

Regional Economics

(M.A. Economics - Elective Code: 1310304111)

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SYLLABUS

Regional Economics

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1. Important of Regional Analysis in Developed and Backward Economics.
2. Definitional Problems in Region: (a) Physical or Geographical, (b) Demographic, (c) Planning Regions and (d) Model Regions (Analysis for Identification of a Region, Regional Approach to the Problems of Backward Economy).

UNIT II

3. Location of Agglomeration: Agglomeration Economic Weber and Locational Agglomeration, Transport Cost and Location, Locational Interdependence, Location and Decision Criteria.

UNIT III

4. Nodal Hierarchy, Central Place Theory, The Central Place Hierarchy and the Rank Size Rule, Gravity Model Growth Poles.

UNIT IV

5. Federalism and Economic Growth: Theory of Federalism, Division of Sources of Revenue between the Central and State Governments with Special Reference to Indian Adjusting Mechanism, Problems of Resources Mobilization at the Regional Level.

UNIT V

6. Regional Aspects of Stabilization and Growth Policy: Post-war Regional Cyclical Behaviour and Policy Measures for Stabilization, Theories to Explain Regional Differences in Growth, Fiscal Programmes, Tax and Transfer Programmes, Fiscal Responses of Power Level Governments, Regional Orientation to Policy Programmes and Central Responsibility.

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UNIT I: INTRODUCTION

1

Chapter

CONCEPT OF REGIONAL ECONOMICS

Objectives

This Chapter is focused on the following objectives:

- Importance of regional analysis in developed and backward economies
- Regional disparities in India
- Socio-economic Development in India (A Regional Analysis)

Structure:

- 1.1 Importance of Regional Analysis in Developed and Backward Economies
- 1.2 Regional Disparities in India
- 1.3 Socio-economic Development in India (A Regional Analysis)
- 1.4 Summary
- 1.5 Self Assessment Questions
- 1.6 Key Terms
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1.1 IMPORTANCE OF REGIONAL ANALYSIS IN DEVELOPED AND BACKWARD ECONOMIES

Blair (1995) attempts to separate economic growth from development. He argues that growth can be beneficial or detrimental. For instance, growth might occur if a new factory was opened but if it paid very low wages, imported all its raw material and sent its profits overseas, the result may be that average incomes fall in the region where it locates. Therefore, though the population and income of the region may have grown, the quality of life has fallen. He suggests that development implies that welfare of residents is improving either, on average, or the more disadvantaged are gaining more than the rest. He sees community development as being particularly important.

Regeneration suggests that something is not quite right with the local economy and needs to be improved or made better. Roberts (2000) concentrates on urban regeneration and suggests that it is a wide-ranging and integrated vision backed up by action that leads a resolution of urban problems in a way that brings about a lasting improvement in the economic, social, environmental and physical condition of an area. The impression is given that regeneration is a more holistic approach than development. It is not just about physical planning and inward investment, it is about building communities and providing opportunities for individuals. The reality is that most of the effort is driven by the public

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sector. Significant amounts of public money are earmarked for regeneration before private investment is forthcoming and the jargon has drifted away from development and is directed more towards regeneration.

Is regional economics a pure science? Regional and local economics is a study of political economy. Therefore, it cannot be separated from the political questions of the day. Thus, it can be argued that regional and local economics, at the macro level, is conditioned as much by political ideology, as by the science of economics itself. The main theories that underpin the analysis are rooted in the various political economy schools of thought like interventionist (Mainstream or Keynesian); free market (Conservative or Monetarist); and Marxist. Not surprisingly, the policy prescriptions usually also fit the relevant political and economic ideologies. Therefore, local economies are seen as working in a similar fashion to a national economy – they are just smaller at the micro level, the divide is not so evident. Traditional demand and supply theory is used coupled with the theory of the firm, etc. There are indications that a consensus has been building for several years about the types of policies that ought to be employed, particularly as there is increasing acceptance that a range of tools rather than one or two policy prescriptions are inevitable to address regional problems. For instance, the solution to chronic unemployment is not just about the level of demand or capital investment, it includes supply-side questions such as vocational training, life skills, education, mobility and migration, technological advancement and also entrepreneurial activity.

Is it relevant? Given the above, it is not surprising that regional and local economic analysis is concerned with real questions about the real economy. Whilst there is a theoretical underpinning and much debate about the merits and demerits of particular theories and models, practitioners use a range of available and emerging tools to try and answer the questions for which policy makers seek solutions. These are as hereunder:

1. Forecasting the impact of an event such as the start-up or closure of a significant enterprise on a local economy.
2. Quantifying the direct and indirect benefits of an existing enterprise on the local economy or determining the spatial impact of the decline of a whole industry on a regional economy.
3. Identifying significant clusters of economic activity within a locality.
4. Tracking the progress of a local or regional labour market or benchmarking a region's competitiveness.

Why is regional or local analysis important and who is interested? Regional and local economic analysis is important to a number of groups in society, some of which are mentioned below. Apart from that, it has a strong tradition in the academic community and has spawned a number of successful research centres and units. The Centre for Local and Regional Economic Analysis, carries out academic research and commercial consultancy work. Clients include businesses, government, (local and national) and other institutions (such as, Learning and Skills Councils, not-for-profit organizations and national industry bodies).

Armstrong and Taylor views: Armstrong and Taylor suggest there are six important issues that economists might be interested in, i.e.,

1. What factors determine output and employment levels in a region?
2. Why are living standards higher in some regions than others?

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3. Why does labour productivity vary so much between regions?
4. What factors determine regional specialisation and inter-regional trade?
5. Whether the migration of people between regions be explained by economic factors?
6. Why some regions have persistently high levels of unemployment?

Interest of the physical planner: The physical planner might be interested in:

1. Land requirements for new homes, commercial and industrial use and social capital.
2. Re-use of derelict land, refurbishment of infrastructure etc.
3. Transport routes, congestion, waste disposal, natural resource consumption and environmental degradation.
4. Facilitating foreign direct investment and encouraging entrepreneurship and indigenous industrial growth.

Interest of governments and other public policy makers: Governments and other public policy makers are interested in:

1. The policy prescriptions that enable more efficient use of resources and economic assets (is the economic potential of the country, region, local area being realised or is it being held back).
2. The affect on public expenditure and social cohesion of economic underperformance (i.e., crime, transfer payments, i.e., benefits and urban and rural decay).
3. Ameliorating the effect of integrated markets (European single market) by attempting to narrow the gap between the leading and the lagging regions. It is the second most important policy sphere after agriculture, accounting for over one-third of EU expenditure.

Putting in place policy to enable individuals to realize their economic potential (i.e., local and national training initiatives, encouragement of entrepreneurial activity), industry and commerce need to be aware of relative performance because:

1. It has an effect on market demand (i.e., is the region a growing or declining one).
2. They need to know the availability and price of inputs (i.e., labour, materials, supply chain etc.).
3. The costs of congestion and the ease of access to markets.
4. The availability of subsidies and advice to counter disadvantage.

What is a regional or local economy? There are a number of definitions, but fundamentally the regional and local economy is all economic activity taking place in a specific geographically defined area. This suggests that the regional or local economist is concerned with the both the broad and particular aspects of the regional or local economy such as the labour market, factor markets, industrial activity and productivity. Most are concerned with the differences in the performance of these markets between different regions or localities.

Definitions in the Economic Text

Armstrong and Taylor adopt a pragmatic Approach: In its broadest sense, a regional economy is a geographical sub-set of the national economy. It may be as large as a

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state or province or as small as a local authority area. The choice, in terms of analysis, is often governed by the availability of data.

McDonald, J., Fundamentals of Urban Economics, 1997, American View: The field of urban (local) economics is closely related to its sister field, regional economics. Both urban and regional economists are interested in the variety of economic experience that can occur within a single nation. Both study economic units that are defined geographically, as opposed to industry units, demographic groups, occupational groups, or any other possible disaggregations of the entire economy. Indeed because both fields study geographic sub-units of the national economy, urban and regional economics makes use of some of the same economic models and methods.

Marion Temple, Regional Economics (1994): Depicts the regional and local economies graphically as a series of concentric circles with the local economy at the centre and the international economy at the extremity. She concedes that in both the UK and EU, the definition of a region remains essentially complex and qualitative in many respects, influenced by convention and custom as well as by administrative convenience or even – sometimes – economic cohesion.

Griffiths and Wall, Applied Economics: Define a region, thus, a region is a portion of the earth's surface that possesses certain characteristics (physical, economic, political, etc) which give it a measure of unity and differentiate it from surrounding areas, enabling us to draw boundaries around it. They then go on to describe how the geographical boundaries of regions in the UK have changed over time with the latest revision in 1994.

Concept of Regional and Local Economies: Most people will be more familiar with their local area be it a city, town or village. They may also identify with a larger spatial area, e.g., country, particularly if it has tax raising powers. Standard planning regions are often less familiar and represent the spatial aggregation at which government tends to work. Clearly, the regional and local economy are part of the larger economic system. Regions viewed from “top down” are subdivisions of the nation's economic space. Viewed from the “bottom up”, they are aggregations of urban and rural areas. Local and regional economies are usually defined by administrative boundaries.

Functions at the Standard Planning Regions

1. Main Government departments work through regional offices and it co-ordinates the work of other government departments in every region. These are Department for Communities and Local Government, Department for Transport, Department of Trade and Industry, Department of the Environment, Food and Rural Affairs, Department for Education and Skills, Home Office Department of Culture, Media and Sport, Department of Work and Pensions, Cabinet Office and Department of Health.

2. Subsequently, regional development agencies were set up and these business-led agencies are funded by government but can also generate profits from land development. They are arms-length organizations, answerable to government but not directly controlled by them.

3. Health Care was organized on a regional basis.

4. Regional physical planning is generally undertaken by Regional Offices in conjunction with local authorities.

5. Local government sometimes organizes regionally.

6. Education and housing are not organized on a regional scale. These are the responsibility of local government although the Department for Education and Skills does release information on a regional basis.

Features of a Regional or Local Economy: Regional analysis is mostly based on the theories and analytical tools developed for national economies. Many models are based on the assumption that similar sorts of fundamental components and relationships exist at the regional or local level as are present at the national level. This is often a second-best option brought about by the lack of hard data at the sub-national level. Researchers are well aware that regional dynamics will be different from national dynamics. For instance, production of one unit of output in a given industry may involve a greater proportion of imported inputs in one local economy (a) than an adjacent local economy (b). Hence, increases in demand for the given product nationally will be more beneficial in income and employment terms to local economy (b) than local economy (a).

Whereas national governments and policy makers are able to exercise a degree of control over external trade, domestic consumption, private domestic investment and government expenditure, than that of regional or local government. External trade plays a more crucial part in the economic life of a regional/local economy than the national economy. For a start, by definition, region or local firms may be exporters (and importers) both within the country and outside it. Viewed in national terms, only external trade is classified as imports or exports. Therefore, regional or local economies are much more open than national economies.

Regions also tend to be much more specialized than national economies. Further, factors of production also flow more easily between regional and local economies than they do between national economies for the following reasons.

Barriers to trade are missing at the local level: It implies:

1. Distance to market is shorter – transportation costs (lower).
2. Labour and capital are more mobile within the region than between countries.
3. There are no defence or political considerations.
4. Cultural and language differences do not exist.
5. Legal tools – tariffs – quotas etc. (restrictions to trade) are not present.

In the region, income is largely determined by what happens outside the region, e.g., government spending, taxation, national wage rates etc.; import and export flows are large; factors of production are mobile; taxes and savings may be lost to the region; thus leakages are higher, and consequently multipliers lower.

Regional or local economies are unique entities: It implies smaller and more open than that of national economy, more specialized and less hampered by political, legal and cultural diversity.

Measures to analyze the regional or local economy: Highlighting and differentiating regional and local economic performance requires an understanding of the processes and interconnections of the various markets that comprise the economy and often, significant amounts of data. The economist job is to inform policy makers, so that they can make policy decisions based on sound, impartial analysis, free from vested interest. Further, the researcher has basically three different perspectives from which to view the economy – Past, Present and Future.

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Past: This is probably the most used (sometimes referred to as driving forward whilst looking in the rear-view mirror), the reason for this is that data is usually readily available. To the researcher, examination of long-run time-series data is helpful in understanding why some economies persistently out-perform or under-perform against the national average, and why these trends persist. They may also wish to examine the effectiveness of policy with the benefit of hindsight under the assumption that past patterns (under realistic assumptions) will probably repeat themselves into the future. Past data can be used to extrapolate trends as a basic tool for forecasting. For more sophisticated forecasting, time-series data may be used to examine the relationship between variables usually using some form of regression analysis (e.g., interest rates and unemployment) or to construct models of economic behaviour.

Present: The researcher is often required to compare and contrast a regional or local economy against some benchmark. Essentially, it implies building a profile of the local economy using the most up-to-date data available (although in practice this may be little out-of-date, e.g., census of employment data usually lags by two years). Because data is either not available or may be lagged, researchers will often use surveys to obtain local primary data. This can be used in profiling, for fine-tuning forecasting models (determining inter-sector linkages) and providing the raw data for impact analysis (expenditure patterns).

Future: This is the domain of the modeller. Researchers construct econometric, social accounting matrices and input-output models of regional and local economies to enable them to produce informed forecasts of future economic behaviour under tightly defined assumptions (e.g., expected growth in national GDP, interest rate parameters etc.). Models are used to forecast such variables as output, employment and occupational structures. Some models make point forecasts for the short-run and others make range forecasts for the longer-run. Whilst there is a certain amount of controversy surrounding the effectiveness of models, as it is claimed some assumptions are too restrictive and some other factors are ignored, they represent the cutting edge of regional and local economic analysis. More importantly, the output from them has a value in the marketplace with demand from government and business.

Tools used: Now, question arises what tools do we use?

Profiles: Snapshot views of the economy of an area based on secondary data. Essentially looking backwards at what has happened in an area, usually comparing the local economy with some reference point (e.g., the national economy). This could include relative indices and shift-share analysis and be used to drive SWOT analyses.

Econometric Models: Used to forecast the outcomes to an economy, based on well laid out assumptions, that may themselves be derived from extensive analysis of primary and secondary data to determine the cause and effect of phenomena, e.g., the affect of interest rate changes on local employment patterns.

Input-output Analysis: Used to simulate the effect of a shock to the local economy and determine its full impact on output and employment after the inter-industry linkages are taken into account.

Cost Benefit Analysis: Used to compare and contrast the expected outcomes of competing policy prescriptions or projects over time, e.g., rival bids to build a new factory in a given area.

Surveys: Although local data is often available for variables such as unemployment and employment, the researcher often requires more detailed knowledge of the local area and this has to be provided via local surveys. This is particularly important in determining the

specification of models and the magnitude of sector inter-linkages, e.g., expenditure patterns, location of suppliers and training penetration.

What is the Political Background (Concept)?: It is probably useful to define the main political policy responses to the problems of regional or local economies. Each of which is associated with a particular political ideology. McDonald suggests that because of differing ethical objectives are embedded in schools of economic thought, the type and range of data collected and the specification of models may differ. Thus, concludes that urban or local economics is conditional analysis and he looks at two main schools; Mainstream and Conservative.

Mainstream: Primary objective is the maximization of utility for members of society, with utility dependent on consumption of goods and services and the usage of time. This is constrained by the availability of resources such as land, capital and time. Optimal outcomes are where marginal benefit (price) is equivalent to marginal cost. Its main features are that allocation is generally by markets. Government intervention is only valid to ameliorate against monopoly, externalities, and to provide public goods. They acknowledge that the market economy produces an unequal distribution of income and favour public policy designed to reduce income inequality (tolerate some inefficiency as the price for greater equity). Monetary and fiscal policy is to be used in the short-run to ensure growth in the longer-run.

Conservative: The underlying proposition is that the pursuit of social goals limits individual freedom (Hayek). They hypothesize that essentially arbitrary decisions are made (by government) with the force of law resulting in administrative discretion rather than the rule of law and this is then justified as judging cases on their merit. The goal of the conservative is to enhance human and economic freedom, which are the necessary pre-conditions for political freedom. They argue that the scope of government should be limited and that government power should be dispersed rather than concentrated at the centre. Government activity should be limited to actions that support the competitive market economy, i.e., the provision of pure public goods, law and order, enforcement of contracts, property rights and maintenance of a monetary system. The role of government is not to correct externalities or alleviate poverty; however, in the transitional stage, the poor should be compensated by measures such as negative income tax.

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1.2 REGIONAL DISPARITIES IN INDIA

I. Historical Trends

India has had a glorious past. Our cultural heritage is comparable to that of China or Egypt. We had great kings and kingdoms. Half of the major world religions had their origin in India. We had produced great thinkers and philosophers who contributed to several branches of knowledge.

But most of our history before 1500 AD is in oral traditions. Indians, by and large, were not good at record keeping. This is especially true about hard facts and data relating to various aspects of life. Even for the period 1500 to 1750 AD, data are rudimentary.

Mughal Period (1500-1750): India during Akbar's time was considered as prosperous a country as the best in the world. Though mainly agrarian, India was a leading manufacturing nation at least at par with pre-industrial Europe. She lost her relative advantage only after Europe achieved a revolution in technology.

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The economy was village-based. Though under Muslim rule for over 500 years, the society continued to be organized in Hindu traditions. Caste system was intact. The social disparity often added another dimension to economic exploitation. While the Jajmani system ensured social security, the caste system ensured social immobility.

However, flexibility of the Jajmani system ensured that the artisans working under it were not completely cut-off from the market. They were free to sell outside the village the surplus goods left after the fulfillment of community obligations. The traditional economic system based on agriculture and small-scale industries was not disrupted either by the activity of native capital or by the penetration of the foreign merchant capital.

There is historical evidence to indicate that there were food surplus and deficit regions as trade in foodgrains between regions took place. This contradicts the postulate that a uniform pattern of self-sufficiency for the entire sub-continent existed. For instance, rice was being purchased from Konkan coast to be transported through sea to Kerala. Likewise, Bengal rice was sent up the Ganges to Agra via Patna, to Coramandel and round the Cape to Kerala and the various port towns of the West Coast. The best mangoes in Delhi's Mughal Court came from Bengal, Golconda and Goa. Salt to Bengal was imported from Rajputana.

Domestic trade was facilitated by a fairly developed road network. Sher Shah Suri during his short regime laid the foundation of a highway system in India. He alone had built 1700 sarais for the convenience of travellers, mainly traders, on the highways.

India exported common foods like rice and pulses, wheat and oil, for which there was considerable demand abroad. Bengal, Orissa and Kanara coast north of Malabar were the major grain surplus regions. Besides, Bengal exported sugar and raw silk, Gujarat exported raw cotton, while Malabar sent out its pepper and other spices.

The Indian merchant lived in a keenly competitive world but he accepted important social limits to competition. Business was organized around the family with an occasional trading partner from the same social group.

Agra during Akbar and Delhi during the reign of Shahjahan were no lesser cities than London and Paris of those days. Foreign travellers who visited India during the sixteenth and seventeenth centuries present a picture of a small group of ruling class living in great luxury, in sharp contrast to the miserable condition of the masses. Indigenous sources do not disagree; they often dwell on the luxurious life of the upper classes, and occasionally refer to the privations of the ordinary people. Such sharp inequality in living standards was not peculiar to India; it existed in a greater or lesser degree everywhere, including Europe.

The Indian village was highly segmented both socially and economically. There was significant inequality in distribution of farm land, though there was plenty of cultivable waste-land available which could be brought under plough if capital, labour and organization were forthcoming.

Share of produce retained by different classes of peasants varied. The general Mughal formula for the authorized revenue demand was one-third or one-half. The precise share depended on a number of factors—nature of the soil, relationship of the peasant with the Zamindar of the area, traditions, etc. Caste might have also played a role. For instance, in some parts of Rajasthan, members of the three upper castes—the Brahmans, the Kshetriyas or Rajputs and the Vaishyas or Mahajans paid land revenue at concessional rates. Because of these factors, one would expect considerable inequality within the village. In any case, the class and caste distinctions superimposed on each other made the rural society extremely complex and unequal.

In comparison to the rural rich, the urban rich especially the merchants in coastal towns were much wealthier. Some of the merchants of Bengal and Gujarat had stupefying wealth. The pattern of life of the nobility and the upper class in Mughal India has become a byword for luxury and ostentation. There is hardly any evidence to show that the puritan style set up by Aurangzeb had any marked effect on the lives of the nobility. Of course, this consumerism created demand for a horde of luxury items which generated employment, income and general prosperity.

The British Period (1757-1947): The debate concerning the level of India's economic development in the pre-colonial era is unlikely to ever reach a satisfactory conclusion as the basic quantitative information is absent.

Dadabhai Naoroji was the first one to make an attempt to estimate national and per capita income in India. He placed per capita income of India at ₹ 30 in 1870 compared to that of England of ₹ 450. However, since necessities in India cost only about one-third as compared to England at that time, the real difference in terms of purchasing power parity was not fifteen times but only five times.

The statistical reporter of the 'Indian Economist' ran a series of articles on the standard of living in India in 1870. One of the items which was given regionwise was value of per capita agricultural output for 1868-69. According to that, it varied from ₹ 21.7 in Central Province to as low as ₹ 11.1 in Madras. Others were Bombay (₹ 20.0), United Provinces (₹ 12.1), Punjab (₹ 17.4) and Bengal, including Bihar and Orissa (₹ 15.9).

Regionwise birth rates, death rates and life expectancy at birth are given in the table below for the period 1901-1911:

Table 1.1

Region	Birth Rate	Death Rate	Life Expectancy	
			Male	Female
East	52.8	45.8	22.4	22.8
West	48.1	42.1	24.8	24.8
Central	46.6	31.3	31.7	32.7
North	48.6	48.7	21.7	19.2
South	40.3	32.2	29.8	32.3
All India	47.7	41.7	24.7	24.4

In 1901, there were 2093 towns in the Indian Sub-continent and about ten percent of the population was urban. There was considerable variation in the level of urbanization across the country, it varied from 18.8 percent in Bombay Presidency to five percent in Bengal Presidency, including Bihar and Orissa.

The dependence on agriculture for livelihood varied considerably across the regions. While the share of cultivators in the male working force in Assam, Bihar, Orissa and Uttar Pradesh was 55 percent or more, it was less than 40 percent in Gujarat, Maharashtra, Kerala and West Bengal in 1911.

Industrialization in India, from the beginning, had been experiencing a duality. European entrepreneurs invested more and more in industries which were mainly export-oriented whereas Indian entrepreneurs concentrated on industries mainly for the Indian markets. Thus, jute, tea, etc. were mainly in European hands whereas textile, sugar, etc. were mainly Indian. Apart from other factors, one main reason was that Indian market offered

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higher profit margins which Indian industrialists found easier to penetrate. Not surprisingly, this tendency continues even today.

The benefit of irrigation development was mainly concentrated in northern, western and southern provinces during British period. Central and Eastern India were relatively neglected. This has had serious implications in the post-independence period also. While the former areas were ripe for benefiting from the green revolution package, the latter could not.

From its beginning in 1853, India's railway system expanded rapidly to become, by 1910, the fourth-largest in the world. This network which covered most of the Sub-continent, radically altered India's transportation system.

Railways vastly increased the speed, availability and reliability of transportation, reduced the cost, allowed regional specialization and expansion of trade. For attracting private investors, Government of British India assured guaranteed return. Under this scheme, which was used in other parts of the world to build railways, if a company did not attain a minimum rate of return of five percent, it received compensation for the difference from the Government. Stimulated by an assured rate of return, British investors swiftly made their capital available to the private railway companies. By 1947, all but a few remote districts in far-flung remote regions were served by railways.

The fiscal system during the British rule gradually evolved into a federal system from a highly centralized control. Over the years, relations between the centre and the provinces were made more elastic but not much more systematic. In particular, there was no attempt to equalize provincial levels of public services, or the tax burdens on similar classes of tax payers in different States. There were enormous differences in tax incidence and standards of public services in the beginning, and these differences were perpetuated since precedent was followed rather than any principle.

The main source of differences in tax burdens was the variation in the system of land revenue, the largest source of public revenue. This also explained one source of difference in expenditure. Bombay spent much more per head on nearly every head of expenditure than the others. The other provinces clamoured for less inequality but to little effect. Bombay continued to spend far more on every major head than the other provinces, and Bihar and Orissa far less. The poverty of these provinces became evident when they were separated from Bengal in 1912-13.

Many critics also argued that the system did not even encourage economy, but rather extravagance, since the actual expenditure in one period formed the basis of allocations from the centre in the next. For the same reason, the provinces had little incentive to try to raise their tax revenues. A more or less similar situation exists in India even today when the Finance Commissions assess the revenue gaps of the States and try to fill such gaps by increased transfers.

Post-Independence Period: Government's economic policies during the colonial period were more to protect the interests of the British economy rather than for advancing the welfare of the Indians. The primary concerns of the Government were law and order, tax collection and defence. As for development, Government adopted a basically laissez-faire attitude. Of course, railways, irrigation systems, road network and modern education system were developed during this period. Railways and road network were more to facilitate movements of goods and defence personnel and to facilitate better administrative control. Irrigation canal system was mainly to fight repeated droughts and famines and to boost land

revenue. Education, to begin with, was developed mainly to train lower-ranking functionaries for the colonial administration.

Particularly lacking was a sustained positive policy to promote indigenous industry. Indeed, it is widely believed that government policies, far from encouraging development, were responsible for the decline and disappearance of much of India's traditional industry.

Altogether, the pre-independence period was a period of near stagnation for the Indian economy. The growth of aggregate real output during the first half of the twentieth century is estimated at less than two percent per year, and per capita output by half of a percent a year or less.

There was hardly any change in the structure of production or in productivity levels. The growth of modern manufacturing was probably neutralized by the displacement of traditional crafts, and in any case, was too small to make a difference to the overall picture.

Along with an impoverished economy, independent India also inherited some useful assets in the form of a national transport system, an administrative apparatus in working order, a shelf of concrete development projects and a comfortable level of foreign exchange. While it is arguable whether the administrative apparatus built by the British helped or hindered development since 1947, there is little doubt that its existence was a great help in coping with the massive problems in the wake of independence such as restoring civil order, organizing relief and rehabilitation for millions of refugees and integrating the Princely States to the Union.

The development projects initiated in 1944 as a part of the Post-war Reconstruction Programme was of particular value to Independent India's first government. Under the guidance of the Planning and Development Department created by the Central Government, a great deal of useful work was done before Independence to outline the broad strategy and policies for developing major sectors and to translate them into programmes and projects. By the time of Independence, several of these were already under way or ready to be taken up. They included programmes and projects in agriculture, irrigation, fertilizer, railways, newsprint and so on. Though the first Five Year Plan began in 1950-51, with the establishment of Planning Commission, a well-rounded planning framework was in place only with the second Five Year Plan after five years. By and large, the basis of the first Five Year Plan was the groundwork done before independence. Most of the principal projects were continuations and major efforts were made to complete them early.

II. Recent Trends

Indian economy has experienced an average annual growth rate of around 6 percent during the last two decades. Though, moderate compared to the performance of several East Asian economies during the same period, this was quite impressive compared to the performance of Indian economy during the preceding three decades when the average growth logged 3.5 percent per annum. Even the growth rate of 3.5 percent experienced during the first three decades of the republic had been spectacularly better than the virtual stagnation of the Indian economy during the first half of the Twentieth century. In terms of per capita income, the improvement has been even more remarkable — around 4 percent per annum in the recent period as compared to less than 1.5 percent in the earlier period. Further, during the recent period, there has been a steady acceleration in the growth performance over the years. The average compound growth per annum was 5.7 percent during the Sixth Five Year Plan (1980-85), 6.0 percent during the Seventh Plan (1985-90), 6.6 percent during the Eighth Plan (1992-97) and subsequently 8 percent during Twelfth Plan (2012-17). While the growth rate

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dropped to 3.1 percent during the two-year period 1990-92 in the wake of international payment crisis and the introduction of major economic reforms, the growth process picked up fast in the subsequent years. Indeed, the growth averaged about 7.5 percent during the three-year period ending 1996-97, which is impressive by any standards. The growth rate has been somewhat lower in the subsequent three years. In contrast to stagnation or negative growth of most of the East Asian economies, India's performance, however, is remarkable. The World Bank and other international agencies have characterized India as one of the fastest growing economies of the world. With the economy slowing down and figures for the year not optimistic, the Planning Commission plans to seek a lowering of the growth rate for the 12th Five Year Plan to 8 percent at the meeting of the National Development Council (NDC) in Delhi. Core objective is that we should be going in for a more optimistic scenario and probably if we reflect, what we now know is that instead of 8.2 percent, it would be better to pitch it at 8 percent.

As is to be expected, improvement in economic growth and per capita income translated, at least partly, into reduction in the level of poverty in the country. Though there are differences in the estimates of the percentage of the poor by different sources, all agree that there has been a secular decline in the share of poor in the population since the late Seventies. The official estimates of population below poverty line released by the Planning Commission on the basis of the Expert Group methodology indicates this secular downward trend.

Table 1.2: Official Estimates of Population below Poverty Line

Year	Percentage of Poor
1977-78	51.3
1983-84	44.5
1987-88	38.9
1993-94	36
1999-2000	26.10
2011-2012	22

The last two decades had seen the introduction or expansion of several anti-poverty programmes and public intervention policies in favour of the poor including public distribution of subsidized foodgrains. The reduction in poverty in the recent period is attributed to anti-poverty programmes by their protagonists and to accelerated economic growth by market-friendly experts.

Along with faster economic growth and reduction in poverty, there has been accelerated improvement in various indicators of human development since the early Eighties whether it is in the case of demographic characteristics or social development indicators. During the last two decades, the country has made major strides in health and education sectors. The economy got diversified significantly and the share of the service sector in employment and incomes improved considerably. While there is a broad consensus on the overall improvement of the economy and quality of life during the period under consideration, there are significantly differing perceptions about the distributional impacts of these gains.

Disparities in economic and social development across the regions and intra-regional disparities among different segments of the society have been the major planks for adopting planning process in India since independence. Apart from massive investments in backward regions, various public policies directed at encouraging private investments in such regions have been pursued during the first three decades of planned development. While efforts to

reduce regional disparities were not lacking, achievements were not often commensurate with these efforts. Considerable level of regional disparities remained at the end of the Seventies. The accelerated economic growth since the early Eighties appears to have aggravated regional disparities. The ongoing economic reforms since 1991 with stabilization and deregulation policies as their central pieces seem to have further widened the regional disparities. The seriousness of the emerging acute regional imbalances has not yet received the public attention it deserves.

Most of the studies on inter-country and inter-regional differences in levels of living and income are done within the theoretical framework of neoclassical growth models. These models, under plausible assumptions, demonstrate convergence of incomes. Three notable recent studies, however, indicate that in the Indian context these convergence theories do not explain the ground realities.

The scope of analysis in this section is restricted to a comparative analysis of the emerging trends in fifteen major States in respect of a few key parameters which have an intrinsic bearing on social and economic development. The variables chosen for examination include those which have a bearing on gender and equity issues. The fifteen States together account for 95.5 percent of the population of India. The remaining 4.5 percent of the population is spread out in 10 smaller States and seven Union Territories including the National Capital Territory of Delhi. Leaving out these States and UTs from detailed study is mainly due to non-availability of all relevant data and also to keep the data sets analytically and logistically manageable. The fifteen States taken up for the detailed study have been grouped into two – a forward group and a backward group. The forward group consists of Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Punjab and Tamil Nadu. The backward group comprises of Assam, Bihar, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

Geographically, the forward group of States fall in the Western and Southern parts of the country and are contiguous except for Punjab and Haryana which are separated by Rajasthan from the rest of the States in this group. The group of backward States are in the Eastern and Northern parts of the country and are geographically contiguous. Another notable geographical feature is that while six out of eight States, except Haryana and Punjab, in the first group have vast sea coasts, only two out of the seven in the second group, viz., Orissa and West Bengal are littoral. While the forward group of States account for about 40.4 percent of the national population, the backward group accounts for as much as 55.1 percent of the population of the country according to 2001 census. In terms of natural resources including mineral wealth, water resources and quality of soil, the latter has definite edge over the former.

A limitation of inter-regional analysis using States as units is the fact that this may not be able to capture the significant intra-State disparities in economic and social development, which exists today. The larger States in both the groups have regions within themselves, which are vastly different in terms of various indicators of development. There are identifiable distinct regions, at different stages of development, in several States.

Demographic and Social Characteristics: As noted earlier, the group of eight forward States together accounted for 40.4 percent of the population of the country whereas the group of seven backward States together accounted for as much as 55.17 percent of the population of the country according to 2001 census. However, the contribution of the group of forward States to the country's population growth during the last decade was much higher at 59.2 percent. On the other hand, the contribution of the group of backward States was as low

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as 33.8 percent. All the States, except Assam and Orissa, in the backward group had a higher contribution to population growth than their share in population. Thus, Uttar Pradesh's contribution to population growth was 18.8 percent against its population share of 16.2 percent and Bihar's contribution was 10.1 against its share of population of 8.17 percent.

In contrast, out of the eight States in the forward group, all except Maharashtra, Gujarat and Haryana had a lower contribution to population growth during the last decade than their respective shares in the population. Indeed, Kerala's contribution to population growth was as low as 1.5 percent against its share in the population of 3.1 percent and Tamil Nadu's contribution to population growth was as low as 3.4 percent against its share in the population of 6.1 percent.

To broadly characterize, the two groups of States are at different stages of demographic transition. States like Kerala and Tamil Nadu which have already reduced their birth rates to levels are comparable to those of developed countries and achieved the replacement level of total fertility rate (TFR) of 2.1. All the remaining six States of the forward group are expected to reach the replacement level of TFR by 2025, one year in advance of the projected year of attainment of replacement level of TFR by the country. On the other hand, the seven States in the backward group are at different stages of demographic transition. Some of them like Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan continue to experience high rate of birth rates and fairly low levels of death rates and a significantly high level of TFR. On the other hand, States like Assam, Orissa and West Bengal have somewhat moderate birth and death rates and relatively moderate TFR. These three States are expected to reduce their TFR to replacement level well before the country's TFR comes down to that level. As against this, Bihar is expedited to reduce TFR to replacement level by 2039, Rajasthan by 2048, Madhya Pradesh by 2060 and Uttar Pradesh beyond 2100.

According to 2001 census, the literacy rate for the country is 65.4 percent. All States in the forward group, except Andhra Pradesh, have literacy rates above the national average. Their rates vary from 90.9 percent in Kerala to 67.0 percent in Karnataka. The level of literacy in Andhra Pradesh is only 61.1 percent. In the backward group, all except West Bengal have literacy rates below national average. They vary from 64.3 percent in Assam to as low as 47.5 percent in Bihar. The level of literacy in West Bengal is 69.2 percent.

Census 2001 indicates that the gender gap in literacy has come down for the country from 24.8 percentage points in 1991 to 21.7 percentage points in 2001. Now, the male literacy is 76.0 percent and female literacy is 54.3. On the whole, the literacy gap is lower in the forward group of States as compared to the backward group of States. Six out of eight States in the first group, except Haryana and Gujarat, have literacy gaps below the national average. On the other hand, all States except Assam and West Bengal have gender gap in literacy higher than the national average. The gender gap in literacy is as low as 6.3 percentage points in Kerala and as high as 32.1 percentage points in Rajasthan. There appears to exist a strong inverse relationship between the gender gap in literacy and the status of women in society. Also, there is a fairly well-established inverse empirical relationship between the female literacy and TFR. The national as well as international experience is that with higher female literacy rate, birth rate come down irrespective of the social backgrounds, religious beliefs and income levels.

The group of backward States account for 63.3 percent of the illiterate females in the country, a share which far exceeds its population share. On the other hand, the group of forward States account for only 34.4 percent of the illiterate in the country, a share far less

than its population share. In this group, Andhra Pradesh is the only State where the share of illiterate females is higher than the share of population.

Income and Property: The most common indicator of the economic development of a society is the per capita annual income generated by it. The level of poverty or the share of population which do not have minimum income to meet its basic requirements is an indicator of the level of economic development as well as the inequality in the income distribution.

Per capita gross state domestic product (GSDP) as a percentage of per capita GDP of the country at four time periods since 1997 for forward and backward group of States are presented in the table below:

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Table 1.3: Growth Rate – GSDP% (Current Prices) as per CSO Data 1997-98 Onwards (As on 30-11-2014)

States Forward Group	1997-98	2006-07	2010-11	2013-14
Arunachal Pradesh	10.31	9.40	20.66	14.17
Bihar	3.44	22.12	24.94	15.84
Meghalaya	13.60	18.72	14.75	15.03
Backward Group				
Rajasthan	11.38	20.25	27.28	11.86
Punjab	10.20	17.02	21.22	12.90
Maharashtra	8.84	20.08	22.60	11.52
All India	N.A	16.67	18.66	11.54

Source: A Study of State Budgets: RBI.

The table sharply focuses the differential growth in per capita incomes of the two groups of States over the last two decades, especially during the last decade. All the States in the forward group, have improved their relative position over the last two decades. Further, these improvements were more spectacular since 2010-11, especially in Meghalaya.

In contrast, all the States except Punjab in the backward group experienced relative deterioration in terms of per capita income. And the deterioration was more marked after the reforms. This especially is true of Rajasthan and Maharashtra.

Resource Transfer from the Centre to the States: There is an in-built imbalance between the expenditure responsibilities and the revenue sources of the State governments. The founding fathers of the Indian Constitution were aware of this fact and ensured a comprehensive scheme of devolution of Central Tax revenues through the mechanism of Finance Commissions. The sharing of Personal Income Tax and Excise duties collected by the Centre with the States is periodically reviewed by the Finance Commission appointed every five years. The Commission also decides the principles and the formula by which the allocable funds are to be distributed among the States.

An important aspect of the devolution of Central tax revenues under Finance Commission dispensation is that it has an in-built bias in favour of fiscally weak States. Population and per capita income of the State get high weightage in the distribution formula. A State with larger population and lower per capita income gets a higher share in the Central tax revenues. The gap between revenue receipts (other than the Central tax revenues) and revenue expenditure is another parameter, which decides the level of a State's share. As a result, the Central tax share constitutes a major revenue source for the backward States.

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A second channel of resources flow from the Centre to the States is Planning Commission, which provides Central Assistance for State Plans. The State plans are financed partly by States' own resources and the balance by Central Assistance. Central assistance is provided as a block assistance of which 30 percent is grant and the remaining 70 percent is a long-term loan. The rationale for this grant-loan proportion is imbedded in the fact that about 30 percent of the plan expenditure was of revenue nature and 70 percent was of capital nature when this proportion was decided in the late Sixties. Since plan expenditure of revenue nature is not expected to yield any financial returns for servicing the loan, this share was provided as grant by the Centre.

The distribution of Plan assistance to the States has been governed by 'Gadgil Formula' since the Fourth Five Year Plan (1969-74). As in the case of Finance Commission devolution, 'Gadgil Formula' which is administered by the Planning Commission also has its built-in bias in favour of backward States. Population and per capita income together account for 85 percent of the weight in the formula. The remaining 15 percent weightage is equally divided between State performance in the achievement of certain priority national objectives and the special problems of the States. Central assistance constituted about 45 percent of the State Plans when all States are taken together. While the share of Central assistance constitutes less than 25 percent of the Plan finances of the more developed States, it accounted for the major share of Plan finances of the backward States. Indeed, the Plans of the most backward States, especially the Special Category States, have been fully financed by Central Assistance.

In the wake of the foreign exchange crisis in the early nineties, the Centre has been encouraging States to seek and absorb more and more external aid for development projects. The external aid to the States is routed through Central budget and devolved as additional Central Assistance for State plan on the same terms and conditions as the normal Central assistance to the State Plans. From the early Nineties, there has been a substantial increase in aid flows to the States. However, the major share of such flows have been absorbed by a few developed States. As a result, during the nineties, there has been an apparent increase in the Central assistance to the more developed States. While 'Gadgil Formula' based normal Central assistance continued to be positively discriminating towards backward States, additional Central assistance for externally aided projects was skewed towards better off States. Indeed, external aid accounted for 40 to 60 percent of Central Plan assistance to some of the developed States, while such assistance contributed less than 10 percent of the Central Plan assistance to most of the backward States.

However, although it is true that resource flows through the Finance Commission and Planning Commission account for a substantial share of State resources, whose overall impacts are highly beneficial to the fiscal health of the states, yet there are certain adverse effects of such flows on the State finances. First, since the Finance Commission approach to revenue deficit is basically a gap-filling approach, this diminishes the incentive of the States to raise revenue receipts and reduce revenue expenditure. In other words, there is an implicit premium on fiscal profligacy. Second, continuing expenditure on plan schemes beyond the Five Year Plans became the committed expenditure of the States and add to their fiscal burden. Since there is a premium on plan expenditure, State governments have a tendency to under-fund maintenance expenditure to inflate the plan size. This results in poor maintenance of public assets created in the past and poor quality of public services, which are outside the plan. A further complication is due to steep increase in the revenue component of plan expenditure over the years. While the grant-loan ratio of Central assistance is still 30 : 70, the

revenue share of State Plan expenditure has reached almost 60 percent. As a result, the debt-servicing burden of the States has gone up significantly.

Pattern of Private Investment: In the wake of economic reforms initiated in 1991, the role of private investment has acquired a special significance in the context of economic development of various States of the Indian Union. Indeed, there has been an element of competition among States ever since for attracting private investment, both domestic and foreign. Some of the States have been offering various tax concessions and other special facilities to new investors on a competitive basis.

The total investment proposals received by all the States and UTs since the inception of economic reforms in August 1991 till the end of March, 2000 are worth ₹ 9,08,888 crore. Disparities are obvious. States like Andhra Pradesh, Gujarat and Haryana accounted for two-third of the amount while states such as Assam, Madhya Pradesh, Uttar Pradesh accounted for just over 27 percent of the amount. Indeed, Gujarat and Maharashtra together accounted for 39 percent of the investment proposals, which is significantly more than the total investment proposals received by States such as Assam, Madhya Pradesh and Uttar Pradesh. While Gujarat which accounted for less than 5 percent of the population of the country, received over 17 percent of the private investment proposals, Bihar which accounts for more than 10 percent of the population of the country, received just a little over one percent of such proposals. This is a clear pointer to the direction of private investment in the coming years.

As regards shares of different States in bank deposits, it is found inter-State and regional disparities. While states like Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala etc. account for over 54 percent of the bank deposits, on contrary States like Assam, Rajasthan and Uttar Pradesh accounts for only about 31 percent of the bank deposits. Maharashtra alone accounts for about 20 percent of the bank deposits.

The distribution of bank credit across the States given shows that bank credit distribution is even more skewed than bank deposit distribution. It implies that a part of the deposits mobilized in the backward States is getting transferred to the advanced States. While the first group of States accounted for about 65 percent of the bank credit, the second group of States could receive only about 21 percent of the bank credit. Indeed, Maharashtra alone accounted for more bank credit than all the seven States in the second group put together. Similarly, all the States in the second group, except Uttar Pradesh and West Bengal, put together received less bank credit than Tamil Nadu. The implications of such skewed distribution of bank credit across the States on economic growth and income distribution in the coming years are obvious. The fact that Maharashtra and Tamil Nadu have major metros in them might have helped them to get higher share of bank credit. Having Calcutta as the State capital might have helped West Bengal also somewhat. In this context, it may be of interest to note that all the 15 States considered together which account for 96.5 percent of the population of the country accounted for only around 85 percent of bank deposit and bank credit. The fact that the remaining 15 percent have gone to the minor States and UTs may be somewhat surprising. This, however, is because of NCT of Delhi accounting for over 10 percent of bank deposits and bank credit.

Apart from that, so far as credit-deposit ratios for different States are concerned, it captures the discrepancy in credit absorption *vis-a-vis* deposit mobilization. Exceptions apart, credit-deposit ratios are much more favourable to the States like Andhra Pradesh, Gujarat, Haryana etc. as compared to States like Assam, Rajasthan, Uttar Pradesh etc..

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III. Intra-state Disparities

In the foregoing sections, we have studied various dimensions of inter-State disparities. An important aspect of regional disparities in India, which could not be covered by this approach, is the significant level of regional disparities, which exist within different States. An important cause of regional tensions which lead to popular agitation and at times militant activities is such regional disparities in economic and social development which exist within some of the States. Indeed, creation of some of the States in the past was in the wake of popular agitation based on perceived neglect of certain backward regions in some of the bigger States. The best instances of such cases are the creation of Andhra Pradesh and Gujarat in the Fifties and creation of Punjab, Haryana and Himachal Pradesh in the Sixties. The latest example is the creation of three new States carved out from an existing larger State, viz., Madhya Pradesh, Bihar and Uttar Pradesh respectively. Past experience, by and large, is that when two or more States are carved out from an existing one or a new State is created by combining parts from more than one State on the basis of some homogeneity criterion like language or some other common heritage, the newly created States develop faster than the pre-partition States.

A number of States included in our analysis have clearly identifiable regions which are at different stages of development and which have distinct problems to tackle. Creation of new States, certainly, may not be a solution to such regional disparities. At the same time, it is important to recognize such intra-state regional disparities explicitly and tackle them through special efforts. As we have noted in an earlier section, Maharashtra is a typical example of a State where overall development is quite good in terms of almost all indicators, but extreme regional disparities exist. Andhra Pradesh has three distinct regions which are at different stages of socio-economic development, viz., Coastal Andhra, Telangana and Rayalaseema. Similarly, North Bihar and South Bihar before State reorganization in 2000 were at different stages of development with entirely different problems. Uttar Pradesh, even after carving out Uttaranchal, has at least three regions with varying problems and different levels of socio-economic development. Other States like Gujarat, Karnataka, Madhya Pradesh, Orissa, Rajasthan and West Bengal also have regions with distinct characteristics of backwardness.

A closer examination of the nature of backward regions in each State will indicate specific reasons for their backwardness. The major cause of backwardness of Vidharba and Marathwada in Maharashtra, Rayalaseema and Telangana in Andhra Pradesh and Northern Karnataka is the scarcity of water due to lower precipitation and lack of other perennial sources of water. On the other hand, backwardness of certain regions in Gujarat, Madhya Pradesh, Bihar and Orissa can be associated with the distinct style of living of the inhabitants of such regions who are mostly tribals and the neglect of such regions by the ruling elite. Topography of a region could also constrain the development of that region; the desert region of Rajasthan is an example of such a case. Historical factors like the attitude of rulers of the former Princely States towards development could have significantly affected the development of a region. For example, the distinctly higher level of social development of the Travancore and Cochin regions of Kerala can be traced back to the enlightened attitude of the former rulers of the Princely States of Travancore and Cochin. On the other hand, the poor social development of Telangana region of AP and certain other parts of the Deccan could be traced back to the absence of visionary rulers in the respective princely States.

An important question, however, is why after 50 years of planned development efforts, such intra-State disparities remain unattended? Often, the answer depends on whether it is

given by people who are the victims of underdevelopment or not. The representatives of the backward regions often attribute the cause of their backwardness as neglect on the part of the rulers of the State, who are often from the well heeled regions. The ruling class may come up with any number of explanations for the underdevelopment of backward regions, which are beyond their control. Indeed, there are specific institutional arrangements for development of backward regions in some of the States. Maharashtra and Uttar Pradesh (before State reorganization) are two such instances. In Maharashtra, there are separate regional plans for the backward regions. In Uttar Pradesh, there was a separate regional plan for the hill region which is characterised as Uttarakhand.

Besides the State-specific efforts for reducing intra-State regional disparities, a number of Centrally Sponsored Programmes have been in operation for the last two to three decades for taking care of specific aspects of backwardness of such regions. The Tribal Development Programme, the Hill Area Development Programme, the Western Ghat Development Programme, the Drought Prone Area Programme and Desert Development Programme are examples of such ongoing efforts. The evaluation studies of some of these programmes have indicated clearly identifiable benefits of such programmes, though at the same time criticized these programmes for their cost-ineffectiveness due to various drawbacks in their design, planning and implementation. Often they are conceived, planned and implemented by the bureaucracy without any involvement of the local people. More often, discontent and agitation on the basis of perceived neglect of the backward regions by the rulers at the State level and at the Centre are led by local leaders who demand some form of autonomy to determine their own destiny. Even those who demand separate State for their region are often willing to settle for autonomous regions within the existing State with considerable financial and administrative powers. The problem, however, is that the State level rulers are generally unwilling to part with their own power of patronage. Those who demand more autonomy for the States from the Centre are often unwilling to share power, either administrative or financial, with the elected local bodies. Indeed, with the 73rd Amendment Act of the Constitution, the Panchayat Raj Institutions were expected to function as local governments with sufficient finances and functions to take care of most of the developmental functions. If they are allowed to function as responsible self-governing local governments, considerable ground can be covered to reduce the regional disparities within the States.

Before concluding this Section, we may mention a few successful cases, where intra-State regional disparities have been reduced considerably through public policies. First, in 1956 when Kerala was formed at the time of State reorganization, there was substantial disparity in the social development of Malabar region *vis-a-vis* the Travancore-Cochin region. Over the last four decades, there has been remarkable improvement in the social indicators of Malabar to catch up with the rest of Kerala as a result of appropriate public policies. The development of the drought prone districts of Haryana through irrigation is another remarkable example of reduction in economic disparities across the regions within a State. Provision of educational, health and communication facilities even in the remotest villages of Himachal Pradesh is a third example of successful public policies in reduction of regional disparities within a State. Overall, Tamil Nadu could be considered as one State which is most successful in reducing regional disparities in economic and social development even when there was substantial variation in the natural endowments in different parts of the State. This was achieved by a combination of public policies and private initiatives. In other States, especially in Maharashtra, Gujarat and Rajasthan, there are a number of successful cases of NGOs which succeeded in transforming pockets of destitution into areas enjoying very high levels of socio-economic development.

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IV. Profile of Regional Disparities for Different Growth Scenarios 2025

An analysis of the historical trends, especially the more recent trends, leads to the inevitable inference that regional disparities are bound to aggregate in the coming decades. Regions, which are characterized as backward in our foregoing discussions, have very weak growth impulses.

Their demographic disadvantage is implicit in the fact that major States in this region, viz., Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh are likely to have fertility rates exceeding the replacement level well beyond 2025, a level which some of the forward States like Kerala and Tamil Nadu have already achieved and others are expected to achieve within a decade or so. We have noted that if the current trend is projected, Madhya Pradesh will reach replacement level only by 2060, and Uttar Pradesh only by 2100.

The implications of these divergent demographic trends on population density, employment opportunities, social sector investments and the overall development can be extremely grave. One of the major objectives of development planning initiated immediately after Independence has been, among others, reduction of regional disparities in social and economic development. Direct investment by the Central Government and Centrally directed investment of the private sector have been two powerful instruments to achieve this objective.

During the first four decades of development planning, most of the large units in basic and heavy industries were set up in the public sector in a regionally well-balanced manner. Indeed, their location, other things being equal, was biased towards backward regions as natural endowments such as mineral deposits were concentrated in those regions. Massive public investments have been made to provide economic and social infrastructure in the backward regions to accelerate their overall development.

The natural tendency of the private sector is to set up industries and other related activities in developed regions. To counter-balance this tendency, various incentive and disincentive schemes have been introduced as public policies to direct private investments to backward regions. Fright equalization scheme was just one of them. The efforts of the first four decades of planned development to reduce various imbalances across the regions have been only partially successful. At best, they have ensured that regional disparities in terms of various indicators of development are not aggravating. Of course, even this is no mean achievement.

Economic reforms initiated in 1991 implied among, other things, that the private sector would be the principal engine of economic growth. Most of the restrictions on private investment have been removed. Mounting debt burden of the government has imposed a cap on public investment. As a result, while there was significant increase in the quantum of private investment, there was a sharp fall in the public investment over the last decade.

The flow of private investment, both domestic and foreign, has been extremely biased in favour of the more developed regions of the country. This has enabled the developed regions to achieve accelerated economic growth during the 1990s. On the other hand, backward regions of the country, which were unable to attract any significant private investment flows, experienced decelerated economic growth during this period.

The net result of this divergent growth performance of the developed and backward regions has been a widening of the regional disparities in the country in terms of per capita income and other indicators of well-being of the people.

The ability of the governments at the Centre and in the States to counter this trend by effecting countervailing public investment also has been reduced considerably. In the context

of macroeconomic stabilization policies initiated in 1991, the ability of the Centre to finance public investment by borrowings has been severely constrained. Revenues of the Centre also experienced reduced buoyancy in the wake of tax reforms especially due to reduction in customs tariff to levels comparable to those of our trading partners.

The factors which attracted more and more private investments to developed regions have been their better developed economic and social infrastructure as well as more efficient and investor friendly State governments. The backward regions, to be attractive to the private investors, have to improve their infrastructure facilities, both economic and social, considerably. This needs substantial public investment. The State governments in the backward regions are, however, strapped for funds even to meet the current expenditure.

Almost all the State governments in the backward regions find that their entire revenues are not sufficient to meet even the committed revenue expenditure like interest liability, salaries and pensions. A sizable share of their borrowings is diverted to fill the gap between the revenue receipts and revenue expenditure. There are several States where borrowings have been steadily increasing, but investments have been decreasing secularly.

The adverse impacts of the deteriorating State finances are much more severe for the backward States as compared to the developed States, where investments of the past have created adequate social and economic infrastructure to attract private investments. The backward States are facing multiple dilemma. They are not able to attract investments due to lack of infrastructure. They are not in a position to provide these facilities on their own due to lack of investible funds. Unlike in the past, Centre is not in a position to help them either as the Centre itself has a serious fiscal constraint.

Along with social and economic infrastructure, efficiency of administration and the quality of governance including law and order situation are important factors in attracting private investment. Studies conducted by NCAER and some of the apex associations of industries have indicated that prospective investors give higher weightage to these factors than various incentives, including fiscal incentives offered by the State governments. Indeed, there are enough evidences to the effect that the investors don't mind paying speed money to get things done fast. In other words, a corrupt but efficient regime is preferred to an honest but inefficient regime in the context of investment decisions. Other aspects of governance like the law and order situation, trade union activism, etc. are also important factors affecting the flow of private investments.

On almost all indicators of governance discussed above, the backward States are at a disadvantage. Indeed, even perceptions about the governance issues based on past may haunt the States in such matters. The cases of Kerala and West Bengal are typical in this regard. All the efforts of these two States during the last decade to woo the investors, both domestic and foreign, have not yielded any significant results. This was mainly on account of the general perception of investors that these States are dens of militant trade union activism, though in reality such militancy, of late, has been significantly subdued in these States.

To conclude this section, it will be appropriate to state that there are hardly any signs of reversing the recent trend of accentuating regional disparities in the country in the coming decades. Indeed, almost all the relevant forces are such that the disparities are likely to widen deriving the next quarter century. It will require Herculean tasks on the part of the Centre and the leadership in the concerned regions to ensure that the gap does not widen further.

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V. Impact on Political, Social and Economic Stability

It comes out clearly from the discussions in the preceding section that if the past trends, especially those of the recent past continued for the next two decades or so, India will be a highly uneven nation in terms of various dimensions of public life. Incomes and living standards will vary considerably across the nation. People in most of the southern and western parts of the country will be enjoying fairly high per capita incomes, which may be comparable to those of middle income developed countries today. More than half of the people in this part of the country will be living in cities and towns with all modern facilities. Even in rural areas, amenities of modern life and reasonably efficient civic facilities will be available. Almost all the children of school-going ages will be attending schooling. There will be hardly any difference between boys and girls in school. The gender difference in literacy will have almost disappeared. Population growth might have come down below replacement level in all the States in this region. A few States like Kerala and Tamil Nadu might have reached stable population level. The average health and nutrition level might have increased significantly. Life expectancy in all States of this region might have crossed 70, both for men and women.

The sectoral employment and incomes will have changed considerably. The share of agriculture in the State domestic product will be 10 to 20 percent in different States and the population dependent on agriculture will be 20 to 40 percent. The share of tertiary sector in employment and income will have increased significantly and accounting for 30 to 40 percent of employment and 50 to 60 percent of income. Secondary sector will account for the balance.

On the whole, productivity of labour will be increased substantially in all the sectors mainly on account of new technologies and skill-endowed labour forces. As a result of secular economic growth of 8 to 10 percent for over two decades and negligible population growth, per capita incomes in the region will have nearly quadrupled as compared to today. Even in agriculture, which would have been highly diversified and market-oriented, incomes will have gone up significantly. Also, because of effective watershed management, even in the drought prone areas, yearly fluctuations of agricultural output will have been minimal.

Abject poverty and deprivations will be unheard of. An effective food security and social security administered by the Village Panchayats takes care of the needs of the poor. The Panchayats will administer most of the civic facilities as well as social and economic infrastructure and services. A similar situation will prevail in the urban areas also. One of the major problems in the larger cities, however, will be ensuring civic facilities and housing for the migrant labour from the other parts of the country.

VI. Policy Initiatives for Balanced Regional Growth

We shall initiate the discussion on initiatives for balanced regional growth by illustrating two instances of initiatives in the past. One relates to agriculture and the other relates to industry, the two most important sectors of our economy. The strategy to boost agricultural production and to ensure food security was evolved in the mid-Sixties when the country faced a grim situation following two consequent years of severe drought. The strategy consisted of various incentives to farmers to adopt high yielding seeds of wheat and paddy along with complimentary inputs, assured minimum support prices for the output, buffer stocking of the foodgrains and supplying the same to the States to distribute through the public distribution system (PDS) to the consumers, especially in the deficit regions. To back up this strategy, institutions like Agricultural Prices Commission (APC), Food Corporation of India (FCI) and Warehousing Corporation of India and other ancillary

institutions were established. Arrangements were made to spread the message of high yielding seeds and the associated package of inputs and practices.

The above strategy ushered in a green revolution, which resulted in doubling of wheat and rice production in the country over a short period. Adequate foodgrains surpluses were generated to build up the needed buffer stock. India was no more a basket case.

The initial success of green revolution strategy was restricted to Punjab, Haryana and western Uttar Pradesh where assured irrigation networks already existed. Subsequently, it was extended to a few irrigation commands in the South and West also. It was, however, expected that with the expansion of assured irrigation, the green revolution would spread to other parts of the country soon. In the event, this did not happen. Even today, almost the entire foodgrain surpluses are generated by the small region, which benefited initially. Though massive public funds are spent on food subsidies, very little is spent on spreading irrigation. Besides food subsidies, large implicit subsidies to farmers for power, diesel, canal irrigation, fertilizer and credit are borne by public exchequer at the Centre and in the States. Agricultural Price Policy which was evolved by APC to ensure adequate protection to the interests of the producers and consumers has been 'hijacked' to serve the interests of the large farmers who produce for the market. It hardly serves the interests of farmers in the emerging surplus regions. The distinction between support price and procurement price is no more there. Similarly, the Food Corporation of India and the associated procurement agencies operate, by and large, only in the traditional surplus regions and farmers in newly emerging surplus regions almost invariably end up selling their surpluses in distress.

Today, the foodgrain management and the food security system is near collapse. As against a total requirement of 24 million tonnes of foodgrain for buffer stock and PDS together, the public stock is over 60 million tonnes as on July 1, 2001. A substantial share of this is not even properly stored and may not be suitable for human consumption. On the other hand, due to severe drought conditions, large-scale unemployment and hunger are reported from several States. Per capita net availability in the market has come down. PDS system has virtually collapsed. Poor people cannot afford the 'so-called economic price' of foodgrains available in the PDS shops.

This is a classic case of a public policy evolved with much thought and resulted in significant gains for the country, as a whole, for several years initially but gone sore subsequently. Instead of adjusting the agricultural and food security policies to expand the scope of green revolution technology to the other regions of the country, they were allowed to be hijacked by vested interests.

The other example of a major public policy, which had gone sore after initial success is the industrial policy. In the Fifties, when India initiated a policy of import substitution by starting various industries in key sectors, there were very few critics both within the country and abroad. Indeed, the industrial policy embedded in the second Five Year Plan, giving emphasis to basic and heavy industries, was lauded equally by Russian experts as well as western experts. That policy enabled the country to lay the foundations of an industrial base.

Gradually, the ills of public sector undertakings and the stifling effects of a market without competition became more and more evident. By late Sixties and early Seventies, several perceptive observers noted that there was need to deregulate the industrial sector to allow competition. Government, instead, went ahead with nationalization of more and more key sectors of the economy and also further throttling of private sector to control

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concentration of wealth and industrial power. The result was further retrogression and immiserization of the economy.

The above two examples have been described in some detail to make the important point that major public policies initiated with thought and foresight and which initially yielded results, subsequently generated into fiefdom of powerful vested interests who will try all the tribes in their trade to frustrate corrective measures. Kulaks and the so-called 'Deshi' industrialists who benefited from 'licence permit raj' are not the only vested interests who stand in the way of programmes and reduction in regional disparities. The list includes politicians, trade unions, bureaucracy, various monopolists in the economy and the educated intelligent who occupy positions of power and patronage. Most of them collect one kind of 'rent' or other which they are not willing to give up only when there is crisis they will loosen their stranglehold, that too only a little which will suffice to defuse the crisis.

The economic reforms initiated in 1991 was also essentially crisis driven. It was the international payment crisis which forced the country to carry out deregulation of trade and industry. Again, once the crisis was overcome reforms also slowed down. There are several vital areas of reforms, which we have been talking about for the last one decade without doing much — public sector reforms, reform of labour laws, reform of the legal system, establishment of effective regulatory bodies and so on. Again, it is the politicians, the bureaucrats, the 'Deshi' industrialists and the trade union leaders who are standing in the way. They do not want to give up the powers, perks and monopoly profits, which they have been enjoying.

The main interest of the foreigners in India is its large potential market. Unless the rural incomes grow, especially in the backward regions, this potential market will not be realized. Corporate India must realize that its future lies with the masses. Raising rural incomes should no longer be looked upon only as a philanthropic objective.

Also reduction of regional disparities should be looked upon as a national objective. The strength of a building depends on the strength of its weakest pillar. In a similar way, the strength of the Indian economy depends on the strength of the economy of Bihar. Similarly, the bottomline of India's human development will depend on the incomes and socio-demographic indicators of development in northern and eastern India.

While the development of depressed regions is a national responsibility, the solution mainly rests with the local leadership. Unless the local leadership — political, bureaucratic and intellectual — resolve to usher in development based on sharing the gains on egalitarian basis with the masses, results will be hard to come by. Resources are not the real constraint. It is the way resources are spent. Large sums are spent on education and health care in the backward States. But the results are not there. This happens because the teachers and medical personnel who are expected to provide the requisite services draw their salaries but provide poor services or no services. Unless this kind of work culture in public services changes, funds alone will not solve the problems.

Lastly, with divergent trends in various sectors of development, there emerges a resistance to vertical and horizontal fund transfers to the backward regions by forward regions. Immediately after the report of the Eleventh Finance Commission, there was an uproar from the so-called 'performing States' against increased tax revenue devolution to the backward States. One of the main arguments was that non-performing States are rewarded for their non-performance. It is imperative that Centre and the leadership of the backward States

should evolve institutional arrangements to ensure that funds transferred result in the best use in terms of development.

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1.3 SOCIO-ECONOMIC DEVELOPMENT IN INDIA (A REGIONAL ANALYSIS)

Development is a multi-dimensional phenomenon. Some of its major dimensions include — level of economic growth, level of education, level of health services, degree of modernization, status of women, level of nutrition, quality of housing, distribution of goods and services and access to communication. In India, progress of socio-economic development among major states is not uniform. Here, we shall study the existing variability of inter-State development. Instead of studying the variability of a particular variable across states, a composite index based on several indicators has been developed using principal component analysis and states are arranged according to the indices derived using four broadly accepted components (a) economic production and economic condition or alternatively level of economic development; (b) common minimum needs; (c) health and health-related services and (d) communication. Findings of the analysis support the general perception about the states. The states in India are marked with wide disparity in socio-economic development. Factors which are found out to be more important for the overall development process, relate to basic needs such as education, availability of food, minimum purchasing power and facilities like safe drinking water, health care infrastructure and so on. It is also found that enrollment ratio cannot be raised unless minimum needs of the common people are satisfied. Thus, true development requires government action to improve elementary education, safe drinking water facilities and health care and to remove barriers against social minorities, especially women. The role of social development such as literacy (especially female literacy) to promote basic capabilities emerges as the prerequisite to overall development. These results emphasize the role of well-functioning public actions to improve overall living conditions of the people. Though economic growth in the sense of expanding gross national product and other related variables is one of the most fundamental input to the overall development process, the basic objective of development should focus on the expansion of human capabilities which has been neglected long in India.

Since Independence in 1947, India has made enormous strides towards the progress of the nation. The concerted and co-ordinated efforts of the national governments through Five Year Plans, starting from 1951, have changed the economic scenario of the country considerably. Agriculture production has risen steadily and progress of industrialization has increasingly played a role in India's economic development. During 1950-51, agriculture contributed about 50 percent of the country's Gross Domestic Product but in 1992-93 its share reduced to 26 percent. There are indeed many areas of economic development and social development in which India's achievements have been creditable. However, overall success in reducing poverty, ignorance and inequality has been quite limited. From 350 million inhabitants in 1952, India's population had grown to 593 million by 1974, 900 million by 1992 and probably it will cross the one billion mark by the next decade. But a large proportion of the population continues to fall far short of minimum basic needs. The average per capita income for the year 1991-92 stood as low as ₹ 5,529 per annum. The sheer number of people, together with the instability and inability of the economy to provide them with even a bare level of subsistence, along with the unprecedented population increases, is an ongoing threat to India's economic development. The faster movement of the population

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growth compared to economic growth never allows India to come out of the vicious circle of per capita contributions. At the same time, the enormous size of the country, its cultural, ethnic and religious traditions, social backwardness, its paucity of communication and variety of climate, geographical and socio-economic activities, make nation-wide solutions incomparably difficult to devise and implement.

One of the most important aspect of India's development progress is its remarkable regional disparity in eliminating basic deprivations. The economy suffers from large and incessant inequalities. The majority of the poor people live in rural areas and belong to the category of landless labourers and the land continues to be highly inequitably distributed. On the other hand, underemployment and unemployment are standard features of urban life. The rural population below the poverty line in some of the relatively economically developed states is about 21 percent, while in some of the other states, more than 65 percent. The rural population is below the poverty line. In terms of social development, this contrast is even sharper. For instance, female literacy of the major Indian states differs from 20 percent to 86 percent. Other indicators relates to health, nutrition etc. also registered significant internal diversities.

Several factors such as the level of literacy, female education, nutritional standards, infant mortality, morbidity, employment, income distribution, public distribution system, political commitments etc., and their corresponding interactions, contribute to these striking variations among states in the livelihood of common people. It may be mentioned that broad state level comparison may not be able to capture fully the extent of diversities among several indicators characterizing several facets of development. Nevertheless, state level indicators are constitutionally defined as state subjects, to be handled by the individual states rather than the central government or a concurrent subjects involving both state and central governments. This provides a strong motivation for studying the variability of inter-State development and thereby identifying the indicators responsible for existing diversity in development. In this context, any State-level policy action on the issues relating to human livelihood necessarily depends on the proper measurement of development process and the suitability of the choice of the indicators affecting development. In this part, we shall focus on the proper measurement and derivation of a composite index of developmental process and thereby studying the variability existing among major Indian states.

The specific objectives of this section as alluded to earlier are as follows:

- (a) Sectoral identification of the developmental process into some category by identifying the dynamics from the outcome of the process;
- (b) To develop a composite index for each sector of the development process and thereby constructing the overall indices of development of individual states;
- (c) To identifying the relative hierarchy of states in the sectoral and overall development by identifying the variables responsible for the hierarchy.

Data and Selection of Variables: After the Second World War, the study of economic development of the economically backward countries grew very rapidly with the issue of economic needs and deprivation of the common people as central importance. Studies in this respect and subsequently in the area of human development and physical quality of life particularly in the context of India are voluminous. Various authors used the methodology given by the UNDP to construct the composite index of development. Irrespective of the arguments and debate regarding the methods to pursue the policy, there remains the question of how to measure the progress of development. As the major object of this part is to study

the socio-economic differential and related behaviour in a developmental perspective, the macro-level country characteristics and individual State-level variables affecting quality of life, directly or indirectly, through developmental process have to be identified. The Indian Sub-continent, with its large size, wide structure and eco-social disparities is better understood and better interpreted while studied at the regional level. Analysis of data is disaggregated by narrowing down the variability and enables better identification of special characteristics. Accordingly, the country is divided into five different regions of 16 major states, which account for 95 percent of the total population. The Northern region is comprised of four states, i.e., Punjab, Haryana, Himachal Pradesh and Rajasthan; western region is comprised of two states, i.e., Maharashtra and Gujarat; eastern region is comprised of four states, i.e., West Bengal, Assam, Orissa and Bihar; and the central region is comprised of two states, i.e., Uttar Pradesh and Madhya Pradesh; and finally southern region is comprised of four states, i.e., Andhra Pradesh, Kerala, Tamil Nadu and Karnataka.

Development can be viewed as a multi-dimensional phenomenon. Some of its major dimensions include level of economic development, level of education, level of health services, degree of modernization, status of woman, level of nutrition, quality of housing, distribution of goods and services and access to communication. Again, it is not possible to study one particular factor mentioned above. Movements of indicators specifying various levels of socio-economic development among states are not uniform. Thus, instead of studying the variability of a particular variable across states, a composite index based on several indicators is being developed and then the States are arranged according to the indices derived. Although this method of composite index for ranking of the regions is widely popular in development economics, there are few attempts made in the field of demography. None of these studies has received the general endorsement of the international community and none of the studies include a range of available modernization measures. However, many of these categories are problematic to measure and there is no internationally accepted rule to measure such categories.

Indicators Relating to Economic Development: The selected variables for level of economic development are – (1) GDP per capita at constant price (1980-81 = 100) (PCGDP); (2) Per capita consumption expenditure for 30 days (PCCONSU); (3) Percentage of people above poverty line (ABOVE) and (4) Employment Rate (EMPL). Of the many choices available for measuring economic production, State level GDP per capita is the most widely accepted and commonly available indicator. The State level GDP (State Domestic Product – SDP) figures are available from the Directorate of Economics and Statistics of respective state governments. One major aspect of economic health of the people in the nation is the capacity of their expenditures towards consumable goods to the extent possible. It is universally accepted that income and consumption vary in the same direction. Therefore, per capita consumption expenditures of states can be taken as a proxy index of States' income standard too. The National Sample Survey Organization (NSSO) published in their 43rd round survey, the State level per capita consumption expenditure for 30 days. Those figures have been used here. Several planning strategies are being implemented to meet the challenges to eradicate poverty. It is perceived that the foremost priority in eradication of poverty is to meet the common basic needs of the people. Poverty has to be identified with deficiency in total level of living and total level of living includes not only energy requirements but also balanced diet needed for health and the other components of basic needs essential for human existence at a tolerable level. The percentage of people below the poverty line of the State shows their level of output, income and distribution of necessary goods and services irrespective of the debate of determining the poverty line. Another

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important indicators for economic development is the employment rate. It is an indicator of the ability of the economy to create and cater jobs. This particular variable is not only an index of the overall economic development but also serves as a crucial link between social and demographic determinants.

Indicators Relating to Common Minimum Needs (CMN): Selected variables for this group are — (1) Literacy (Enrollment Ratio) (ENROL); (2) Percentage of households having safe drinking water (WATER); (3) Percentage of houses having electric facility (ELEC) and (4) Percentage of households living in pucca house (HOUSE). Education is one of the principle attributes of the quality of a population. It plays an important link between social and economic development processes. For the education component of the developmental process, two types of indicators are generally used. One type is cumulative and measures the proportion of the population with certain characteristics relates to educational attainment, such as the percentage of the population literate or the percentage with primary schooling completed. The other type of measure is current and measures the proportion of the student-age population currently enrolled in school. Therefore, the percentage literate is a measure of the stock of education in the population at a moment in time, while the enrollment ratio is a measure of the current input to that stock. Because the developmental process is dynamic and socio-economic change may be rapid, the measures reflecting the current situation are considered preferable. Thus, enrollment ratios are selected as being more representative of the current situation than literacy rates. Indicators selected is the gross enrolled at the primary and secondary levels, regardless of age, divided by the population within the age groups normally attending these schooling levels. The net enrollment ratio that includes only those enrolled students in the appropriate age group would have been preferable, but comparable data were not available for all States.

In India, even after 50 years of independence, a majority of the people do not have a safe drinking water facility. There is a wide disparity among states in this respect. A village with a safe drinking water facility does not necessarily mean that all households in the village have a safe drinking water facility. Therefore, percentage of households having a safe drinking water facility is a better indicator than percentage of villages having safe drinking water. Other than this, one major component of daily amenities is the household electricity. It may be mentioned that availability of these two infrastructure facilities is mainly dependent on the public (government) actions and political commitments.

Indicators Relating to Health: One vital component of human development is the access and availability of primary health services. In this category, six variables have been selected – (1) Expectancy of life at birth (EXP), (2) Doctors per lakh population (DOCPL), (3) Hospital bed per lakh population (HOSBPL), (4) percentage people not morbid (NMORBI), (5) Children survival rate per thousand birth (CSR) and (6) Hospital per lakh population (HOSPL). Decline in the death rate and reduction in infant mortality is directly related to the level of existing health standard. These are related to other socio-economic indicators too. Therefore, expectation of life at birth (EXP) can be taken as an indicator of the health of the country. It may be mentioned that expectation of life at birth (EXP) is one of the most widely used variables in the field of human development.

Another indicator for availability of health services relates to the number of hospital beds. Accordingly, hospital beds per lakh population are taken as an indicator of health services facilities, particularly characterizing the level of infrastructure and accommodation facilities of health available in a state. But, all hospitals in a country extend their services towards the outdoor patients on a regular basis. Therefore, number of hospitals per lakh

population (HOSPL) indicates the accessibility of health facilities around the vicinity of the hospital. It is generally felt that measures like HOSBPL, HOSPL etc. of the supply of health services are weak both because the component of distribution of services is not captured and hospital care is only one component of the health care system. There are several health centres and several doctors who practice outside the bigger medical and health institutions. Services rendered by them can be thought to be more powerful components than the available hospital facilities as far as the distribution and accessibility are concerned. Thus, the number of doctors per lakh population (DOCPL) is taken as another indicator in this group under discussion.

However, it is perceived that the child survival rate can be taken as an indirect measure of health care accessibility, as suggested by the World Health Organization (1981). Though, the child survival rate can be seen as reflecting the distribution of health services, it is definitely influenced by other factors like nutritional levels, general sanitation, access to transport and cultural practices. In recent years, much attention has been given to the morbid condition of the people because a state may have good health in terms of life expectancy, infant mortality and so on, but a sizable proportion of people in the state may be sick or morbid. In this connection, sometimes many demographers in India quote the instance of Kerala. Most of the time, in particular in India, reliable data on morbidity is not available. However, recent Nationality Family Health Survey data (NFHS, 1992-93) has provided some excellent disaggregated data on many of the demographic characteristics of people, which includes data on State-level prevalence of morbidity. State-wide morbidity data, included here, is relevant both for demographic assessment of the population and to health policies and programmes.

Communication: Final component of the development process explained here relates to the extensiveness also measures the extent of infrastructure facilities for the distribution of goods and services in the society. Role of this component was to evaluate the degree of percolation throughout the community of those goods and services, which particularly relate to communication networks. There are a wide variety of indicators of communication infrastructure based on consumption items, such as passenger cars, television sets etc. available for this purpose. But the indicators based on consumption items are more suitable for developed countries. Reliability and accuracy of these data is always questionable in developing countries. Alternative way to envisage the impact of mass media would be the exposure of common people to TV, radio and so on. While exposure to television is mostly centralized in urban or semi-urban places, exposure to radio is more in rural areas.

Thereby, taking all these into consideration, following five variables for which a fair amount of reliable state level data are available in India have been chosen as communication and mass media indicators ~ (1) Post office per lakh population (POSTL), (2) Telegraph offices per lakh population (TELGL), (3) Telephones per lakh population (TELEPHL) and (4) Percent of ever married women age 13-49 who usually listen to the radio (RADIO) at least once a week. Data on mass media exposure are based on National Family Health Survey (NFHS), 1992-93 and Communication Data are based on Centre for Monitoring India Economy (CMIE) publication.

Most of the data indicates that in every category of variables related to the year 1990-91, except per capita consumption expenditure for 30 days which relates to the year 1988-89. Unless otherwise mentioned, the source of the information base is CMIE.

Methodology: To derive a composite index from a set of variables, a wide variety of multivariate statistical techniques are available. In fact, the choice of the most appropriate technique depends upon the type of the problem, nature of the data and objective of analysis.

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In social science, variables are in general correlated and the researchers are not in a position to study the socio-economic dynamics with a set of independent variables. One needs to look for an alternative dimension reduction technique which will enable them to summarize the entire set of information into a manageable form without much loss of the information content of the original data. The theme of the multivariate analysis is simplification and to summarize a large body of data by means of relatively few parameters.

Empirical Analysis: Five variables, per capita state domestic product (PCGDP), per capita consumption expenditure for one month (PCCONSU), percentage of people above the poverty line (ABOVE) and employment rate (EMPL) have been considered for the construction of the index relating to economic development. Loading structure and other related statistics are shown in Table 1.4. It can be seen that the first principal component (PRIN1) explains almost 59 percent of variation of the data, which is taken to be satisfactory.

It is observed that per capita consumption expenditure has the highest loading in the first principal component followed by percent above poverty line and per capita state gross domestic product. One striking result is that employment has not turned out to be as significant as compared to other factors for the economic development process in India.

If we study more carefully, then we find that expenditure capacity for India is very low and it determines to a greater extent the level of economic development. On average, one Indian national consumes only ₹ 188.40 worth of things that are absolutely required in a month (Table 1.5). Low per capita income and higher degree of economic imbalance in the earnings capacity leads to the fact of lower consumption expenditure. Being above the poverty line is also found to be an important indicator. It is found that only 64.8 percent of India's population live above the poverty line. Alternatively, 35 percent of the total population is still below the poverty line.

Therefore, irrespective of GDP per capita and employment rate, basic problem of India still lies in the circle of poverty, hunger and economic imbalance. It must be recognized that the majority of the common people in India particularly in rural areas are deprived of every opportunity of life and continue to live a miserable life, often falling far short of even minimum calorie needs. These poor people belong to the categories of landless labourers, small and marginal farmers, fishermen, rural artisans and backward classes and backward tribes. They have either no assets or assets with very low productivity and therefore they continue to work for very low paid jobs. Unless the condition of these categories of people is improved, the root cause of poverty will not be alleviated and overall development process will be delayed by further decades.

Table 1.4: Principal Component Loading for Different Group of Indicators

Economic Development			Common Minimum Needs			Health			Communication		
Variables	PRIN1	PRIN2	Variables	PRIN1	PRIN2	Variables	PRIN1	PRIN2	Variables	PRIN1	PRIN2
PCGDP	0.5179	0.1982	ENROL	0.3554	0.8765	EXP	0.4625	0.0582	TELPL	0.4855	-0.3885
PCCONSU	0.6021	-0.1298	ELEC	0.6350	0.0267	DOCPL	0.2725	0.4754	POSTL	0.2343	0.6355
ABOVE	0.6006	0.1079	WATER	0.4438	-0.2847	HOSBPL	0.3761	-0.6183	TELGL	0.3239	0.6152
EMPL	-0.0925	0.9655	HOUSE	0.5229	-0.5229	HOSPL	0.2792	-0.5295	TV	0.5441	-0.2554
						NMORBI	0.3402	0.4869	RADIO	0.5554	-0.0370
						CSR	0.4985	0.1479			
Variation Explained	58.8%	84.5%	Variation Explained	56.8%	79.5%	Variation Explained	61.4%	79.8%	Variation Explained	57.0%	90.0%

Note: PRIN1 = 1st Principal Component Scores; PRIN2 = 2nd Principal Component Scores

Table 1.5: Indicators Relating to Economic Development

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State	PCGDP	PCCONSU	ABOVE	EMPL
Andhra Pradesh	1979.25	183.14	72.80	92.65
Assam	1992.77	159.66	63.16	94.91
Bihar	1353.68	152.89	46.63	95.96
Gujarat	3029.80	171.55	67.67	94.21
Haryana	3807.28	244.65	83.37	92.41
Himachal Pradesh	2485.79	239.61	90.80	96.88
Karnataka	2284.57	157.55	61.86	94.94
Kerala	2098.15	217.97	67.92	78.81
Pradesh	1939.36	152.89	56.60	97.14
Maharashtra	3739.39	171.07	59.90	95.33
Orissa	1542.48	174.34	44.39	93.56
Punjab	4128.00	264.71	87.30	94.93
Rajasthan	2151.25	218.79	65.40	94.26
Tamil Nadu	2537.01	170.93	54.87	89.64
Uttar Pradesh	1785.73	164.73	59.01	96.56
West Bengal	2749.52	169.98	56.01	91.87
Mean	2475.25	188.40	64.86	93.38
STD	822.33	36.26	13.34	4.36
CV%	33.22	19.25	20.57	4.67

No assets or assets with very low productivity and therefore they continue to work for very low paid jobs. Unless the condition of these categories of people is improved, the root cause of poverty will not be alleviated and overall development process will be delayed by further decades.

The programme to cater to common minimum needs (CMN) of the people was outlined several times in several five year plans of various governments. To a common citizen, CMN became a part of the government's responsibility to satisfy. Four selected variables in this category are enrollment ratio (ENROL), percentage villages electrified (ELEC), percentage of household having safe drinking water facility (WATER) and percentage of household having safe drinking water facility (HOUSE). In India, average enrollment ratio is estimated to be 88.8 percent (Table 1.6). Rajasthan has the lowest level of enrollment ratio 49.9 percent, followed by Bihar 54.2 percent and Uttar Pradesh 60.5 percent. The highest level of enrollment is achieved by Tamil Nadu 125.1 percent.

More than fifty percent 51.2 percent of Indian households still do not have the facility of electricity at home, even after 50 years of Independence. A distressing situation is revealed in the case of Bihar where only 12.5 percent of households are electrified, followed by Assam only 18.7 percent. On contrary, about 87 percent of households in Himachal Pradesh have the facility of electricity, followed by Punjab 82.3 percent. Achievements of these two states are far ahead of any other Indian states. On an average, 62.7 percent of households in India have the facility of pure drinking water. Punjab and West Bengal are on the top of the list, followed by Himachal Pradesh and Haryana. One of the acute problems in Orissa is safe

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drinking water. Only six percent of households in Orissa has the facility of safe drinking water. The last component of common minimum needs is percentage of household having pucca house. This is one proxy indicator of housing quality in India. It is not necessarily true in India that living in kachcha house signifies bad quality of housing. In some of the cases in India, housing quality for kachcha houses is even better than pucca houses. But pucca house shows the ability of the person to improve the housing quality. On the average, merely 34.5 percent households in India live in pucca house. Here, again Assam and Orissa are at the bottom of the list. Particularly, for those two states, almost 90 percent of people do not have pucca housing facility.

Table 1.6: Indicators Relating to Common Minimum Needs

State	ENROL	ELEC	WATER	HOUSE
Andhra Pradesh	90.62	46.30	55.08	29.77
Assam	76.36	18.74	45.86	10.53
Bihar	54.19	12.57	58.76	24.07
Gujarat	103.70	65.93	69.78	43.42
Haryana	73.05	70.35	74.32	41.46
Himachal Pradesh	102.37	87.01	77.34	49.75
Karnataka	98.41	52.47	71.68	30.45
Kerala	103.65	48.43	18.89	51.56
Madhya Pradesh	81.48	43.30	53.41	20.93
Maharashtra	114.28	69.40	68.49	35.37
Orissa	83.94	23.54	39.07	13.00
Punjab	93.31	82.31	92.74	72.14
Rajasthan	49.91	35.03	58.96	47.04
Tamil Nadu	125.09	54.74	67.42	34.60
Uttar Pradesh	60.48	38.89	68.84	32.70
West Bengal	110.50	32.90	81.98	15.74
Mean	88.83	48.87	62.66	34.53
STD	21.87	21.98	17.86	16.23
CV%	24.62	44.98	28.50	47

The first principal component (PRIN1) for the category of common minimum needs explains about 57 percent of the variation in the data as shown in Table 1.4. Percentage of households having electricity (ELEC) has highest loading 0.64 in PRIN1, followed by housing facility 0.52 and safe drinking water facility. Least weight was assigned to enrollment ratio 0.35. It plausibly supports the dictum that basic needs, which is described in economic development and CMN are of major importance for a healthy enrollment ratio. While the people do not have the ability to provide other minimum needs and is significantly high. Therefore, enrollment ratio cannot be raised unless minimum needs are satisfied.

To study the overall health situation in individual states, six indicators such as expectancy at birth (EXP), number of doctors per lakh population (DOCPL), hospital beds per lakh population (HOSBPL), hospitals per lakh population (HOSPL), percentage of population not morbid (NMORBI) and children survival rate (CSR) have been considered. The average life expectancy of an Indian individual is only 62.3 years which is significantly

low as compared to developed countries. Kerala has achieved the highest life expectancy at birth 72.4 years and in contrast Uttar Pradesh recorded the lowest at 52.8 years, followed by Assam 54.5 years and Madhya Pradesh 57.9 years as shown in Table 1.7. There were only 51 doctors available per lakh population in India. Haryana was at an extreme low of only 3 doctors per lakh population, followed by Madhya Pradesh and Uttar Pradesh. Punjab, on the other hand, recorded the highest number of doctors per lakh population. It is found that number of hospital beds per lakh population (HOSBPL) has the highest observed variability. It indicates that there is a very high degree of disparity among states in terms of health infrastructure facilities.

For the health category, first Principal component (PRIN1) explains 61.4 percent of the variation of the data. It is found that the loading structure that most determining factors for the health component in India still lie in the infant mortality rate followed by expectation of life. The number of doctors per lakh population has the least weight in the loading pattern.

The chosen variables for the last weight component of development of development, communication are shown in Table 1.8. The extent of variability was more discernible for telephone per lakh population (TELEPHL). This communication media is used more in urban localities than in rural India and the level of urbanization for individual states varies greatly.

Table 1.7: Indicators Relating to Health

State	EXP	DOCPL	HOSBPL	HOSPL	NMORBI	CSR
Andhra Pradesh	64.48	49.51	40.28	2.80	90.76	980
Assam	54.48	46.83	56.49	1.20	95.11	969.50
Bihar	60.09	30.53	33.68	0.38	94.39	973.20
Gujarat	62.74	52.80	142.78	5.74	92.63	976.30
Haryana	64.22	3.18	42.69	0.47	97.22	977.20
Himachal Pradesh	64.55	32.84	74.49	1.10	96.62	982.40
Karnataka	65.30	98.23	84.33	0.65	93.58	978.30
Kerala	72.37	56.55	265.30	7.01	97.22	996.10
Madhya Pradesh	57.96	16.90	27.41	0.55	90.14	961.50
Maharashtra	65.06	62.54	99.98	3.95	91.79	984.10
Orissa	58.40	35.03	45.78	0.10	90.46	966.60
Punjab	66.55	131.33	72.34	1.07	95.48	982.60
Rajasthan	61.34	31.92	46.51	0.50	88.79	966.40
Tamil Nadu	63.05	81.61	87.33	0.73	96.92	984.70
Uttar Pradesh	52.84	23.85	33.99	0.53	88.09	962.20
West Bengal	61.94	61.29	80.45	0.58	97.62	981.60
Mean	62.34	50.93	77.11	1.7	93.55	976.42
STD	4.86	32.11	58.62	2.08	3.23	9.35
CV%	7.79	63.05	76.02	121.63	3.45	0.96

The first principal component (PRIN1) explains 57 percent variation of the data. It is observed that mass media variables such as TV and RADIO were more important, followed by TELEPHL. This obviously affirms that media has a very definite and positive role to play in overall development process. The other two variables, viz., number of post offices per lakh population (POSTL) and number of telegraph offices per lakh population (TELGL) are almost of equal importance in determining the first principal component.

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Composite Indices Based on Economic Development

The composite index or score of this sector has been calculated based on the indicators as explained in an earlier section. State-wide scores for all the major 16 states based on first principal component and second principal component are presented in Table 1.9 and the states are arranged in descending order of magnitude of indices derived from the first principal component. The highest value of the score for a particular state indicates that the state was the top of the hierarchy in terms of economic development. It is observed that the value of the scores varied from -2.172 to 3.286 (PRIN1).

Table 1.8: Indicators Relating to Communication

State	TELEPHL	POSTL	TELGL	TV	RADIO
Andhra Pradesh	652.00	24.38	5.92	39.10	62.40
Assam	476.00	30.77	4.93	18.00	32.80
Bihar	167.00	13.20	4.30	12.70	25.90
Gujarat	1331.00	21.29	4.29	39.40	47.00
Haryana	834.00	15.50	2.29	49.00	42.20
Himachal Pradesh	864.00	50.46	12.20	47.10	54.60
Karnataka	950.00	21.58	8.94	39.50	62.90
Kerala	1181.00	17.08	6.84	42.20	71.30
Madhya Pradesh	460.00	16.70	5.01	26.70	32.70
Maharashtra	1851.00	15.25	3.26	46.40	52.30
Orissa	289.00	25.10	7.61	16.10	34.90
Punjab	1250.00	18.73	2.95	57.30	42.00
Rajasthan	501.00	23.18	3.94	17.90	27.20
Tamil Nadu	1016.00	21.57	9.91	50.40	59.70
Uttar Pradesh	291.00	13.92	4.16	19.00	29.70
West Bengal	653.00	12.36	2.74	33.30	48.30
Mean	797.88	21.32	5.58	34.63	45.37
STD	453.35	9.25	2.82	14.32	14.19
CV%	56.81	43.39	50.54	41.35	31.27

As the indicators have been standardized with respect of their means, on the whole it can be interpreted that the states yielding positive scores on the first component are above average level existing states in India. Alternatively, these states are better off as compared to the other states. Accordingly, there were only seven states, which can be considered above average in terms of economic development. There was no surprise that Punjab was at the top with a score of 3.29 followed by Haryana marked with a score of 2.63. Punjab has dominated in all selected indicators. Himachal Pradesh has occupied the third position. The only South Indian State identified in the above average group was Kerala.

In respect of economic criteria, 9 major states were below average level. Andhra Pradesh was approaching the average. Bihar was the poorest of all proceeded by Orissa, Madhya Pradesh and Uttar Pradesh. As Rajasthan was observed to be above in Indian scenario, the nomenclature of BIMARU as described by some dogmatic demographers in India, is no longer valid here. It may be mentioned that the largest share of population in India belongs to these least performing states, such as Bihar, Orissa, Madhya Pradesh and

Uttar Pradesh. It is, thus, observed that northern states dominated the India's economic scenario while states in central and most of the eastern India registered a very low level of economic development.

NOTES**Table 1.9: Indices Scores Based on Economic Development**

State	PRIN1	PRIN2
Punjab	3.286	0.650
Haryana	2.627	0.055
Himachal Pradesh	1.951	0.804
Kerala	0.700	-3.395
Rajasthan	0.306	0.013
Maharashtra	0.244	0.758
Gujarat	0.179	0.401
Andhra Pradesh	-0.027	-0.198
West Bengal	-0.500	-0.273
Tamil Nadu	-0.622	-0.831
Karnataka	-0.800	0.386
Assam	-0.890	0.312
Uttar Pradesh	-1.158	-0.575
Madhya Pradesh	-1.379	0.763
Orissa	-1.746	-0.300
Bihar	-2.172	0.280

Note: PRIN1 = 1st Principal Component Scores; PRIN2 = 2nd Principal Component Scores

Composite Indices Based on Common Minimum Needs: First principal component scores of individual states have been arranged in descending order and presented in Table 1.10. Out of 16 major states, 7 states were found to perform above the average and the scores in the first principal component varied from -2.26 to 2.99. Punjab and Himachal Pradesh with their respective scores of 2.99 and 2.18, stood at the top. In contrast, Assam was at the bottom of the hierarchy. In fact, there was virtually little difference among the last three states, Assam, Orissa and Bihar, in this group. West Bengal was presented just below the average standard. Most of the southern states were much better off compared to eastern and central regional states in India. In the western region, states were evenly poised and disparities were much less. Gujarat and Maharashtra with third and fourth position respectively in the hierarchy list, showed very little difference in the first component scores. Likewise, a similar situation was observed in the case of Tamil Nadu and Haryana. Condition of Uttar Pradesh was noticeably better than Bihar, Orissa and Assam. These states have to drive a long way in the transition process of overall development to reach the level of northern states, particularly Punjab.

Table 1.10: Indices Scores Based on Common Minimum Needs

State	PRIN1	PRIN2
Punjab	2.998	-1.156
Himachal Pradesh	2.177	-0.007
Gujarat	1.198	0.292

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Maharashtra	1.179	0.932
Tamil Nadu	0.879	1.383
Haryana	0.877	-0.958
Karnataka	0.352	0.342
West Bengal	-0.235	0.989
Kerala	-0.311	0.886
Andhra Pradesh	-0.387	0.303
Uttar Pradesh	-0.655	-1.204
Rajasthan	-0.722	-1.817
Madhya Pradesh	-0.949	0.170
Bihar	-2.046	-1.122
Orissa	-2.092	0.662
Assam	-2.264	0.303

Note: PRIN1 = 1st Principal Component Scores; PRIN2 = 2nd Principal Component Scores

Composite Indices Based on Health: From the loading pattern in the first principal component of health category, it was envisaged that in Indian context the most important components for health are infant survival rate and average span of life. These two indicators were also universally identified and used as the major variables for human development index as outlined by UNDP. In fact, these two variables are proxy measure of health facilities, evolved through the process of socio-economic development. Composite indices of health for individual states are presented in Table 1.11. There is wide range of variation among states in the composite scores. It can be seen that Kerala was on the top of the hierarchy with a score of 4.85. The next best state in this respect was found to be Punjab with an index of 1.46, which was much lower than average level. Uttar Pradesh, with a score of -3.01 was at the bottom of the list preceded by Madhya Pradesh and Orissa. Bihar was placed in a comparatively better position than Uttar Pradesh, Madhya Pradesh, Orissa, Rajasthan and Orissa. This was because of slightly longer life span and better health services availability, particularly doctors per lakh population, of Bihar compared to other states. It is important to notice that these states consistently performed badly in all sectors of the development process. The poor performance of Orissa was due to very high level of infant mortality rate and as a result Orissa is designated as the most tragic state in India.

Table 1.11: Indices Scores Based on Health

State	PRIN1	PRIN2
Kerala	4.853	-1.661
Punjab	1.463	1.849
Gujarat	1.187	-1.708
Maharashtra	1.163	-0.745
Tamil Nadu	1.027	1.330
Himachal Pradesh	0.759	0.537
Karnataka	0.651	1.040
West Bengal	0.577	1.159
Andhra Pradesh	0.001	-0.457

Haryana	-0.288	0.460
Bihar	-1.047	0.408
Assam	-1.239	0.249
Rajasthan	1.747	-0.622
Orissa	-1.892	-0.234
Madhya Pradesh	-2.454	-0.657
Uttar Pradesh	-3.014	-0.948

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Note: PRIN1 = 1st Principal Component Scores; PRIN2 = 2nd Principal Component Scores

Composite Indices Based on Communication: Composite indices of development, in respect of communication for ranking of the states on the basis of first principal component score, are depicted in Table 1.12. About 8 major states in India are found to have communications facilities below average. Even Punjab, the high performing state in other categories of development, is found to be comparatively in the lower position in the list. Bihar once again is at the bottom of the list followed by Uttar Pradesh and Rajasthan. Less communication infrastructure of these states may be a major bottleneck to its development process. Himachal Pradesh is marked as the topmost state in terms of communication infrastructure. This state performed consistently in every other area of development too. Tamil Nadu secured the second position of the list followed by Kerala. Maharashtra and Karnataka registered almost the same level of development in respect to communication.

Table 1.12: Indices Scores Based on Communication

State	PRIN1	PRIN2
Himachal Pradesh	2.402	3.141
Tamil Nadu	1.896	0.454
Kerala	1.749	-0.547
Maharashtra	1.426	-2.052
Karnataka	1.425	0.486
Punjab	0.846	-1.533
Andhra Pradesh	0.796	0.285
Gujarat	0.667	-0.829
Haryana	-0.064	-1.395
West Bengal	-0.643	-1.093
Assam	-1.303	1.113
Orissa	-1.329	1.495
Madhya Pradesh	-1.341	0.022
Rajasthan	-1.805	0.370
Uttar Pradesh	-2.099	0.063
Bihar	-2.622	0.145

Note: PRIN1 = 1st Principal Component Scores; PRIN2 = 2nd Principal Component Scores

Composite Indices of Overall Development: Development models of individual states in each of the categories clearly establish a cogent regional pattern. Most of the states in northern region are economically developed and provide a relatively higher proportion of minimum basic needs to the people as compared to other states. Southern states, on contrary,

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are found to be more advanced in respect of health achievements. Western states fall in between these two different scenarios and are marked with a middle level of progress. The crux of India's development problem is, thus, mainly associated with eastern states. As the regions or states differ noticeably in every sector of the development process, indices of overall development have been compiled by taking the scores of first principal component as the variable values for respective categories and thereby using another PCA. Using these four variables, each characterizing a separate sector of the developmental process, component scores have been estimates. An attempt was also made to include first two principal components scores of every category as the variables for further PCA. But, as the inclusion of the second component score as variable drastically reduced the explanation power of the resulting first principal component, we confined our analysis to using the first component scores only.

Table 1.13: Principal Component Loadings of Category of Variables

State	PRIN 1	PRIN 2
Economic Development	0.4795	-0.5826
Common Minimum Needs	0.4700	-0.6179
Health	0.5247	-0.3833
Communication	0.5233	0.3630
Variation explained	73.4%	90.7%

Note: PRIN1 = 1st Principal Component Scores; PRIN2 = 2nd Principal Component Scores

The loading structure of the variables, representing each sector of development, in the first two principal components have been exhibited in Table 1.13. It is observed that the first component explains about 73 percent variability of the data. The first two components together capture more than 90 percent of variation in the combined data. Here, almost every sectors are equally important in determining the overall development of any state. As health facilities turned out to be one of the most important factors in the overall development process in India, 9 states, out of 16 major states, were found above the average level of development. Lots of coercive efforts has to be made to pull up the other half of the states. Composite index scores also differed substantially among states.

Thus, to conclude, in general, development can be viewed as a multi-dimensional phenomenon. Here, a composite index of development is constructed using four broadly accepted components as mentioned above, viz., (a) economic production and economic condition or alternatively level of economic development; (b) common minimum needs; (c) health and health related services and (d) communication.

Findings of the analysis support the general perception about the states. The factors which are found out to be more important for overall development process relating to basic needs such as education, availability of food, minimum purchasing power and facilities like safe drinking water, health care infrastructure and so on. It is also observed that enrollment ratio can not be raised unless minimum needs of the common people are satisfied. Thus, true development requires government action to improve elementary education, safe drinking water facilities and health care and to remove barriers against sections of societies particularly women.

The states in India are marked with wide disparity in socio-economic development. Some states are better off in terms of economic development, while certain states like Kerala, Tamil Nadu have recorded remarkable social progress. The role of social development such

as literacy and more particularly female literacy to promote basic capabilities emerges as the prerequisite to overall development. Entitlements to basic commodities and services also varies significantly among states. These results emphasize the role of well functioning public actions in improving the overall living conditions of the people. The disparity in entitlement of basic necessities among states mainly emanates from the scope and quality of a wide range of public services like schooling facilities, basic health care and public food distribution system. Indeed, Kerala's success may be attributed to the role of public action to promote a range of social opportunities relates to elementary education, status of women in society and provisions for health care and other services. The condition of BOUMAR states, on contrary is the result of incessant public neglect of the same opportunities. Therefore, the overall result of incessant public neglect of the same opportunities. Hence, the overall results evidently shows that economic reforms alone are not adequate for overall development unless it is accompanied by social and political commitments. Faster development necessitates government action to improve elementary education, particularly for the younger generation. Kerala has set up the instance and has clearly progressed. It has a sluggish economy and a high level of unemployment. Though economic growth in the sense of expanding gross national product and other related variables is one of the most fundamental input to the overall development process, the basic objective of development should focus on the expansion of human capabilities which has been neglected for too long in India.

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1.4 SUMMARY

1. Blair (1995) attempts to separates economic growth from development.
2. Regional and local economics is a study of political economy.
3. Main theories that underpin the analysis are rooted in the various political economy schools of thought like interventionist (Mainstream or Keynesian); free market (Conservative or Monetarist); and Marxist.
4. Fundamentally, the regional and local economy is all economic activity taking place in a specific geographically defined area.
5. Regional analysis is mostly based on the theories and analytical tools developed for national economies.

1.5 SELF ASSESSMENT QUESTIONS

I. Fill in the Blanks

1. Government departments work through _____ and it co-ordinates the work of other government departments in _____.
2. Models are based on the _____ that similar sorts of _____.

II. True and False

1. National governments and policy makers are able to exercise a degree of control over external trade.
2. In the region, income is largely determined by what happens outside the region, e.g., government spending, taxation, national wage rates etc.

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III. Multiple Choice Questions

1. Barriers to trade are missing at the local level. It implies _____.
 - (a) Distance to market is shorter – transportation costs (lower)
 - (b) Labour and capital are more mobile within the region than between countries
 - (c) There are no defence or political considerations
 - (d) All of the above
2. A composite index based on several indicators has been developed using principal component analysis and states are arranged according to the indices derived using four broadly accepted components _____.
 - (a) Economic production and economic condition or alternatively level of economic development
 - (b) Common minimum needs
 - (c) Health and health-related services
 - (d) Communication
 - (e) All of the above

Short Answer Questions

1. Explain in brief about the tools used in regional analysis.
2. Define Econometric Models and Cost Benefit Analysis.

Long Answer Questions

1. Explain in detail about the ‘importance of regional analysis in developed and backward economies’ in the Indian context.
2. Critically analyze the strategy of the Socio-economic Development in India.

1.6 KEY TERMS

- Demographic
- Immiserization
- Interventionist
- Mainstream
- Regression analysis

1.7 KEY TO CHECK YOUR ANSWER

- I. 1. regional offices, every region, 2. assumption, fundamental components.
- II. 1. True, 2. True.
- III. 1. (d), 2. (e).

2

Chapter

STRATEGIES TO DEAL WITH REGIONAL ANALYSIS

Objectives

This Chapter is focused on the following objectives:

- Definitional problems in regions: (a) Physical or Geographical, (b) Demographic (c) Planning regions and, (d) Model Regions (analysis for identification of a region)
- Regional approach to the problems of backward economy.

Structure:

- 2.1 Definitional Problems in Regions: (a) Physical or Geographical, (b) Demographic (c) Planning Regions and (d) Model Regions (Analysis for Identification of a Region)
- 2.2 Regional Approach to the Problems of Backward Economy
- 2.3 Summary
- 2.4 Self Assessment Questions
- 2.5 Key Terms
- 2.6 Key to Check your Answer

2.1 DEFINITIONAL PROBLEMS IN REGIONS: (A) PHYSICAL OR GEOGRAPHICAL, (B) DEMOGRAPHIC (C) PLANNING REGIONS AND (D) MODEL REGIONS (ANALYSIS FOR IDENTIFICATION OF A REGION)

Definitional Problems in Regions

(a) Physical or Geographical:

Defining Regions: With the end of the Cold War and the trend towards economic globalization as well as the increasing complexity of international relations, the concept region risks becoming an empty idea. These forces have redefined the structural and agentive relationships between the global, regional and national contexts. Moreover, they are leading us to re-examine the theoretical foundations of the study of regionalism. Our regional images are often based on unexamined and outdated metageographical conceptions of the world — a perspective dubbed the “jigsawpuzzle view” that assumes discrete, sharply bounded, static continental units fit together in an unambiguous way. Yet, the world is not structured in such a neat manner; to the contrary, regions disappear and reappear as they are transformed by various economic, political, and cultural factors.

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Key Distinctions: Often those engaged in defining the concept region are content to list physical, political and economic criteria without embarking on theory development. For instance, Edward Mansfield and Helen Milner emphasize geographical proximity and specificity as the key defining traits of a region. Further, researchers refer to early conceptual analyses and essentially leave the concept undefined. Scholars in history and political science seem to think that they will know a region when they see one. For economists, the choice is even easier, region is coextensive with a preferential trading agreement or a customs union.

Therefore, L. Alan Winters explains in detail the concept of multilateralism but takes its counterpart, regionalism, almost for granted. For him, it refers to any policy designed to reduce trade barriers between a sub-set of countries, regardless of whether those countries are actually contiguous or even close to each other.

These are inadequate solutions to the definitional problem because both the character and functions of regions have recently experienced a major transformation. One change has occurred in the relative weights given various levels of analysis — global, regional, national and the links between them. During the Cold War, most regions were either political or mercantile clusters of neighbouring countries that had a place in the larger international system. Occasionally, political and military motives fostered the establishment of super regions such as the North Atlantic Treaty Organization (NATO) and the Organization of African Unity (OAU).

However, since the late 1980s, sub-regional and micro-regional organizations have become more common, for example, the Baltic Council of Ministers, the Visegrad Group, the Shanghai Group, and Mercosur. This trend is, in part, a response to the fragmentation of great-power blocs, especially in Eastern Europe and Central Asia, but it also reflects the need to react to the pressures created by economic globalization through local means.

A second change is the growing differentiation between physical (geographical and strategic) regions and functional (economic, environmental, and cultural) regions. This transformation appears linked to the first change. Increasing emphasis on the global-regional relationship has led to paying more attention to functional and subregional relations, even though the nation-region nexus is still predominantly viewed in physical and State-centric terms.

Distinction between physical and functional regions is reminiscent of Manuel Castells differentiation between a space of places and a space of flows. He defined a place as a locale whose form, function and meaning are self-contained within the boundaries of physical contiguity. Places are historically rooted yet reshaped increasingly by the flows of information and people. The space of flows refers to the 'material organization of the time-sharing social practices that work through flows and networks'.

A number of scholars have tried to link the physical and functional conceptions of regions by focusing on the boundary-eroding consequences of globalization and identity formation and the extra-territorial challenges to sovereignty that these forces unleash. They suggest that physical and functional definitions of regions may be viewed as a sequence in which territory gradually gives way to space. Indeed, the transition from physical to functional regionalism is due to the increase in the interaction capacity of the system. In a low-capacity international system, physical vicinity matters; states are linked with their neighbours by economic and security concerns and international relations are subsystem dominant. An increase in the interaction capacity of the system helps the actors reach beyond their immediate neighbourhoods; these new contacts give rise to more system-dominant international relations.

Regionalism and the End of the Cold War: During the Cold War, bipolarity and nuclear weapons created contextual effects that contributed to the emergence of a semi-global system. In Europe, in particular, extended US nuclear deterrence and Soviet political-military control of its eastern half limited the autonomy of individual states and made them parts of a larger whole. Local security systems existed, but they were overshadowed by the ability of external powers to move directly into the local security complex with the effect of suppressing the indigenous security dynamic. The end of the Cold War has reduced the effects of the global system on regional security dynamics and national decisions. Thus, an end to the bipolar cleavage has led to a restoration of regional sovereignty and to the establishment of several regional powers dominating their geographical areas .

Changes in the international structure and new security challenges were expected to push the development of regionalism, providing order and stability in the regions and certainly in Africa, the Middle East and Southeast Asia, one can discern tendencies toward a diminution in the presence of the major powers, especially the USSR. Indeed, Arthur Stein and Steven Lobell have argued that even during the Cold War, regional security was not globalized. Though the United States was a significant player in most regional security arrangements, it, too, remained reluctant to participate in African and Asian conflicts that were not considered central to its interests.

In the post-Cold War international system, even though there has been an increasing demand for external intervention and crisis management for humanitarian and other political reasons, neither the United States nor any other major power has shown a willingness to shoulder the full responsibility for managing these regional crises. As a solution to this dilemma, some have suggested the establishment of a concert of powers to replace global hegemony which is thought to be unattainable and a balance-of-power system which is considered unstable. Indeed, a central theme of David Lake and Patrick Morgan's book '*Regional Orders*' is the advocacy of regional concerts and the assessment of their feasibility.

Globalization and Regionalization: In the security sphere, the weakness of global arrangements has given priority to the national and regional levels and as major powers, particularly the United States, wield decisive unilateral and multilateral influence, the national-regional linkage continues to dominate international security relations. If concerts between major powers are established at all, they are informal arrangements focusing on the management of a particular crisis rather than, as traditional theories suggest, comprehensive arrangements to produce collective security. The Contact Group, dealing originally with Bosnia and then other parts of the former Yugoslavia, is an instance of a new type of concert of major powers.

In the economic sphere, however, the situation is quite different. The process of globalization, although partial and variable in nature, is creating an increasingly autonomous economic reality that interacts directly with both national and regional economies. The formation of regions takes place at the interface between global economic and technological forces and national realities. National actors may, in fact, perceive regionalism as a defense mechanism against the competitive pressures arising from the globalization process. Moreover, regions are shaped by the spillover of domestic conditions across borders. Despite that connection, the new regionalism cannot be linked solely with national factors and separated from the global context. Instead, the two processes of globalization and regionalization are articulated within the same larger process of global structural change.

The mutual interdependence or dialectic between globalization and regionalization is widely accepted; indeed, among radical political economists the point is uncontested.

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According to Samir Amin, the historical development of capitalism has been to gradually move from the local level to the global, and at each step to create new polarizing tendencies. To be able to improve their economic positions, peripheral countries have had to delink themselves from the global system and adopt alternative, countervailing strategies, one of which is regionalization. James Mittelman also considers 'transformative regionalism' a counterthrust to neoliberal globalization. His view of regionalism is more nuanced than Amin's, noting that the tendency toward flexible specialization in global production networks gives rise to many different types of regional and transborder arrangements. Mittelman warns against a too strict contrast between globalization and regionalism. This point has been made more specifically by Ralph Pettman who reminds us that such a simple dichotomy has both analytical and political costs. Analytically, one may ask what's the point of dichotomizing regionalism and globalism when they would seem to be points along a continuum and not really opposed? Politically, the counterposing of these two categories can lead to an antagonistic impression that the West is global and the East regional.

Relationship between globalization and regionalization has been extensively studied and debated by mainstream economists. The basic question underlying this research and current debates is stated well by Bhagwati when he asks – Were the preferential free trade areas and customs unions belonging to the second regionalism of the 1980s building blocs or stumbling blocs for the multilateral economic order? In his view, due to the dominating effects of trade diversion, regionalism became a stumbling bloc, slowing down progress toward multilateralism.

One of the few exceptions is Robert Lawrence who argues that economic globalization does, in fact, demand deeper regional integration. He rejects the traditional view that foreign direct investment (FDI) and trade are substitutes for each other. Instead, Lawrence observes the growing role of FDI and the need it creates to restructure, specialize, and engage in network production. The expansion of FDI has led to regional production and service clusters intended to improve efficiency and reduce transaction costs. Due to the globalization of FDI, regional integration has become progressively deeper and moved beyond preferential trading arrangements.

Political-Military Regions: Given our discussion to this point concerning global-regional security linkages, especially from the viewpoint of concert theory, it is possible to conclude not only that this linkage is relatively weak but that the theory itself is conceptually muddled and empirically of limited value. Therefore, alternative formulations are needed to create a proper spatial context for security theories. This task seems all the more important because defining region and regionalism using the concepts of traditional security theories does not appear to be of much help. Neorealism – with its focus on anarchy, risks of defection, and relative gains – does not take spatial dimensions seriously. The same applies to neoliberal institutionalism in which spatial concepts find hardly any place at all. Instead, institutions are treated almost exclusively as analytical and non-spatial phenomena. Only in discussions of offensive realism do we find strong geopolitical undertones as a result of its concentration on great-power competition.

Externalities: The problematic status of regionalism in mainstream international relations theories may explain why their supporters introduce the spatial dimension only indirectly by using general concepts such as externalities. An illustrative externality is the concept regional security complex, defined as a group of states whose primary security concerns link sufficiently closely that their national securities cannot realistically be considered apart from one another. These complexes are kept together by the negative or positive security links between states.

The externality approach does not address the conceptual transition from the study of regional systems to regional orders that is a common weakness in the theory of regional security complexes. In fact, the approach seems to lead to the study of coalition formation as the operative mechanism in region formation, reinforced by the emphasis on transaction costs. One can assume that actors use externalities as grounds for making decisions on their participation in regional security arrangements. Furthermore, it seems likely that actors affected by the same external effects are inclined to deepen their co-operation for mutual protection. The traditional example is, of course, the establishment of a defensive coalition against a common external threat. This reaction tends to exclude sources of negative externalities from the regional system. Against this backdrop, one can define a regional security system as a coalition in which positive externalities are maximized and negative externalities minimized. This choice helps give size and a spatial domain to the regional system. This theory of externalities can help us differentiate among security orders. Integration and the building of security communities are principal intra-regional strategies that facilitate the development of a local security order, but hegemony, concert, and balance of power almost always involve extra-regional powers. As it may be misleading to exclude external factors from the analysis of regional security, a potential next step would be to explore the relationship between the intra- and extra-regional dimensions of security orders. Such an analysis would benefit from the specification of the kinds of externalities that different security orders produce, for instance, the externalities of hegemony (limitation of the domestic autonomy of smaller states) compared with those involved in the balance of power (breakdowns that can lead to war).

Functional Regionalism

Social Spaces: The social definition of region focuses on functional exchanges as the source of spatiality and can be traced back to Jean Gottman's distinction between iconography and circulation, between places and flows to use today's terminology. Another major contributor to the definition of spatiality was Robert Sack who distinguished between territoriality used to control a spatial political organization and non-territorial action; he considered territoriality as the attempt to affect, influence or have control over a specific area. Later on, Sack realized that territory is usually contested and started to stress the importance of access to it. The distribution of territorial power is rarely equitable because actors have different abilities to control and enter a particular territory. With this in mind, Sack redefined territoriality as a "strategy to establish differential access to people, things, and relationships".

Economic Regions: Economic regionalization appears to depend on both political decisions at the regional level and the locational decisions made by firms. In effect, regions are viewed as an appropriate unit in which to organize governance and stimulate political participation. But often, as in the European Union, regional governance has remained weak. In fact, its regional dimension has been more manifest in the rise of economic pivot regions and of capital- and technology-intensive cities that support local development. There is evidence to suggest that, at least in Europe, differences in regional growth rates have depended on a combination of local conditions and their linkages to the world economy. Neither the state nor regional government alone can assure regional success that is based on the interrelationship among local resources, transnational capital, and public-private interactions. Loose policy initiatives and regional networks cannot save a regional project if its market incentives are inadequate.

Regional specialization and growth are due both to expanding trade and investment as well as endogenous factors. Decreasing transaction costs play a role in the relocation of

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production within and between countries. The result is a center-periphery division that changes as development spurts integrate new regions into the center. Due to backward and forward linkages, production tends to agglomerate to areas where there is already similar production, irrespective of the intensity of trade relations.

(b) Demographic:

The term Demography implies – studies of a population based on factors such as age, race, sex, economic status, level of education, income level and employment, among others. Demographics are used by governments, corporations and non-government organizations to learn more about a population's characteristics for many purposes, including policy development and economic market research. Demographic trends are also important, as the size of different demographic groups will change over time as a result of economic, cultural and political circumstances.

Health

Maternal Health in India: India continues to contribute about a quarter of all global maternal deaths. WHO defines maternal mortality as the death of a woman during pregnancy or in the first 42 days after the birth of the child due to causes directly or indirectly linked with pregnancy.

Fast Facts: Globally, every year over 500,000 women die of pregnancy related causes and 99 percent of these occur in developing countries. The Maternal Mortality Ratio (MMR) in India is 254 per 100,000 live births according to Sample Registration System (SRS) Report for 2004-2006. This is a decline from the earlier ratio of 301 during 2001-2003. MMR in China stands at 45, Sri Lanka at 58, Bangladesh at 570, Nepal at 830 and Pakistan at 320 in 2006.

Wide disparities exist across states in India. The MMR ranges from 95 in Kerala to 480 in Assam.

UNICEF in Action: Building on the achievements of the Government of India's National Rural Health Mission (NRHM), UNICEF continues to support health programmes such as the Village Health and Nutrition Days (VHND), to reach out to pregnant women in underserved areas, ensuring that they receive the three essential antenatal check-ups and sensitizing them about the importance of institutional deliveries. UNICEF is working closely with National Rural Health Mission programmes such as Janani Suraksha Yojana to encourage women to have institutional deliveries. UNICEF follows the continuum of care approach to ensure that both mother and newborn receive necessary services. This involves a chain of interventions that begin with complete and comprehensive antenatal care, increasing skilled attendance at birth, ensuring that first referral units are equipped to deal with emergency obstetric care and ensuring that both the mother and newborn are followed up *post partum*.

Neonatal Health in India: Child mortality is a sensitive indicator of a country's development. In India, the Infant Mortality Rate (IMR) (under one year) has shown a modest decline in recent years. The average decline of IMR per year between the years 2004 to 2008 has been about 1 percent per year. In 2008, the IMR was 53/1,000 live births. Eight states contribute to 75 per cent of infant mortality: Uttar Pradesh, Bihar, Madhya Pradesh, Rajasthan, Andhra Pradesh, Orissa, Gujarat and Assam. At the current rate of decline, India will miss the XI Plan goal of reduction in IMR and the Millennium Development Goal-4 on child survival. About 70 percent of the childhood under-five is caused by perinatal conditions

(33.1 percent), respiratory infections (22 percent) and diarrhea (13.8 percent). Malnutrition is an underlying cause responsible for about one-third of all deaths in childhood.

Fast Facts: Averting neonatal deaths is pivotal to reducing child mortality. The Newborn period is the period starting from birth and continues throughout 28 days of life. Neonatal mortality rate (mortality in the newborn period) stands at 35/1000 live births, and contributes to 65 percent of all deaths in the first year of life.

Between 2004-2008, neonatal mortality has moved from 37/1000 live births to 35/1000 only.

56 percent of all newborn deaths occur in five states: Uttar Pradesh, Rajasthan, Orissa, Madhya Pradesh and Andhra Pradesh.

Three major causes contribute to about 60 percent of all deaths in the newborn period: pre-maturity and low birth weight, birth asphyxia and infections.

UNICEF in Action: UNICEF partners with the Government of India, state governments and communities, promote simple interventions which can significantly improve newborn survival. UNICEF encourages home-based care of all newborns through its support to the Integrated Management of Newborn and Childhood Illness (IMNCI) programme. The programme equips frontline workers with the required skills and supplies. Following training on IMNCI, frontline workers (ASHAs and AWWs) visit newborns at their households three times in the first week of life. During the visits, the workers assess the newborns, promote healthy practices, manage simple problems and refer those with serious illnesses. UNICEF supports intensive behaviour change communication efforts through all channels to promote key practices that improve survival of newborns. UNICEF raises awareness of media and elected representatives on issues related to newborn and child survival. UNICEF supports setting up and managing of Special Care Newborn Units (SCNUs) that provide state-of-the-art care for newborns in some of the least developed districts of the country.

Measles in India: The respiratory disease measles remains a leading cause of death among young children, despite the fact that a safe and effective vaccine has been available for 40 years. Measles is an acute illness caused by a virus of the paramyxovirus family. It is one of the most contagious diseases and many children who do not have sufficient immunity contract measles if exposed. During the first few weeks after contracting measles, a child's immune system becomes weakened, and a normal cold or diarrhoea can become a life threatening illness.

UNICEF/WHO Actions: The global reduction in death from measles reflects support and commitment by the Measles Initiative to boosting immunization coverage and by national governments to following the World Health Organization (WHO)/UNICEF comprehensive strategy for reducing measles mortality. This strategy consists of four key components:

1. Providing at least one dose of measles vaccine at routine vaccination coverage of at least 90 per cent of children, administered at nine months of age.
2. Giving all children a second opportunity for measles vaccination.
3. Establishing effective surveillance.
4. Improving clinical management of complicated cases – including Vitamin A supplementation

India Celebrates Victory over Polio: Completing three full years without reporting any case of polio, India celebrated a landmark achievement in public health on 11 February 2014 – the victory over polio. India has not reported any case of polio since a two-year old

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girl got polio paralysis on 13 January 2011 in Howrah district of West Bengal. India's victory over polio paves the way for polio-free certification of the Southeast Asia region of WHO in March end. This is an unprecedented progress for a country, which reported more than half the global polio cases until the year 2009. Experts always predicted India would be the last to stop polio as its endemic pockets in parts of Uttar Pradesh and Bihar were among the most difficult places in the world for polio eradication. India overcame huge challenges, with a strong commitment that matched \$2 billion allocation over the years to stop polio. Implementing innovative strategies, the programme reaches an incredible 99 percent coverage in polio campaigns, ensuring every child, even in the remotest corner of the country is protected against polio.

India introduced the oral polio vaccine in 1985 in the Universal Immunization Programme in the backdrop of over 200,000 cases of polio annually (as per estimates of the Indian Academy of Pediatrics). In 1995, the first national polio immunization campaign was held; since then two national and multiple sub-national campaigns are rolled out every year for children up to 5 years of age. In each national polio campaign, 2.3 million lakh vaccinators, led by 155,000 supervisors, visit 209 million households to immunize 170 million children up to the age of 5 years.

Nutrition: The level of child undernutrition remains unacceptable throughout the world, with 90 percent of the developing world's chronically undernourished (stunted) children living in Asia and Africa.

Detrimental and often undetected until severe, undernutrition undermines the survival, growth and development of children and women, and diminishes the strength and capacity of nations. With persistently high levels of undernutrition in the developing world, vital opportunities to save millions of lives are being lost, and many more millions of children are not growing and developing to their full potential.

Nutrition is a core pillar of human development and concrete, large-scale programming not only can reduce the burden of undernutrition and deprivation in countries but also can advance the progress of nations.

UNICEF Action

UNICEF supports the Government in its objectives to reduce and prevent malnutrition, and to improve the development of children under three-years old, especially those in marginalized groups. UNICEF is assisting the government to further expand and enhance the quality of ICDS in various ways: by improving the training of anganwadi workers; by developing innovative communication approaches with mothers; helping to improve monitoring and reporting systems; providing essential supplies; and by developing community based early childcare interventions. UNICEF supports iron supplementation for adolescent girls and Vitamin A supplementation for children. It encourages the universal use of adequately iodized salt by educating the general population and collaborating with the salt industry. UNICEF's programme contributes to reducing hunger and malnutrition rates, especially among the three most vulnerable groups of children (0-35 months old), children of economically disadvantaged populations and children of socially excluded groups.

Water, Environment and Sanitation: UNICEF's long standing support for improving water supply, sanitation and hygiene stems from a firm conviction and based on sound evidence that these are central to ensuring the rights of children. In fact, it is essential for children to survive, grow and develop into healthy and fulfilled citizens of the world. In the

broader context, UNICEF's activities in Water, Sanitation and Hygiene (WASH) contribute to the achievement of the Millennium Development Goals.

Sanitation: It is estimated that only 31 percent of India's population use improved sanitation (2008).

In rural India, 21 percent use improved sanitation facilities (2008).

One hundred forty-five million people in rural India gained access to improved sanitation between 1990-2008.

Two hundred and eleven million people gained access to improved sanitation in whole of India between 1990-2008. India is home to 594 million people defecating in the open; over 50 percent of the population.

In Bangladesh and Brazil, only seven percent of the population defecate in the open. In China, only four percent of the population defecate in the open.

Water: 88 percent of the population of 1.2 billion has access to drinking water from improved sources in 2008, as compared to 68 percent in 1990. Only a quarter the total population in India has drinking water on their premise.

Women, who have to collect the drinking water, are vulnerable to a number of unsafe practices. Only 13 per cent of adult males collect water. Sixty-seven percent of Indian households do not treat their drinking water, even though it could be chemically or bacterially contaminated.

Hygiene: According to the Public Health Association, only 53 percent of the population wash hands with soap after defecation, 38 percent wash hands with soap before eating and only 30 percent wash hands with soap before preparing food. Only 11 percent of the Indian rural families dispose child stools safely. 80 percent children's stools are left in the open or thrown into the garbage. Only 6 percent of rural children less than five years of age use toilets. Wash interventions significantly reduce diarrhoeal morbidity; statistically, it has been shown that:

1. Handwashing with soap reduces it by 44 percent.
2. Household water treatment by 39 percent.
3. Sanitation by 36 percent.
4. Water supply by 23 percent.
5. Source water treatment by 11 percent.

Key Issues:

1. **Newborn infants:** Handwashing by birth attendants before delivery has been shown to reduce mortality rates by 19 percent while a 4 percent reduction in risk of death was found if mothers washed their hands prior to handling their newborns.
2. **Children under five years:** Poor wash causes diarrhoea, which is the second biggest cause of death in children under five years. Diarrhoea is an immediate cause of undernutrition.
3. **School-aged children:** Children prefer to attend schools having adequate and private wash facilities. Schools provide an excellent opportunity for children to learn about hygiene practices.
4. **Older girls:** Giving girls the knowledge and facilities necessary for good menstrual hygiene is key to their dignity, their privacy, their educational

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achievement and their health. Adolescent girls are empowered through improved menstrual hygiene management.

5. **Mothers and caregivers:** Handwashing with soap at critical times is important for protecting the health of the whole family. By being a role model, mothers and caregivers can also help instill in their children the good hygiene practices which will serve them for life.
6. **Children in emergencies:** During emergencies, children are especially vulnerable to the effects of inadequate access to water and sanitation services. Wash is a key component of any emergency response.

Chemical contamination in water ensuring water quality at the source is crucial. In India, there is a widespread natural occurrence of arsenic and fluoride in the groundwater. UNICEF is supporting Government of India programmes on arsenic and fluoride mitigation and identifying water quality testing technologies which are appropriate for use in field situations. All emergencies cause disruption to basic services. People are less likely to be able to drink safe water, use basic sanitation facilities and maintain improved hygiene practices. Children, especially those under the age of five, are particularly vulnerable to the diseases which can result during emergencies. These diseases include diarrhoea, cholera, typhoid, respiratory infections, skin and eye infections which are all likely to occur when water supplies and sanitation services are disrupted. UNICEF has set out minimum standards of response for any emergency situation. These describe the life-saving actions which UNICEF will take within the first six to eight weeks of an emergency, along with the longer term role in the subsequent weeks and months.

UNICEF Action: UNICEF supports the national and state governments in developing and implementing a range of replicable intervention models for sanitation, hygiene and water supply. UNICEF's Childs Environment Programme in India supports the government's flagship programmes of Total Sanitation Campaign to improve access to and use of sanitation facilities and the National Rural Drinking Water Programme to provide adequate safe water to every rural household in India. The Child's Environment Programme also works with Sarva Shiksha Abhiyan and Integrated Child Development Services, to promote hygiene water and sanitation services in schools, anganwadi centers and health centers with lasting outcomes.

HIV/AIDS: The National AIDS Control Programme (NACP) III 2007-2012 has the overall goal of halting and reversing the epidemic in India. Over 99 percent of the population in the country is free from infection. NACP III places highest priority on prevention while seeking to integrate care, support and treatment for those affected by HIV/AIDS.

Fast Facts: Global, Regional and India Estimates

1. An estimated 33.4 million people worldwide were living with HIV (2008).
2. Approximately 2.1 million children under 15 were living with HIV (2007).
3. An estimated 2.1 million people died of AIDS-related causes (2007).
4. An estimated 290,000 children under 15 died of AIDS-related causes (2007)
5. India has a low HIV prevalence of 0.34 percent. Yet in terms of individuals infected, India is home to the third largest number of people living with HIV in the world.
6. The vast majority of HIV infections in India occur through sexual transmission (85.6 percent).
7. Nearly five percent of infections are attributable to parent-to-child transmission.

8. The epidemic disproportionately affects women, who account for 40 percent of the total infections in the country.
9. In India, the epidemic is more pronounced in urban areas than rural ones and decreases with increasing education levels.

NOTES**Key Issues:**

The Four Ps: The global and country level response to HIV is based on a comprehensive approach that includes the following four strategic elements, or the four Ps:

1. Preventing HIV transmission from women living with HIV to their infants
2. Primary prevention of HIV infection among couples of child bearing age
3. Preventing unintended pregnancies among women living with HIV
4. Providing appropriate protection to children affected by HIV and their families

Prevention of Parent-to-Child Transmission (PPTCT): In India, the transmission of the virus from the mother-to-child during pregnancy, labour and delivery or breastfeeding is called parent-to-child-transmission to emphasize the role of the father in both the transmission of the virus and management of the infected mother and child. Nearly five percent of infections are attributable to parent-to-child-transmission. It is estimated that out of 27 million pregnancies every year, nearly 49,000 occur in HIV-positive mothers. As of December 2008, only 16 percent of pregnant women were tested for HIV, while 22 percent of the children born to the estimated 49,000 HIV-positive women were receiving anti-retroviral prophylaxis. The number of facilities offering HIV testing and counselling went up from 4,269 in 2007 to 4,817 in 2008 and stands at 4,987 as of March 2009. In 2009, only 11,489 of an estimated 49,000 pregnant women living with HIV received anti-retroviral treatment to prevent parent-to-child transmission. This is because of multiple factors including social customs, lack of family support and financial barriers, which constrain women from availing of institutional care necessary for administering treatment. PPTCT services have also not been scaled up in remote areas with lower HIV prevalence. One of the best practices in PPTCT in India is the outreach approach, used by the ICTC to ensure that HIV-positive women who are tested are followed up before, during and after an institutional delivery, and provided with anti-retroviral prophylaxis. The core principle of this approach rests on the continuum of care for women, children and their families – a chain of interventions that begin before pregnancy and continue through pregnancy, labour and delivery and subsequently as part of routine or specialized chronic care services for after the child is born.

Pediatric Care and Treatment: It is estimated that 70,000 children below the age of 15 are living with HIV in India and 21,000 children are infected every year through parent-to-child transmission. A small proportion are also infected by unsafe injections and infected by blood transfusions. Most children are infected with the virus while still in the womb, during birth. The National Pediatric Anti-retroviral Treatment (ART) Initiative was launched in 2006. A total of 40,000 children living with HIV will be provided ART by the end of NACP III. A total of 375 ART centres shall be equipped to offer pediatric ART in the country. Follow-up of HIV exposed infants, according to the Indian Guidelines, begins at six weeks. The Road to Health Card for these children includes information on maternal HIV status, co-trimoxazole prophylaxis, infant HIV diagnosis and infant feeding information. To reach more mother-infant pairs, the Reproductive and Child Health (RCH) Programme is linked to the PPTCT and Pediatric HIV Programme in order to provide for and incorporate HIV care into the package of services for mothers and children.

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Preventing Infection among Young Adolescents and Young People: In India, the prevalence of HIV among 15-19 year olds is 0.04 percent and that among 20-24 year olds is 0.18 percent. By the end of the NACP III, about 25 million students will have been reached through the Adolescent Education Programme. The NACP III will also bring HIV prevention skills education programmes and related services to 70 million young people who are not in school, including, street children, children of CSWs, children in institutions, child labourers and other vulnerable youth.

Protection, Care and Support for Children Affected by AIDS: In the short term, NACP III will reach out to as many children living with HIV as possible to provide them with the treatment and the care and support services that they need. In the long term, NACP III aims to ensure that every child has access to the same comprehensive set of basic health, education and social protection services, regardless of their HIV status or that of any member of their family.

UNICEF in Actions: UNICEF supports the Government in its effort to halt and reverse the HIV/AIDS epidemic in India, and mitigate its impact on affected children and women. UNICEF is assisting the government to further expand and enhance the quality of programmes to reduce the transmission of HIV from infected mothers to their children and to increase the access of these mothers and their children to treatment in various ways: by providing strategic supplies of drugs and commodities, improving the capacity of staff; by developing innovative communication approaches for prevention and care; and helping to improve monitoring and reporting systems. UNICEF supports efforts to reduce stigma and discrimination against children and people affected by HIV and for commitment on ensuring their equal access to essential health, social welfare and educational services. UNICEF's programme contributes to increasing knowledge, dispelling myths and misconceptions relating to HIV transmission and prevention, and behaviours among vulnerable young people.

Child Protection: UNICEF India's programmatic approach to child protection aims to build a protective environment in which children can live and develop in the full respect of their fundamental rights. Translated into action, this approach led to a multi-layered programme whose scope is to understand and address the multiple vulnerabilities of children in need of special protection rather than tackle only their immediate manifestations. UNICEF Child Protection Programme in India focuses mainly on three areas of intervention: child labour, child trafficking, and children in difficult circumstances. UNICEF India's programmatic approach to child protection aims to build a protective environment in which children can live.

In the area of Child Labour, projects implemented in various states of the country adopt an essentially holistic approach, combining strategies aimed not only to the withdrawal of children from work, but also to enhance communities' awareness, ownership and collective action for the protection and promotion of children rights. Existing strategies include: (a) Promotion of education as both, key preventive measure and essential component for the rehabilitation of released children; (b) Addressing poverty related factors through the promotion of self-help groups; (c) Advocacy and social mobilisation for the elimination of child labour. In Uttar Pradesh, for instance, this strategy led to an increase of more than 47 percent in school enrollment and attendance among the villages targeted by the ongoing UNICEF child labour elimination intervention. Over 120 Alternative Learning Centers (ALC) have been established in order to facilitate mainstreaming of out-of-school children into formal education and through them more than 24,000 children have been able to go back to school. Moreover, over 1000 Self-help Groups have been established and they are now

playing a crucial role in reducing indebtedness among poor rural families. Women's empowerment is also showing to be instrumental to the well-being of children as a whole. With the support of UNICEF, for example, 50 percent of targeted villages have adopted three key-friendly practices, namely an immunization coverage of more than 80 percent, a school enrollment rate of more than 90 percent and a sensible increase in the age of marriage. In the area of child trafficking, UNICEF India supports the Government with a twofold strategy aimed to strengthen rescue mechanisms and reduce at the same time, children's vulnerability to trafficking through a special focus on preventive action. For this purpose, a National Communication Strategy on child trafficking has been developed and is now being implemented at community level through UNICEF state offices. Manuals have been developed for social workers, judiciary, and counsellors working on issues of child trafficking in order to enable rescue and rehabilitation processes which are in the best interest of the child. As a part of its efforts to formulate strategies and legislations on issues related to child protection, UNICEF also supports the Ministry of Women and Child Development, Government of India, to undertake a national level study on children affected by violence and to conduct regional and national consultations on child marriage and to hold dialogues on Offences against Children Bill. In the efforts to improve the implementation of the Juvenile Justice System in the country, UNICEF is also supporting the government with the development of training materials for the judiciary and various other functionaries of the system like the child welfare committee members, police and care-takers in the various institutions under the Act. UNICEF is also collaborating with the Ministry of Women and Child Development on the creation of a website for Missing Children to facilitate tracing and reintegration of lost children.

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Education: The Education Programme supports and strengthens government efforts to provide quality education by reducing gender and other social and economic disparities at the national and state levels. The Ministry of Human Resource Development is the nodal ministry for UNICEF's Education Programme.

Through a close and productive partnership with MHRD and the Department of School Education and Literacy along with civil society, the programme has been supporting the Government of India's flagship programme Sarva Shiksha Abhiyan (Education for All)¹ to ensure greater access to education, enrollment and improved learning outcomes for the most marginalized groups of children. While retaining a focus on elementary education for children aged 6-14 years under the Right of Children to Free and Compulsory Education Act (RTE), the programme is now covering a wider gamut – starting from early childhood education through elementary up to Grade 10. Child friendly schools and systems are being promoted and capacities of teachers strengthened to ensure children's right to learn. Convergence with other programmes to combat child labour and child marriage, and universal access to improved water, sanitation and hygiene facilities, is also ensured. The programme aims to improve equitable access to quality early childhood education. It includes:

1. Accelerate implementation of the Right to Education Act and child friendly schools
2. Enhance capacities of teachers and pre-school functionaries to deliver quality education
3. Mobilize communities to demand equitable access to quality education
4. Increase access to secondary education for adolescents with a focus on reducing gender and social disparities.

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(c) Planning Regions:**Economic and Developmental Challenges in India**

Sustainable growth: The United Nations describes sustainable growth as a process that fulfills the needs of the present without compromising the ability of future generations to meet their own needs. This year, academics working on India questioned whether Indian growth was truly sustainable or whether the country had failed to utilize resources generated by recent economic growth by investing much more in education and health care and developing infrastructure in an environmentally responsible way. Heading into 2014, India must better assess how to enhance economic growth together with low-carbon development initiatives including ways to improve food and water security.

Inclusive growth: For Indian growth to be sustainable, it must be inclusive to cover issues related to inequalities between castes (including tribal children and elderly people living in remote areas), colour, disability, gender, regions (rural-urban as well as differences between states), and more. While the gender gap in employment and political participation has been narrowing, there is much more to be done for the health and safety of girls and women. India needs to do more to ensure inclusive growth, particularly by improving social protection policies. Good examples such as ‘Amma’s canteen’, which was recently introduced in Tamil Nadu and sells highly subsidized nutritious meals, are worth expanding to other states to solve problems related to high malnutrition levels.

Demographic dividend: Approximately 200 million Indians are between the ages of 15 and 24 and India is well positioned to make the most of a growing population of working age. However, to reap the demographic dividend, India will have to manage the demand and supply of skills and labour carefully. While the government has introduced policies to improve access to education, much more needs to be done to improve the quality of education, standards of teaching, methods of examination, development of skills, vocational programmes, etc. In order to make Right to Education policy effective, the country should also address the challenges of bridging the gaps between children from disadvantaged and advantaged backgrounds being able to study together and better understand, respect and befriend each other. In the new year, India should look to develop public-private partnerships and social entrepreneurship programmes that can ensure livelihoods for its young population.

Inflation: The issue of high inflation is uppermost in the minds of politicians, policymakers and the people. Consumer prices in India have risen at an average annual pace of 10 percent during the past five years, and Indian households are bracing for another 13 percent increase next year. To check inflation, the Reserve Bank of India has raised interest rates and will review India’s monetary policy framework in line with recommendations by the Urjit Patel Committee, which is expected to submit its report at the end of the year. It is also essential to manage artificially induced national and international mechanisms. The Central Bank and Ministry of Finance are working together to analyze and understand the reasons and find ways to encourage investment and curb inflation.

Rapid urbanization: Indian cities are growing at an unprecedented rate—the country’s urban population is expected to grow to 590 million people by 2030. This rapid urbanization is also expected to drive economic growth. According to some estimates, cities could generate up to 70 percent of new jobs created until 2030 and produce 70 percent of Indian GDP. To reap the economic advantages of urbanization, the Indian government must develop better policies to meet urban infrastructure needs through sustainable means and address growing urban poverty and inequality.

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Land reforms: The Land Acquisition Act passed this year received mixed views. There are concerns that the new law will drive up costs across the economy and make several industrial and real estate projects unviable, without necessarily delivering justice to farmers and landowners whose lands are acquired. These and other challenges related to land reform – particularly in the context of urbanization and the growing need for low-income urban housing – mean that India will have to continue drafting land related legislation to ensure sustainable and equitable growth.

Centre-state dynamics: The evident role of states in influencing economic growth, governance and policies has increasingly become more prominent. States are driving localized growth, enhancing their own investments, and developing models that are being replicated across the country. But the centre needs to do more to facilitate state-state interaction and the states should also be proactive in sharing of knowledge of best practices among themselves. The central government should also seek to do more to balance the uneven growth between states.

Older citizens: While India seeks to harness its young population to drive growth, it must also start planning for increased expenditure on health and welfare services for the elderly. Fertility rates in India are declining as life expectancy increases. There will be more than 300 million Indians over the age of 60 by 2050. ‘Indians never seem to retire’ has been said of people in various sectors, particularly in urban areas, as many continue to work for several years after retirement. Nevertheless, the shifting demographics will add to the burden of inadequate healthcare, welfare services, and families. Elderly women, who will outnumber men, are expected to be the most vulnerable. In addition, there are interesting opportunities and challenges of elderly parents remaining in India while their children have migrated. To tackle these challenges, India must develop policies to ensure that its older citizens too have healthy and happy lives.

India-China trade: Despite various diplomatic standoffs this year, the governments of both India and China remain eager to boost bilateral trade to US\$100 billion in the next few years. No doubt, trade with China is a significant component of India’s economy. But trade relations remain one-way, with more Indian consumers buying Chinese goods than the other way around. India will have to address this trade deficit in the new year by improving its export competitiveness and identifying more goods, services and policies to enhance balanced trade with to China.

India-Pakistan trade: In the past decade, India-Pakistan trade has increased from US\$370 million per year to US\$2.4 billion. But this is just a start. According to some estimates, the volume of a normalized bilateral trade regime could be as high as US\$40 billion. The onus for progress on bilateral trade relations currently rests with Pakistan. Despite repeated calls for improved India-Pakistan ties, Prime Minister Nawaz Sharif, who was elected to power in May, has yet to grant India Most Favoured Nation status. While there is little India can do to boost trade until Pakistan takes this key step, New Delhi should continue its support for increased bilateral trade, as it would be for the benefit of the economies of both India and Pakistan while also helping to improve the political relations between the two countries.

(d) Model Regions (Analysis for Identification of a Region):

Guidelines for development of Regional Model Competency Standards (RMCS) Regional Skills and Employability Programme (SKILLS-AP): National skill standards play an important and increasing role in vocational training and recognition in the Asia-Pacific region as they do in many other parts of the world. They are a guide to the scope of

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skills and knowledge required for a whole industry and can be flexibly combined into jobs or occupations. Skill standards are now the common basis for vocational training programmes, and testing and certification in many countries. This Guideline is for development of Regional Model Competency Standards (RMCS) that can be used in various ways to underpin efficient and effective skill development in the Asia-Pacific region.

The future of work is changing: The nature of work is changing rapidly due to new technology and work organization innovations. This has a dual effect by tending to dramatically reduce the number of low or unskilled positions available globally and additionally putting emphasis on the need to extend worker's skills over a shorter and shorter time frame. It is no longer sufficient to only have initial skills in say, a recognized trade as the changing nature of work will require individuals to regularly upgrade their skills or add completely new ones in order to remain fully employable. Most of this upgrading or addition of skills can be gained in a training centre or within the workplace but irrespective of how competency has been achieved it should be formally recognized in the same way as the initial trade skills were. RMCS can provide a flexible benchmark for the whole range of skills needed in an industry and so support recognition, upgrade training and certification irrespective of where or how the skills were gained.

Work or qualification levels across the region: Skill standards developed in different countries have levels or hierarchies used to group the skills defined. In the Asia-Pacific region, these are usually based upon occupational classification structures and the particular qualification framework for that country. However, both of these vary considerably across the Asia-Pacific region and worldwide in terms of the number of occupational definitions, levels of qualifications and terminology used. For example, common references to concepts such as 'basic' or 'advanced' are used as occupation or qualification descriptors in a number of countries but the definition of these terms is not consistent internationally. As most countries in the region will have a level or classification system for their own particular qualifications or skill recognition credentials, RMCS must allow for this. So, RMCS do not define qualification levels but rather clusters competencies in logical groupings that can be translated into each country's classification system as required. As the movement of labour across borders increases every year, it is important to have a common translation tool such as RMCS to allow the skills of migrant workers to be evaluated simply no matter what qualification they hold.

Benefits of Regional Model Competency Standards (RMCS): RMCS are valuable for the following reasons:

1. Changes in the labour market must be duly reflected in new regional skill standards. The ongoing effects of globalization and technological development have a profound impact on jobs. The skill requirements for most jobs change rapidly so reflecting these changes and providing a basis for regional co-operation is necessary.
2. Companies can use regional model competency standards to describe the skills they need in a common language. Existing workforces can be evaluated against model standards to determine whether the necessary range of skills and knowledge is held by workers and where any gaps may be.
3. The approach to describing workplace needs for human resources in competency standards can accommodate rapid changes in skill requirements, as the process is more closely linked to the needs of industry than course based learning outcomes and curriculum.

4. Previous skill description systems such as Model Occupational Skill Standards (MOSS) used traditional occupations as a basis for clustering competencies.

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The new competency-based model standards are designed for broader industry, industry sub-sector or occupational cluster coverage and so have a wider application and are quicker to develop for industry:

- (i) where there is migration of skilled workers;
- (ii) where there is strong economic development; and
- (iii) where work is service focussed and not only traditional manufacturing trades.

RMCS are simply developed sets of competency standards in streams of occupational or industry sector groupings. It is up to users in any particular economy to determine which of the standards should make up local qualifications or other recognition tools such as licensing. In most countries that use competency standards across their training system, it has been found that whole qualifications are not always the only, or best way to aggregate competencies. Increasingly, smaller sets of skills make up highly valued job roles and assist individual workers not wanting or needing lengthy 'trade' style qualifications.

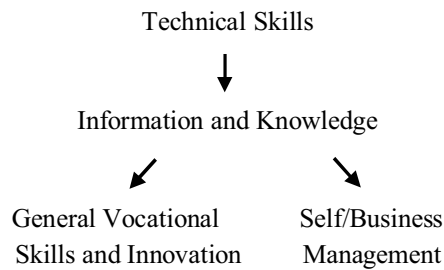
In today's faster paced world of work, even existing workers with respected qualifications still need to upgrade frequently to keep abreast of new technologies and workplace practices. They need to access short, sharp training programmes that put together valuable new competencies that complement each other. There are also many new portfolio workers who undertake a variety of jobs across various occupational sectors according to demand.

An industry focus for RMCS: The RMCS concept deals with a whole industry or major industry sectors not single occupations. This does not mean, however, that recognized occupations, including traditional trades are not covered by RMCS. All the functions and skills to work effectively in an industry or discrete industry sector can be described in a common, competency based format. To do this, the RMCS format is designed to allow various combinations of work functions to be put together to describe whole jobs. This approach can also show combinations of competencies that are the equivalent of existing trade or other occupations. Well-designed RMCS, therefore, accommodate industry job requirements and cross-industry or trade requirements from within the same framework of descriptors. In other words, everyone can get something useful from them as a tool for:

- (i) describing new jobs for any industry;
- (ii) designing vocational training or testing materials for all work, including trades;
- (iii) conducting skills audits at the enterprise or national level, i.e., for assessing the skills of migrant workers;
- (iv) restructuring an enterprise or industry sector for development of new services and manufactures;
- (v) planning for multi-skilling of a workforce; and
- (vi) introduction of team based approaches to work.

The economic success of any countries' businesses will be through high value technical application, innovation, customer service, business acumen and enterprise. Workers in the emerging world economy must be more knowledgeable about their industry culture and enterprise needs and utilize this knowledge to contribute to innovation. The relationship between technical skills, knowledge (technical and vocational), innovation and business/self-management looks like this:

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Competency: It is useful to view competency as being in essence extremely simple, involving being clear about what people in or entering work need to be able to do. When this is described in a standard outcomes-focussed format, it is an essential tool for:

- (i) basing training and assessment, at the least, on those identified outcomes; and
- (ii) certifying that people can actually do what was specified as the outcome and credentialing them accordingly. This requires a standard that enables industry to accurately define its workplace requirements — these are called competency (not skill) standards.

As well as underpinning training and vocational education outcomes, they can provide the benchmark for recognition of competencies gained informally. In other words, it describes exactly what someone should be able to do and not any particular training they should undertake. It also embodies the ability to transfer and apply broad skills and knowledge to new situations and environments. The description of competency must, therefore, capture the way effective workers operate not just list their duties. This is a comprehensive definition of competency in that all aspects of work performance, not only narrow task skills, are included. It encompasses:

- (a) the requirement to efficiently perform individual tasks [i.e., task skills]
- (b) the requirement to manage a number of different tasks within a job [i.e., task management skills]
- (c) the requirement to effectively respond to irregularities and breakdowns in routine [i.e., contingency management skills]
- (d) the requirement to deal with the responsibilities and expectations of the work environment [job/role environment skills], including working with others and in teams.

In addition to being based on this broad concept of competency, RMCS have to be:

- (i) related to realistic and current workplace practices;
- (ii) expressed as outcomes; and
- (iii) written in clear, simple, user-friendly language that is readily understandable to employees, employers, trainers, supervisors, and trainees.

RMCS also incorporate appropriate underlying skills and knowledge as this relates to competence in regional workplaces, and deal with attitudes and values in a way that focuses on the outcomes to be achieved rather than the views of individuals. It is important that the standards are free of bias and discrimination. There is a common international terminology used in competency standards development.

The Structure of RMCS: Regional Model Competency Standards have the following three primary components:

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1. Industry Descriptor and Coverage
2. Primary Functions
3. Units

The third component – Units – are structured with four sub-components:

- Performance Criteria
- Evidence requirements
- Critical Skills and Essential Knowledge
- Range Statement

Let's look at each component and sub-component in turn with examples of how they are used and drafted.

Industry Descriptor and Coverage: A Regional Model Competency Standard for say, the air-conditioning industry might include the following information in its description and coverage statement:

The intention of this opening RMCS statement is to describe succinctly and clearly what the whole set of model standards covers in industry or industry sector terms. It is important not to simply go to occupational descriptions because one industry may use skills from many occupations and, conversely, occupations can cross a number of different industries. The descriptor and coverage needs careful consideration because it defines the parameters of the model standards being developed and sets the boundaries of the skills defined.

Primary Functions: Continuing with this example of an RMCS Industry, description and coverage, one of the primary functions for our air-conditioning industry could be:

Primary Function: Install, test and commission domestic air-conditioning systems. This is a broad range of work that occurs after specifications for an air-conditioning system have been determined. The system has been built or acquired and is now ready for installation. It would be broken down into a number of different actions and each will require a range of skills to be used. This is where the RMCS Unit structure comes in.

Units: Again using the above example of a Primary Function in Air-conditioning installation, some of the relevant Units could be:

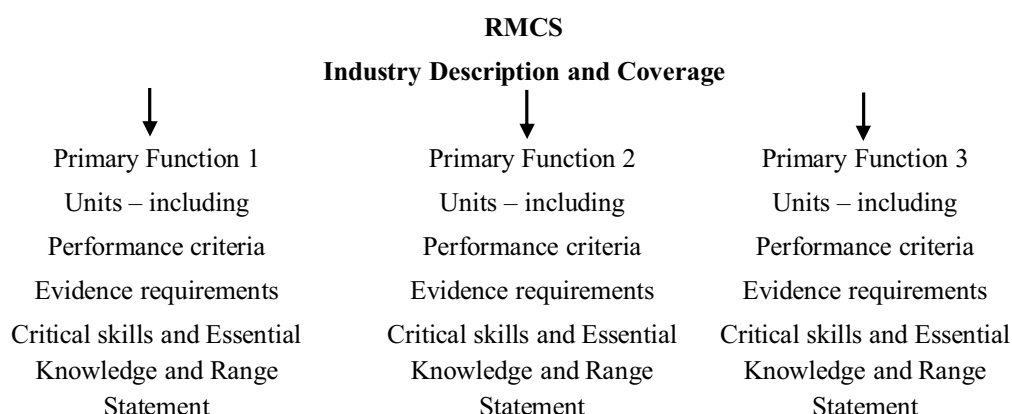
1. Planning work to meet all requirements of installation drawings and technical specifications;
2. Installing with minimal structural displacement, to a clean finish and within relevant building codes of practice;
3. Connecting the system to domestic power supply in a safe manner which meets applicable electrical regulations;
4. Testing and adjusting system to ensure flow rates, noise levels, and filtering meet system specifications and customer requirements;
5. Commission system and hand over to customer with appropriate warranty documentation, operating instructions and maintenance schedules accurately completed and explained.

Performance Criteria: The first example Unit above would have a number of Performance Criteria describing real work outcomes. They are drafted to describe in detail the skills a worker applies when undertaking the work defined in the Unit. While quite concise, they must set out fully what is done, how well the work should be performed and

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allow for a measurable outcome. This shows a fundamental beginning process in undertaking the task of installation where the worker has to read and interpret plans and make decisions about the resources or tools required and how long it will take to complete the work. It is an essential aspect of professional performance and easily measurable and assessable through observation in the workplace or a simulated work situation (i.e., a training college). It is not just about being able to read a plan but also about understanding it and using judgement and planning.

RMCS Format: Each preface to an RMCS should have the Industry Description and Coverage statement and outline the major functions also briefly described, followed by a diagram to make this information clear. Shown diagrammatically below is the simple structure that illustrates the relationship between the components. The primary functions would be shown as illustrated and the detailed Units would follow in the RMCS in the same order as the functions.



An important feature of RMCS is that they cover a whole industry in this broad, functional structure and not by identifying discrete occupations or job roles. This is because as regional model standards they cannot accommodate every possible combination of skills that would make up all the recognised occupations in various countries. Traditional trade roles and the different stages of development across the region means defined occupations are not easily compared between countries. In addition, many countries have developed levels within their trades or national occupations and linked these to local qualifications.

RMCS Component Details: This section of the Guidelines shows examples of how an industry might construct an RMCS. A companion document to these Guidelines is a full example of an RMCS for the Tourism Industry to show how each component is set and defined. So, the following uses Tourism examples plus other different industry models in each case for comparison and to best illustrate the quality requirements.

Industry Descriptor: Regional Model Competency Standards cover the Tourism sector and include competencies for:

- Tour Operations
- Guiding
- Attractions and Theme Parks
- Travel Services (Retail and Wholesale)
- Visitor Information Services
- Meetings and Conventions
- Tourism Product Development

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The scope of the standards is for entry level to middle management and encompasses common sector skills in the areas of customer relations, tourism product development, sales and bookings, travel and tour operations and tourist attractions. There is also inclusion throughout of competencies that are not exclusive to the Tourism industry but are common skills that could apply to many different workplaces. These include:

- Customer Service
- Hygiene, Health, Safety and Security
- General Administration
- Financial Administration
- Computer Technology
- Technical and Maintenance Services
- Merchandise Sales
- Training
- Management and Leadership.

Primary Functions: Every RMCS will have a number of primary functions. How many of these are there depends upon the particular industry or occupational cluster covered by the RMCS. Each primary function describes the major type of work involved – administrative, technical and so on with a range of contexts for its application. Careful construction of the primary functions is necessary as they determine the utility of the whole RMCS. This is the major difference between defining a set of model standards for an industry or a similar exercise for an occupation. Occupations are definitions of sets of skills with broad descriptions of how they are applied but they do not easily show what skills are brought to bear in any particular industry or enterprise. Working from what occurs in an industry allows all the work functions to be defined not just those covered in traditional trades or well-known jobs. It shows how work interrelates across an industry and what the full range of skills necessary are.

Units: RMCS should provide the basis for skill formation now, and in the future. Capturing the ability to apply skills in new situations and changing work organization rather than only reflecting the tasks currently performed. Each primary function has a number of Units describing the work in more detail. These are statements about what particular work is done – utilizing certain technology or materials, working with others or alone, operating within certain regulatory requirements and so on – and the performance measures that apply to a competent worker. It is vital that these are in outcome terms and do not simply describe a process or input. Each begins with a brief statement of what the Unit covers. As industries develop RMCS, it is important to pinpoint current and likely changes, and identify the skill requirements emerging from these in the coverage statement. It is one of the most vital aspects of making model standards really useful and ‘futureproof’.

Performance Criteria: Performance criteria are evaluative statements in a Unit which specify what is to be done in the work environment and the required level of performance. It is here that the activities, skills, knowledge and understanding which provide the evidence of competent performance, are specified as outcomes within the Unit. Considering the following principles and examples will support development of good performance criteria. Breadth and precision in expression is essential.

Evidence: The next component of the RMCS is guidance on the sort of evidence that would support an assessment process and determine if an individual really held the

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competencies described. Evidence covers the sort of broad activities that should be observed or simulated in an assessment to reliably attest to a person being able to apply a competency in a realistic workplace environment and include the modes of evidence that are best for the competency:

- (i) direct observation for some units;
- (ii) written or oral testing for others; or
- (iii) evaluation of longer term work or practice outcomes such as complete products, service records and so on.

An RMCS Evidence requirement needs to provide information on the ways in which competency can be reliably determined – as previously noted, it is particularly important to cover aspects of work that are not easily observable in routine situations. In the Tourism RMCS, one of the primary functions covers tour guiding. A Unit might deal with guiding a group of tourists in remote or potential hazardous situations. An Evidence statement might, therefore, be required which ensures a trainer or assessor evaluates whether the potential tour guide understands the safety and environmental aspects of guiding their clients.

Critical Skills and Essential Knowledge: Skills and knowledge are integrated into all competency standards although how this is done can vary. The practical skills to be demonstrated in an occupation or job are best interwoven into the performance criteria rather than separately referred to but a list of what might be termed ‘critical’ skills can be noted. Using our Tourism RMCS, a Primary Function component is promoting and attracting tourists to events such as sporting tournaments, concerts and so on. A Unit dealing with communicating with clients to ascertain their needs in this regard would have Critical Skill aspects to be assessed.

Critical applications of competency might also include having sufficient theoretical knowledge to source alternative options/strategies, based on the evidence, i.e., problem solving skills including knowledge of some broad process. This is illustrated in a competency from an RMCS for Automotive Service and Repair dealing with the technical skill of diagnosing faults in vehicles.

Essential Knowledge: The application of knowledge is usually the key to the transfer of competency to new situations. In addition, underpinning knowledge has to be assessed in order to ensure that the person understands the ‘why’ as well as the ‘how’ in the work they perform. Knowledge and understanding this implies should always be placed in the context of actual workplace operations and not treated as a separate aspect of performance such as being exhibited in tests. For RMCS, essential knowledge may best be developed as a separate list and although it must be specific to the functions and units being described it and should be indicative rather than overly prescriptive.

Range Statement: An important information source in RMCS is a Range Statement covering the many possible ways in which the work could be performed. A range description is beneficial where different technologies are used regionally or within a country for essentially the same work outcomes, or where legislation is likely to apply but will differ according to the country where the work is carried out. The Range Statement sets the parameters for application of the competency and usually tries to capture the types of work, resources, services and so on that would come into play when the competency was being used. An example would be a Unit that dealt with the common function of collecting, ordering and storing data. Clearly, there are unchanging aspects of competency for this work that requires understanding of the process and outcomes such as:

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- (i) accurate interpretation of the data gathered for classification purposes;
- (ii) systematic collation of the data in logical groups; and perhaps
- (iii) accurate transcription and secure recording.

But what may be different in applying the function is the means of handling, manipulating and storing the data which could in some cases be paper-based and manual, but also possibly fully computerized or even a mix of both at various stages. A Range Statement that noted the competency could be applied in these various ways is therefore valuable and does not confine it to particular techniques or technology. Full achievement of the competency may, of course, need to demonstrate in one or all possible modes of application.

Developing RMCS: The first stage of drafting an RMCS is specifying a discrete industry or industry sector and then managing the process of identifying its competency needs. This may be done through a variety or combination of techniques, including DACUM or modified DACUM, Functional Analysis, Nominal Group Technique and Critical Incident Analysis. These data gathering techniques require an expert focus group approach to qualify, order and group competency requirements for an industry, sector or enterprise. This is often the most difficult part of the process, as it requires reaching consensus on what industry future work requirements may be rather than simply reordering data about what currently occurs. A Delphic type approach is, therefore, sometimes an aspect of the development work although full, iterative Delphi surveys are not commonly used in the development process.

Focus groups should include:

- (i) representatives from typical enterprises across the industry
- (ii) employer bodies and associations representing major aspects of the work covered
- (iii) worker's organizations
- (iv) expert employee representatives
- (v) professional associations where they exist
- (vi) regulatory or licensing bodies where relevant
- (vii) educators and trainers with special expertise
- (viii) other industry bodies with existing similar or potentially overlapping standards

The groups will need an expert facilitator – who may or may not have experience in the industry for which the standards are being developed. The facilitator must, however, fully understand the format and underpinning principles of the RMCS and be adept at synthesizing the data provided by the industry experts into coherent and useable standards.

Relationships between Work Roles, Progression and Portable Recognition: It is usually the case that workers, even acknowledged 'experts', see their own particular job in sharp focus and this view may possibly extend to a few closely associated colleagues, subordinates and supervisors. Their understanding and appreciation of the work of most others in an organization is usually much less clear, however. Thus, opportunities for extending workplace networks, working in more harmonious and productive ways and perhaps understanding career progression options can be lacking. RMCS must try to capture all the interrelated work roles in an industry by gathering data from everyone and giving this a broad perspective. They should show all work interrelationships, and make transparent the work roles and responsibilities of others.

Through good RMCS, individuals will be able to see their potential for job and career satisfaction may not necessarily rely upon a vertical progression through a narrow stream of

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expertise. In the modern enterprise's flatter structure, traditional vertical career progression is less likely and may in any case entail a complete shift of skill and knowledge application. Progression may well be through multi-skilling or holding a pivotal, even rotating role in a team-based organizational structure.

Validating RMCS: After developing each component of the RMCS that expresses these industry requirements clearly and comprehensively, the draft RMCS should then be agreed as accurate by a peak national group representing the industry. This might be an especially convened steering group from the RMCS development project, or an existing body that has credibility in the industry or sector. Ensuring the RMCS are in a consistent format and validated by a broad representative industry body means users of the standards are able to trust, understand and consistently interpret what is presented. Users include employers, agencies assessing skill development and recognizing trade level achievement, and training institutions needing to use the standards for training programmes. To ensure the success of the validation process, it is worthwhile developing a validation approach that takes into account the following:

- (i) the size and geographic distribution of the industry so that representative enterprises can be involved;
- (ii) the diversity of the industry in terms of technology utilized and products produced;
- (iii) the worker profile to ensure all competencies are included not just those of a few recognized trades;
- (iv) the costs of validating so that the process – important as it is – does not become too expensive to undertake; and
- (v) the timeframe available, which cannot be extended indefinitely if the RMCS are to be made available.

In essence, the final draft of the standards should be presented to as wide an audience as possible. Validation also requires more in depth involvement from participants than just providing editorial comment on copies of draft standards. Validators should be encouraged to critique all aspects of the standards – their structure, functional breakdown, performance criteria, knowledge requirements, bias and discrimination and so on.

2.2 REGIONAL APPROACH TO THE PROBLEMS OF BACKWARD ECONOMY

Regional Balance and Planning

Issue of regional balance has been an integral component of almost every Five Year Plan. Adoption of planning and a strategy of State-led industrialisation with plans and policies designed to facilitate more investments in the relatively backward areas were intended to lead to a more balanced growth in the country. It was expected that, over time, inter-state disparities would be minimized. However, the perception is that regional imbalances have actually got accentuated, particularly over the past 15 years. This is not altogether surprising. Different parts of the country are in different stages of development and development has not been uniform at any point of history. Even the problem of intra-state inequalities has not been adequately addressed, with regional disparities persisting within all states (including the relatively prosperous ones) to a greater or lesser degree. The Centre has an important role to play in promoting balanced development in which all states, and regions within states, have the opportunity to develop evenly. This equity promoting role demands

that greater efforts be made to remove the gaps in the provision of human development and basic services and infrastructure so that no region or sub-region and no group remains deprived of the fruits of development and at least attains a minimum standard of living. The equity-promoting role of Central planning assumes added importance in the wake of the emerging policy environment. With the opening up of the economy and removal of controls, the play of market forces may tend to exacerbate disparities. As the economy gets increasingly integrated with the global economy, the Centre may be required to play a stronger equity-promoting role and to secure sufficient space for all the federal units to work out their own strategies of development, harnessing global regimes or forces for the purpose, rather than being overwhelmed by them. Centre would also be required to ensure suitable a macroeconomic policy framework for the growth of the economy to meet the aspirations of the people. The Tenth Five Year Plan had recognized that the concept of regional disparities would need to go beyond economic indicators and encompass social dimensions as well. Furthermore, the focus on inter-state disparities masked the incidence of intra-state disparities. The Tenth Plan had, accordingly, advocated a multi-pronged approach to provide additional funding to backward regions in each state, coupled with governance and institutional reforms. Midway through the Plan, the Mid-term Appraisal seeks to take a fresh look at the key issues involved and strengthen/refocus strategies as warranted by the present situation and the lessons gained through experience.

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Issues and Strategies

There is no clear historical consensus on the best mechanism for reducing regional disparities. For several years, direct investment in public sector units and capital and other subsidies for the private sector in backward regions was seen as the best way of addressing regional imbalance through capital formation as well as income and employment generation. Other mechanism, which continues till date, is ensuring a greater share in Central finances for backward regions through the transfer formulae used by the Planning Commission and Finance Commission. Two broad approaches emerge from the lessons of past experience. The first involves proper identification of backward areas and targeting them with additional resources and investments to help them overcome the infrastructural deficiencies that contribute to their backwardness. Ideally, the policy directions and strategies adopted should seek to redress iniquitous policies and support the innate strengths of these areas. The second approach would be to seek to improve the overall environment for the economic growth of less developed states and areas through a combination of major infrastructure interventions, institutional reforms and appropriate incentive structures. Key issues and directions are set out below.

National Goals and Targeting

The Central Plans have traditionally focused on setting only national targets. However, recent experiences suggest that the performance of different states varies considerably due to variations in potentials and constraints. For instance, although the growth of the economy as a whole has accelerated, the growth rates of different states have varied and has even decelerated in some of the poorest states. It is important to recognize that the sharp increase in the growth rate and significant improvement in the social indicators that are being contemplated for the Tenth Plan will be possible only if there is a corresponding improvement in the performance of the relatively backward states. Indeed, if the higher targets were sought to be achieved simultaneously with the relatively slower progress in some of the most populous states, it would necessarily imply a very large increase in inter-state inequality.

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Geographical Features

Most of the more developed states seem to be located in the western and southern parts of the country and have vast coastal areas. The group of relatively backward states are in the eastern and northern parts of the country and are mostly in the hinterland. Studies have shown that India's growth has been urban-led, favouring those states where urbanization is already high, perhaps due to coastal access (e.g., Maharashtra, Gujarat, Tamil Nadu) or where there is relatively high productivity of agriculture (e.g., Punjab, Haryana). Even with faster overall growth, the inland areas are likely to continue to grow more slowly than coastal areas, widening the gap between fast and slow growing regions. This may lead to increasing internal migration from rural areas to cities and from interiors to coastal areas. Another distinct geographical region that remains less developed is the north-east. The economic backwardness of the north-eastern states is a special feature that seems to have a lot to do with their geographically disadvantageous location. However, the political, social, cultural, educational and security aspects also seem to have a bearing on the region's economic growth. The states located in the hilly terrains face additional per capita costs of providing development services due to what may be termed as a divergence between the surface area and the geographical area of the state. For example, even though Himachal Pradesh and Punjab have identical geographical areas, the surface area of the former is double that of the latter. Hence, more resources are required to deliver services to a hilly state as compared to a state in the plains. Distance from the markets adds to the economic backwardness of hilly states.

Natural Resources Forests

The contemporary economic perspective on the preservation of forests is that it is an environmental public good, generating positive externalities for multiple stakeholders beyond the local level. There are costs, including opportunity costs, associated with forest preservation, which are borne by local stakeholders while benefits accrue to a dispersed group of stakeholders (the country and the world at large). For instance, the ban on green felling has meant that many states with large forest cover have had to forego revenues from this source. These also happen to be mostly less developed states, such as Himachal Pradesh, Uttarakhand, Chhattisgarh and the north-eastern hill states. It is possible to quantify the costs and benefits of forest preservation. If regional balance is to be encouraged by leveraging the innate strengths of the less developed states, there is no reason why these already relatively backward states alone should bear the country's economic burden of environmental conservation. Consideration needs to be given to evolve a suitable mechanism to compensate. In some way, these backward states with a high proportion of land under verified forest cover, for providing this public good. This would be a pro-equity entitlement that would create a level playing field and reduce the inherent economic disadvantages of backward, forested states.

Minerals

Similarly, mineral-rich states like Bihar, Jharkhand, Orissa, Madhya Pradesh, Chhattisgarh, Andhra Pradesh and West Bengal are all also relatively backward states. Large concentrations of tribal population live in the mineral-rich areas of these states; these also tend to be amongst the most deprived groups and the poorest areas within the state. Due to shortcomings in the existing royalty system, lateral transfers are, in effect, taking place from these backward states to the rest of the country, accentuating regional imbalances. Royalty rates are, unfortunately, fixed with the well-being of the public sector coal industry being the primary concern of State policy. The key issue is the linkage of royalty on coal with the competitiveness of the coal industry. It would be rational and just to delink royalty from the

performance of coal companies. In case the Central government feels that warranted increases in the royalty rate might be injurious to the health of coal companies, and desires to prop them up nevertheless, it should subsidize these companies in a transparent manner. Because of the implications of this policy for the mineral-rich, backward states, this step alone would go a long way in redressing past inequalities and sending a strong signal indicating the commitment of the Centre for regional balance.

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Infrastructure Endowments

Many of the less developed states have had less favourable initial infrastructure endowments relative to other states. This is evident in the Index of Social and Economic Infrastructure prepared by the Eleventh Finance Commission. Bihar, Madhya Pradesh, Orissa, Rajasthan and most of the north-eastern states are ranked low in the Index. On the other hand, more developed states like Goa, Punjab and Gujarat, to name just three, have better infrastructure endowments. There is, arguably, a greater need for higher levels of investment in social services and infrastructure in the relatively backward states as compared to the more developed states. The governments of the backward states tend to be fiscally weaker and are, therefore, unable to find enough resources to meet the huge investment requirements needed to catch up.

On the other hand, the more developed states are fiscally better off and, therefore, able to improve their social and economic infrastructure further and thus attract private investment, both domestic and foreign. Conversely, the backward states are caught in a vicious cycle of being unable to attract private investments because of the unfavourable investment climate and poor infrastructure and not having resources to improve the infrastructure. The challenge is to break this vicious circle.

The Bharat Nirman announced by the Finance Minister in his Budget Speech for 2005-06 is an over-arching vision to build infrastructure especially in rural India. Conceived as a business plan to be implemented over four years, Bharat Nirman has six components namely, irrigation, roads, water supply, housing, rural electrification and rural telecom connectivity.

Public Investment

In the past, especially during the first three decades of planned development, a major catalyst for the development of backward regions was the massive central investment in key sectors. Though these investments might not have triggered regional development, they had a positive impact in a number of backward regions in various states. Since the early 1980s, the scope and role of such direct Central investment have been steadily declining. The liberalization process, reforms in financial and industrial sectors and budgetary constraints of the Union government have further reduced the scope of such Central investments. The main instruments of Central support for less developed states now are resource flows to the states via Finance Commission awards and Planning Commission allocations. These are likely to remain largely equity based and in favour of backward states.

The Gadgil Formula for transfers of Plan funds (normal Central assistance) to states has been in force for over 30 years. The Formula has ensured a predictable flow of non-discretionary financial resources from the Centre to support the development of the states. However, it should be recognized that while equity would have been a major consideration in drawing up the Formula, its operation does not seem to have noticeably mitigated regional disparities. The actual flow of funds to backward states resulting from the operation of the Formula till date needs to be analyzed and the Formula may need to be revisited in the

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present-day context. In particular, all such formulae and transfer mechanisms should be reviewed to ensure that not only are they transparent but also that the instruments to tackle regional disparities have in-built mechanisms to ensure that a State's own efforts towards bringing about regional balance are rewarded. More importantly, the formulae should not promote perverse incentives, that is. the incentive to remain poor.

Capital Flows

In the early Plans, capital flows, whether public or private, were largely regulated and directed in nature. However, post-liberalization, and in particular during the last two Plans, private, institutional and external capital flows have tended to become more and more market-determined. The pattern of distribution of these flows is a subject of increasing interest. There is a correlation between per capita capital inflows and the state of infrastructure. States attracting relatively larger per capita capital flows are also better placed in the infrastructure index. Of the various kinds of capital flows, those arising out of disbursement from externally aided projects (EAPs) require special mention. This is because, in the present era of resource constraints, it is imperative for state governments to maximize additionalities to their domestic resources to the extent possible. EAPs are the single most important potential source of augmenting the State's resources because, typically, between 70 percent and 90 percent of expenditures on EAPs are reimbursed to the state in the form of Additional Central Assistance (ACA) and there is no ceiling on the amount a state can receive as ACA. The amount of ACA received by a state by way of external assistance depends only on the efforts made by the state, primarily in terms of efficiency of project implementation, preparation of project proposals keeping in view donor agency requirements, aggressive follow-up of proposals, and projection of a positive perception of the state, specially in matters relating to governance and reforms. This appears to be the only window in which it is possible for less developed states to attract financing for developmental efforts, even if they are not so well off or well endowed in terms of infrastructure. Both Andhra Pradesh and Orissa, among the top five states receiving highest levels of per capita per annum assistance during the Ninth Plan, are cases in point. In absolute terms, less developed states like Uttar Pradesh and West Bengal, to a large extent, and Madhya Pradesh and Rajasthan, to a lesser extent, have also done well. The link between capital flows and high income/infrastructure levels seems to be the weakest in EAPs in relation to other forms of capital flows, and this indicates considerable scope for state initiative.

Intra-state Disparities

Some of the factors explaining inter-state disparities do not automatically apply in the consideration of intra-state disparities. States are administratively homogenous units. Favourable treatment to, or alleged neglect of, a state by the Central government cannot be an explanation for uneven development between regions within a state. Nor can financial constraints faced by a state be a reason. These factors are neutral within a state. Yet, most states have large intra-state disparities. Interestingly, some of the most prosperous states have the largest intra-state disparities. While particular areas may have certain limitations and constraints in making very rapid progress on human development, owing to geography and limitations of natural resources, an entitlement in terms of a minimum standard should be attainable for all. There is, thus, a case for setting of public policy goals for achieving defined minimum standards in key indicators of human development for the entire state. One way of starting would be to focus attention on the districts lagging behind, establish feasible and doable levels of desired human development outcomes, and direct priority attention as well as

an adequate flow of public resources to those districts. This approach could be encouraged and monitored in the Planning Commission's dialogue with the states on State Plan priorities.

The Commission should also consider putting into place a mechanism to financially or otherwise reward states (whether more or less developed) that have achieved a significant level of intra-state regional balance as assessed by objective district-level indicators. Alternately, there could be a disincentive mechanism that would apply to better-off states that have large regional disparities, in order to encourage all states to proactively strive for greater regional balance.

Tribal Areas

The tribal areas, in particular those in the central India, are arguably amongst the most backward areas of the country. The planning system has attempted to address the special financial and developmental requirements of these areas through the Tribal Sub Plan (TSP), adopted since the Fifth Plan. The TSP enables the development of special strategies and the earmarking of funds (proportionate to the tribal population of the state) within the State Plan for the tribal areas.

The idea was to provide a thrust to development of the tribal areas, to improve livelihood opportunities and fill critical gaps based on the special needs of the population of these areas. However, in practice, TSP has become a loosely-knit agglomeration of schemes prepared by line departments and driven more by departmental priorities rather than any broad philosophy or thrust on tribal development. People's participation is conspicuous by its absence. There is no objective assessment or evaluation of earlier efforts. The programme achievements are measured in financial terms, and not in outcome terms. The TSP needs to be looked at as an integrated pool of funds that should be deployed only in a few key priority areas and activities that are needed to achieve minimum norms of human development in the target areas and raise income levels of the scheduled tribes residing there. The TSP should be reviewed, revamped, energized and taken seriously. This will also go a long way towards improving regional balance, and reducing intra-state disparities.

Decentralization and Local Initiatives

Local ownership and initiative are critical for the successful implementation of development programmes. Externally imposed plans are unlikely to lead to successful outcomes unless they are supplemented by local initiatives. Enabling local decision-making on development issues will also reduce the likelihood of neglect of certain regions or districts due to centralised State-level compulsions. Decentralized decision-making structures, therefore, have to be vigorously promoted, and the Constitutional provisions relating to district planning and panchayati raj institutions (PRIs) implemented with the active encouragement of the Planning Commission. There is absolutely no reason why non-compliance of these Constitutional provisions should be allowed to persist for so long. Decentralization of funds, functions and functionaries to the third tier of governance needs to be closely monitored and linked with allocation decisions.

Governance Reforms

The quality of governance is an important factor influencing the pace of socio-economic progress of a state. Successful implementation of development programmes requires adequate funds, an appropriate policy framework, formulation of suitable Plan schemes, and effective delivery machinery. Past experiences suggest that availability of funds, though important,

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may not alone be adequate to tackle the problems of poverty, backwardness and low human development. What is equally important is the capability of the delivery system to effectively utilize these funds and implement schemes on the ground. There are deficiencies in both respects. Governance reform needs to be at the centre-stage of development planning, since without good governance and programme implementation, much of the vast quantity resources being spent for development is wasted. Governance reforms have, in recent years, been the focus of the Planning Commission's development strategies. The Tenth Plan document had outlined an agenda for governance reforms. It includes a multifaceted strategy based on decentralization, civil service renewal, open and responsive government, tackling corruption and strengthening the rule of the law, and fiscal and environmental sustainability. These directions remain relevant today. The administrative framework needs to be significantly strengthened particularly in the north-eastern states. The reach of the administrative network is weak in several of these states, leading to difficulties in implementation of most development schemes. Funds continue to flow through the defunct autonomous districts councils where elections have not been held for a long time. As a precursor to development initiatives, the unfinished agenda of strengthening the administrative framework in the region needs to be addressed and satisfactorily resolved on priority.

Single Economic Space

Another fiscal issue that needs to be addressed urgently is that of the distortions in incentive structures caused by existing competitive policies, particularly in the industrial sector in the form of industrial incentive policies, as well as the negative impact of the existing economic barriers between states. Subsidies, whether based on capital investment or interest, cause a direct outflow from the exchequer. Tax concessions and exemptions carry a cost in terms of revenue foregone. This, it is argued, is a short-run sacrifice for the long-term objective of enhancing the State's taxable capacity by attracting industrial investment. Evidence from different states so far, however, seems to indicate that the claimed benefits of such policies are suspect, and usually not commensurate with the losses to the state exchequer. That is something that cash-strapped backward states in particular can ill afford. Similarly, inter-state trade barriers exist in the form of border check posts and octroi/local taxes. These barriers inhibit the free flow of commerce and reduce income generation. There needs to be a consensus on the idea of a single economic space in the country, to maximize efficiencies and productive potential of business and commerce, which would also give a fillip to the economies of the less developed states according to their comparative advantages. The varying sales tax regimes in different states also distort market incentives and lead to loss of revenues on various counts. There is consensus that the implementation of value-added tax (VAT) is an important step forward in the rationalization of the indirect tax regime and one that will stimulate economic activity and help increase revenues of all states. There is a need to recognise the commonality of interests of states and work together towards the objective of creating a common economic space, which can release growth-enhancing efficiencies for all states, thus equalizing economic opportunities.

Reform-linked Targeted Funding Initiatives

The Tenth Plan had stated that a core element in the Planning Commission's strategy towards reducing regional disparities is the targeting of less developed areas with funds for capital investments and innovative delivery mechanisms linked to institutional reforms. The Rashtriya Sam Vikas Yojana (RSVY) was initiated in 2002-03 with a view to assist the development of backward areas through additional grants for developmental programmes that

would help reduce imbalances, speed up development and help these areas overcome poverty, besides facilitating the states to take up productivity enhancing reforms. Although yet to be fully operationalized in all the targeted districts, RSVY has got off to a promising start, and the concept needs to be developed further in the light of experience.

The Tenth Plan had also proposed that RSVY funding should be available to a state only if the concerned state government undertakes an agreed set of reforms. Reforms in the administrative and fiscal structure, in policies related to the day-to-day life of the ordinary people and in the way financial and administrative powers are delegated are needed to supplement the flow of funds. While the targeting of funds to certain identified most backward districts and certain conditionalities on good administrative practices in the targeted districts have been operationalized, the economic reform linkage has not. Admittedly, state-level institutional and economic reforms are needed to enhance the growth potential of states. However, while these reforms may be desirable in themselves, they may not necessarily help redress inter-state and intrastate regional disparities. In fact, the impact of reforms in the initial stages may even be to widen these disparities. The focus of the RSVY approach needs to be kept on the issue of regional balance, and the scheme modified and strengthened according to this focus. The criteria for identification of backward districts under RSVY also need to be revisited. Human development indicators like the literacy rate and the infant mortality rate (IMR), which are now universally and nationally recognised as better indicators in assessing the level of living of the people of an area, should also be included.

Policy Considerations

The directions outlined above would help in addressing the problem of growing regional disparities. Directed flow of financial support to less developed states remains the primary instrument available to the Centre for the purpose. However, a key issue is the approach to be taken if, despite this, the desired development does not occur, governance and implementation does not improve, and the states remain backward. It could be argued that preferential funding should be made strictly conditional on reforms. At the same time, it is probably not an equitable or feasible option to actually curtail or reduce the flow of additional resources to less developed areas. Rather, it will be necessary to continue directing additional flows to these areas in the most effective way that is possible. This is a challenge that needs to be recognized and addressed in the formulation of any approach towards bringing about greater regional balance.

Basic approach has to be an outcome driven one. Additional funding must be seen as only the instrument to achieve the desired outcomes, and not as an end in itself. It should be possible to define nationally acceptable minimum norms of human development and infrastructure development that every district in the country must attain, and direct policies, initiatives and funds to fill the normative gaps and achieve these standards. Central initiatives such as the Sarva Shiksha Abhiyan and the proposed employment guarantee legislation are examples of such normative approaches.

This will require changes in the pattern of providing Central assistance to State Plans. If the intention is to sharpen the focus of planning for the states towards improving regional balance, the idea of providing significant allocations out of this Central assistance for funding to support regional balance initiatives needs to be considered. The question of how these significant allocations are to be provided needs to be considered. Since the total Central assistance is likely to increase only incrementally from year to year, these allocations have to be found from within the existing flows, by reorienting their present content and direction.

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Presently, block loans or grants in the form of normal Central assistance to support State Plans are provided as non-discretionary flows according to the Gadgil Formula. The Formula can be modified only through a consensus in the National Development Council. Recent proposals for modification have not been able to generate the required consensus among states. It appears that normal Central assistance is likely to continue in its present form in the near term. However, this is not the only channel for Central Plan assistance to states. More than half of such assistance is allocated through a number of sector-specific schemes of special central assistance or ACA. Some of these schemes are area development programmes targeting hill areas, tribal areas or the north-eastern region. Such area development schemes tend to be consistent with regional balance objectives. Apart from these few schemes, a large number of the ACAs are essentially discretionary flows tied to a particular programme or sector reform initiative of the Central government, generally relating to subjects in the jurisdiction of the states. Most of these are indistinguishable in intent and content from centrally sponsored schemes. It could be argued that if these ACAs are truly necessary for achieving desirable sectoral objectives, they could well be continued by the Central ministries and departments as centrally sponsored schemes.

2.3 SUMMARY

1. Our regional images are often based on unexamined and outdated metageographical conceptions of the world — a perspective dubbed the “jigsawpuzzle view” that assumes discrete, sharply bounded, static continental units fit together in an unambiguous way.
2. Increasing emphasis on the global-regional relationship has led to paying more attention to functional and subregional relations, even though the nation-region nexus is still predominantly viewed in physical and state-centric terms.
3. The study of regionalism is also undergoing a methodological renewal that is manifested in the new divide between rationalist and constructivist research agendas regarding the processes of region formation.
4. The process of globalization, although partial and variable in nature, is creating an increasingly autonomous economic reality that interacts directly with both national and regional economies.

2.4 SELF ASSESSMENT QUESTIONS

I. Fill in the Blanks

1. _____ and _____ emphasize geographical proximity and specificity as the key defining traits of a region.
2. The study of _____ is also undergoing a methodological renewal that is manifested in the new divide between _____ and _____ research agendas regarding the processes of region formation.

II. True and False

1. During the cold war, bipolarity and nuclear weapons created contextual effects that contributed to the emergence of a semi-global system.

2. In the last couple years, it has become clear that unilateralism rather than concert behaviour is the main rule in this area of the world.

NOTES**III. Multiple Choice Questions**

1. Regional Model Competency Standards have the following three primary components _____.
 - (a) Industry Descriptor and Coverage
 - (b) Primary Functions
 - (c) Units
 - (d) All of the above
2. Well-designed RMCS, therefore, accommodate industry job requirements and cross-industry or trade requirements from within the same framework of descriptors. In other words, everyone can get something useful from them as a tool for _____.
 - (a) Describing new jobs for any industry
 - (b) Designing vocational training or testing materials for all work, including trades
 - (c) Conducting skills audits at the enterprise or national level, i.e., for assessing the skills of migrant workers
 - (d) All of the above

Short Answer Questions

1. Define the term 'Demography'.
2. Define the term 'Neonatal Health'.

Long Answer Questions

1. Critically analyze in detail about the 'Model Regions (analysis for identification of a region)'.
2. Explain in detail about the 'Regional approach to the problems of backward economy'.

2.5 KEY TERMS

- Demography
- Neonatal Health
- Unilateralism

2.6 KEY TO CHECK YOUR ANSWER

- I. 1. Edward Mansfield, Helen Milner, 2. Regionalism, rationalist, constructivist.
- II. 1. True, 2. (b) True.
- III. 1. (d), 2. (d).

UNIT II: STRATEGY OF AGGLOMERATION AND ITS IMPACT ON LOCATION ANALYSIS

3

Chapter

AGGLOMERATION, TRANSPORTATION AND LOCATIONAL ANALYSIS

Objectives

This Chapter is focused on the following objectives:

- Location of agglomeration
- Agglomeration economic Weber [Agglomeration economies and Location decision-making of firms in Location-triangle Approach]
- Locational agglomeration (Agglomeration benefits and location choice) theories of localization
- Transport cost and location
- Locational interdependence
- The importance of transport in business' location decisions (location and decision criteria)

Structure:

- 3.1 Location of Agglomeration
- 3.2 Agglomeration Economic Weber [Agglomeration Economies and Location Decision-making of Firms in Location-triangle Approach]
- 3.3 Locational Agglomeration (Agglomeration Benefits and Location Choice) Theories of Localization
- 3.4 Transport Cost and Location
- 3.5 Locational Interdependence
- 3.6 The Importance of Transport in Business' Location Decisions (Location and Decision Criteria)
- 3.7 Summary
- 3.8 Self Assessment Questions
- 3.9 Key Terms
- 3.10 Key to Check Your Answer

3.1 LOCATION OF AGGLOMERATION

Agglomeration Economies

Agglomeration economies or external economies of scale refer to the benefits from concentrating output and housing in particular areas. If an area specializes in the production

of a certain type of good, all firms can benefit from various factors like: (i) Good supply channels; (ii) Supply of trained workers and (iii) Infrastructure built specifically for the industry. Due to agglomeration economies, people and firms often concentrate in particular areas. For instance, people tend to move to cities where there is greater choice of jobs, social activities and specialist services. However, there is always the risk of diseconomies of scale, where firms become too big and average costs start to rise.

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Economies of Agglomeration

The term economies of agglomeration is used in urban economics to describe the benefits that firms obtain by locating near each other (agglomerating). This concept relates to the idea of economies of scale and network effects. Simply put, as more firms in related fields of business cluster together, their costs of production may decline significantly (firms have competing multiple suppliers, greater specialization and division of labour). Even while competing firms in the same sector cluster, there may be advantages because the cluster attracts more suppliers and customers than a single firm could achieve alone. Cities form and grow to exploit economies of agglomeration.

The term diseconomies of agglomeration refers to the opposite case. Additional competition drives down pricing power. For instance, spatially concentrated growth in automobile-oriented fields may create problems of crowding and traffic congestion. It is this tension between economies and diseconomies that allows cities to grow while keeping them from becoming too large.

Agglomeration economies are closely associated with economies of scale and the network effects mentioned above. It is important to understand that a positive outcome of agglomeration economies will only be achieved if the benefits outweigh the disadvantages. The ultimate end to agglomeration economies is the formation and growth of a city. The processes and factors contributing to the formation and growth of cities are considered here in the types of economies that are formed, their sources that are the contributing factor, network linkages, and the advantages and disadvantages that may or may not occur in the growth and formation of cities.

In simple terms, the basic concept of agglomeration economies is that production is facilitated when there is a clustering of economic activity. Although this may be true, the reality is that the existence of agglomeration economies is central to the explanation of how cities increase in size and population, which places this phenomenon on a larger scale. This concentration of economic activity in cities is the reason for their existence and they can persist and grow throughout time only if their advantages outweigh the disadvantages. It is significant to understand why these advantages allow for the persistence of cities.

Advantages

When firms form clusters of economic activity, there are particular development strategies that flow in and throughout this area of economic activity. This helps to accumulate information and the flow of new and innovative ideas among firms for the achievement of what economists call increasing returns to scale. Increasing returns to scale, and economies of scale, are internal to a firm and may allow for the establishment of more of the same firm outside the area or region. Economies of scale external to a firm are the result of spatial proximity and are referred to as agglomeration economies of scale.

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Agglomeration Economies and Well-being: Evidence from India

In the process of economic development, urbanization and industrialization share a close nexus, not only industrialization leads to urbanization but also urbanization has productivity-augmenting effects on industry. While production was predominantly agricultural in pre-industrial society, it occurred outside the cities. This pattern got reversed as the industrial revolution progressed — manufacturing production emerged as the major activity occurring in inner city areas. On the whole, economic development not only caused a shift in the composition of growth and occupational structure but also manifested itself in terms of locational shift of the population resulting in urbanization. Within the urban areas, large cities because of agglomeration economies, manifesting themselves in terms of higher levels of productivity and technical efficiency are again considered better than the medium-sized or small towns.

In relation to this view, it has been widely noted that economic growth varies considerably across space; even within India, states have recorded different growth rates, which do not seem to have any tendency towards convergence in the long run. Among several factors that influence economic growth, industrial performance has been treated as the engine of growth implying that equalization of industrial productivity can bring in equalization of economic growth across space. And also states with higher rates of urbanization reported higher rates of economic growth, thus bringing out a close connection between industry and urban.

In the context of agglomeration economies, it is noted that some industries induce concentration of economic activity as they exhibit high economies of scale in operation and there are others which benefit from concentration because of these external economies. Concentration not only strengthens the forward and backward linkages, but also reduces the cost of operation by developing complementary services. The effective price of infrastructure services declines if there is concentration of users of these services. In all, interdependence of industries in terms of input-output linkages, ancillarization and availability of infrastructure contribute to the growth of agglomeration economies. The benefits of concentration can be attributed to the following factors: (a) substantial economies of investment expenditure – the investment for the whole complex is less than the sum of investment for each enterprise planned and located in isolation, (b) efficient production due to advantages of specialization, economies of large-scale operation and organization of common managerial and infrastructural facilities, (c) possibility of jointly exploiting of the natural and raw material resources of the area of location, and (d) opportunities for close contact, rapid diffusion of technological innovations, and rapid overall development of the economy. The external economies, in general, are divided into two categories: (a) urbanization economies and (b) localization economies, resulting in productivity augmenting effects. Agglomeration effects are usually captured in terms of total population or workforce or employment in a given industry or all industries.

Since the large cities are characterized by higher levels of productivity, the real wages are also higher therein. Even in the informal sector, the wages due to forward and backward linkages between the sectors are higher. In fact, in a general equilibrium framework, it can be conveniently demonstrated how the gains in the high productivity segments get transmitted to other sectors in the economy.

The technological progress that the world is witnessing at a rapid pace is now accessible to all areas thanks to the communication technology. However, its implementation and utilization at the fullest level is possible only when the support structure in terms of highly

skilled manpower, adequate infrastructural facilities and the overall governance exists significantly. Since the large cities are usually better off from this angle, the outcomes are also more profitable. Ancillarization and subcontracting possibilities are sizeable in large cities as the number of firms is large and they tend to encourage interdependency in an attempt to pursue super-specialization and reduce cost.

It has been widely observed that among the low-income households, the existence of social networks for accessing job market information is widely prevalent. In fact, these networks are the basis of their survival strategy. However, it has been observed when individuals operate through close relatives and other informal networks along the lines of caste and kinship bonds, they end up creating excess supplies of labour in certain pockets and thus the possibility for upward mobility becomes highly limited for both the contact person and the new entrant. But in large cities, the possibility of diversifying the networks at a later stage subsequent to the entry is much higher as new contacts develop through new friends, employers and so on.

The visibility of the civil society, the general awareness of the public and the watchful role played by the media help cultivate new networks and also assure higher returns to the networks pursued by the low income households. In large cities, there are usually a number of labour recruitment centres (informal), and as the new contacts develop, individuals tend to access more than one labour recruitment centres simultaneously, which in turn raises the options leading to occupational mobility and the possibility of accessing higher incomes. Better connectivity, cheap transport system and the availability of alternative modes of transport help individuals commute faster, which does not restrict them to secure jobs in the neighbourhood of where they reside. Labour exploitation in large cities is less as unions and various voluntary organizations in some form or the other safeguard the interest of the general public. The anonymity of individuals particularly from the point of view of those who belong to disadvantaged castes helps break the legacy of the caste-based occupations in a large city. The sense of urbanism is supposedly more prevalent in large cities which help people overcome the barriers of caste and other social hindrances and follow a more market-oriented approach. From all this, it may be inferred that individuals across various socio-economic sections benefit in terms of accessing sustainable livelihood more in a large urban settlement *vis-a-vis* small towns.

These views are, however, one-sided. There is an equally strong contestable literature suggesting considerable overlaps between informal sector employment and poverty in large cities. Since it is the urban economy which is usually supposed to provide opportunities for raising productivity by generating employment in the high productivity industrial sector and contributing towards eradicating abject poverty, rural to urban migration is usually directed towards the large cities. The economy-wide consequences of excess supplies of labour in relation to demand are manifested in the form of open unemployment, underemployment and low productivity, leading to large-scale poverty in the cities. The rapid spread of slums resulting not merely from the shortage of housing but also from the low earnings of the workers engaged in low productivity activities has become an endemic feature of the urbanization process in the developing countries. Also, the large cities are often pressed by several diseconomies of scale including congestion costs and greater land-rent prices.

Undermining the importance of agglomeration economies, it is noted that the territorial division of labour between the urban and the rural areas is on the decline, in the developed countries especially. Similarly, the differences between the economic structure in large urban settlements and that in medium-sized towns are about to disappear, lending little relevance to

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the agglomeration literature. However, within the countries of Asia and the Pacific, despite a decline in poverty across the region, there are significant disparities between urban and rural areas and between regions within countries. In the Indian context, the rural-urban occupational distribution of labour is significantly different; while agriculture is still dominant in the rural areas, most of the large-scale manufacturing and modern service sector firms are concentrated in the urban localities. In the backdrop of globalization, the rural-urban distinction in sources of livelihood has grown much sharper. Economic globalization in an attempt to reap the cost advantages has motivated firms to diversify the production base across different countries depending on resource availability and this has led today to the emergence of a multi-centric world economy, as opposed to a centre and a periphery model of the earlier phase, and the increasingly pronounced convergence of emerging countries, led by China, India and Brazil. However, this has not resulted in any reduction in rural-urban growth differential in India and the differences in the sources of growth across rural and urban areas. Activities associated with economic globalization are highly dependent on infrastructure and human capital endowment, which are not evenly distributed across space. Even within the urban areas, the spatial inequalities in infrastructure availability are sharp, leading to greater concentration of activities in a handful of cities. Industrial and services hubs have emerged in a few locations which already had rich infrastructural base and could subsequently attract further investment in those areas. Bangalore and Hyderabad are some of the glaring examples of this phenomenon. On the whole, economic globalization particularly in the Indian context has contributed to concentration of non-agricultural activities in the urban areas and again within the urban localities, the external economies of scale are operating only in a few locations due to unequal distribution.

Given the possibilities of higher returns to investment and per capita incomes in large cities, the present paper tries to verify if the well-being levels of those in the lower rungs are higher there compared to their counterparts in small towns. The direct and indirect linkages (including the secondary effects) exist through which the growth effects from one sector can percolate down to reach other peripheral sectors. The secondary effects are not just confined to the domain of employment generation: they may have spillover effects in the areas of education and health as well. As workers in large cities can afford better quality education and health, the private suppliers of these services are also motivated to situate their firms in these locations. Though perfect competition does not prevail to bring down the prices of these services, oligopoly structure ensures reduction in supernormal profits. All this results in higher well-being levels of the residents in large cities, including the ones placed at the bottom of the socio-economic ladder.

Urbanization in India

The level of urbanization in the Indian context unlike the historical experience of several developed countries at comparable levels of per capita income and growth has been quite low. It increased sluggishly from 17.29 percent in 1951 to 27.79 percent in 2001 and 31.16 percent in 2011 (Table 3.1). However, the rate of growth of urban population has been quite high notwithstanding a nominal increase in the percent urban (Table 3.2). Demographers are quite concerned about this high rate of growth of urban population as it tends to create significant pressure on the infrastructure base. The number of cities and towns has also gone up considerably over the years, particularly over the last decade from 5161 in 2001 to 7935 in 2011.

Table 3.1: Urbanization Level and Urban Growth

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Year	% Urban	No. of Cities or Towns	Rate of Growth of Population in Urban Areas	Rate of Growth of Population in All Areas
1951	17.29	3035		
1961	17.97	2657	2.37	1.97
1971	19.91	3081	3.29	2.24
1981	23.34	3981	3.87	2.23
1991	25.70	4615	3.16	2.16
2001	27.79	5161	2.75	1.97
2011	31.16	7935	2.7	

Note: 1981 and 1991 figures include interpolated population estimates for Assam and Jammu and Kashmir respectively.

Source: Census of India, 2001, 2011.

Though the number of cities and towns went up steadily, urban population in India is concentrated in big cities. For example, the Class I cities (each with a population of 100,000 and above) constituted around 70 percent of the total urban population in 2011. There were 384 urban agglomerations in 2001 which went up to 475 in 2011. Further, 42.5 percent of the total urban population lived in 53 metropolises (each with a population of 1 million and above) in 2011. Among the Class I cities, population distribution again seems to be highly unequal: only the top ten mega cities accounted for one-fourth of the total urban population in 2011. All this tends to suggest a highly unequal size distribution of urban population, i.e., large cities account for a large percentage of the urban population.

The definition of urban, particularly in the Indian context, seems to be quite broad and hence, it includes areas which still do not show any dynamism as the term urbanization is expected to indicate. One popular view in the context of urbanization suggests that only Class I cities are to be considered as representative of urban characteristics and dynamism. In this section, we, therefore, carry out a detailed study of 380 Class I cities or urban agglomerations (as per the 2001 population census) in order to comment on their characteristics and assess how vibrant Indian urbanization has been. This is of course pursued in a very indirect manner by examining the question whether large cities offer better employment opportunities and a better demographic profile. This could not be done for more recent year (2011) as the detailed data are still awaited.

Keeping in view the limitations of the data, we focus here on a set of variables which capture demographic, social and economic aspects. These variables are household size, female-male ratio, child-woman ratio, literacy, male and female work participation rate, percentage of workforce engaged in non-agriculture activities excluding household manufacturing. Lower household size and child-woman ratio are desirable from demographic point of view. Literacy is likely to increase to reflect development. Similarly, enhanced work participation, particularly for females is indicative of higher social development and for males, better economic opportunities.

There is a clear-cut positive relationship between the population size and the work participation rate, particularly that of males, possibly indicating that large cities offer greater work opportunities and hence, the worker to population ratio is higher in large cities than the rest (Table 3.2). Female literacy rate (among the population above six years) also indicates a

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positive relationship, mild though, with city size. On the other hand, household size tends to decline with city size. In terms of other demographic variables like female to male population ratio large cities, however, demonstrate a lower ratio which is possibly because of relatively higher magnitudes of single male in-migration to large cities. The child-woman ratio does not vary inversely with city size indicating no major variation in the fertility behaviour of the Indian urban population across various city sizes (Table 3.2).

Table 3.2: City Size and Certain Key Variables

Indep. Var:	Dep Var: HHSZ	Dep Var: F/M Ratio	Dep Var: Child/Woman	Dep Var: WPRM	Dep Var: WPRF	Dep Var: OTHA CTM	Dep Var: OTHACTF	FLIT
POPSZ	-5.25e-08 (1.78)a	-6.05e-06 (-2.67)*	-1.39e-09 (-0.79)	5.18e-07 (2.74)*	4.10e-08 (0.22)	5.31e-07 (2.33)*	1.20e-06 (2.46)	5.42e-07 (1.69)a
Constant	5.36 (122.39)*	918.32 (272.51)*	0.272 (104.39)*	48.85 (173.72)*	10.67 (38.24)*	92.56 (271.93)*	82.57 (113.91)*	72.99 (153.1)*
R ²	0.01	0.02	0.001	0.02	0.0001	0.01	0.02	0.005

Note: No. of observation is 380. ‘* and a’ stand for significance at 5 and 10 percent levels respectively. HHSZ is household size, F/M female-male ratio, Child/Woman is child-woman ratio, WPRM and WPRF are work participation rates among males and females respectively, POPSZ is population size of the city, MLIT and FLIT are literacy rates among the male and female population respectively, SCSTM and SCSTF are the percentage of scheduled caste population among males and females respectively, OTHACTM and OTHACTF are the percentage of male and female (respectively) work force engaged in activities other than agriculture and household manufacturing.

Source: Based on Population Census, 2001.

The detailed information on employment structure is not available from the population census in the sense that several activities like non-household manufacturing, construction, trade and commerce, transport, storage and communication and community, social and personal services have been clubbed together. Only the activities like agriculture and household manufacturing have been reported separately. We may note that there is a positive association between city size and the relative size of the first group of activities, which are expected to constitute more demand-induced employment than the others (Table 3.2). Also, in response to literacy, this group of activities varies positively, tending to supplement the view that large cities possibly have more demand-induced employment than their small counterparts. One of the important determinants of worker-population ratio and the so-called demand induced activities is city size, particularly in the case of males (Table 3.3).

Table 3.3: Determinants of Work Participation Rates and % of Workforce Engaged in Non-household Manufacturing, Trade and Commerce, Transport, Storage and Communication and Community, Social and Personal Services

Indep Var:	Dep Var: WPRM	Indep Var:	Dep Var: OTHACTM	Indep Var:	Dep Var: WPRM	Indep Var:	Dep Var: OTHACTF
SCSTM	-0.064 (-1.85)	SCSTM	-0.03 (-0.81)	SCSTF	0.09 (3.31)*	SCSTF	0.16 (2.57)*
MLIT	0.199 (4.84)*		0.34 (6.05)*	FLIT	-0.002 (-0.06)	FLIT	0.67 (8.96)*

POPSZ	4.58e-07 (2.49)*	POPSZ	5.04e-07 (2.43)*	F/M	0.03 (6.59)*	F/M	-0.04 (-3.95)*
		HHSZ	-2.19 (-3.24)*	CHILD/ WOMAN	-33.05 (-4.83)*	CHILD/ WOMEN	-11.43 (-0.64)
		WPRM	-0.31 (-3.35)*			WPRF	-1.55 (-12.58)*
						POPSZ	-4.09 e-07 (1.15)
						HHSZ	-5.43 (-5.90)*
Constant	32.57 (9.22)*	Constant	90.85 (8.45)*	Constant	-6.32 (-1.02)	Constant	116.26 (7.97)*
R ²	0.08		0.20		0.34		0.51

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Source: Based on Population Census, 2001.

In order to highlight the association between several variables simultaneously, the factor analysis is considered to be appropriate as it does not get into the cause-effect relationship though at the same time it churns out the commonalities among different variables. A statistically significant factor deciphers the variables which tend to have strong association among themselves. This is reflected in terms of the coefficient of the variables known as factor loadings, the absolute value of which can vary from 0 to 1. Variables with factor loadings closer to modulus 1 are treated to be dominant and the ones with closer to 0 are insignificant.

The results of the factor analysis (Table 3.4) corroborate the patterns which we observed from the regression analysis. The work participation rate, literacy and the dynamic component of the activities are positively associated with each other which are in turn negatively related to household size and child-woman ratio. In other words, the development indicators scattered over various dimensions are in a sense interrelated. With rise in literacy, the work participation improves and so also the probability to access jobs in relatively dynamic activities. As participation in productive jobs rises, fertility tends to decline which is reflected in lower household size and the child-woman ratio. The cluster analysis has been carried out to examine if the groups formulated on the basis of the magnitudes of the attributes have a geographical correspondence. Based on the data set for 380 Class I cities or urban agglomerations, around twenty groups can be identified. It is, however, quite difficult to decipher any systematic pattern in relation to their geographic location.

Table 3.4: Results from Factor Analysis

Variable	Factor 1	Factor 2
HHSZ	-0.842	0.168
F/M	0.446	-0.378
CHILD/WOMAN	-0.813	0.186
MLIT	0.764	0.241
FLIT	0.825	0.176
WPRM	0.646	0.386
WPRF	0.556	-0.465

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OTHACTM	0.367	0.585
OTHACTF	0.327	0.659
SCSTM	0.178	0.563
SCSTF	0.193	0.570

Source: Based on Population Census, 2001.

Well-being of the Low-income Households: The next issue relates to the well-being levels of the population in different types of cities with the underlying hypothesis that agglomeration economies in large cities get translated into higher well-being levels. Higher agglomeration economies reflected in terms of higher productivity levels and real earnings imply greater affordability. Nutritional status and accessibility to education and health improve which in turn contribute to the overall well-being levels of the households. Fertility behaviour, for example, changes and so also the indicators of social development as education levels and health outcomes tend to improve.

However, due to the lack of data for the total city population, we had to examine this hypothesis indirectly. The question that we pose are the households from low-income households better off in large cities compared to their counterparts in relatively small ones? On the aspect of poverty and well-being, not much information is available at the city level from the secondary sources. However, under the UNDP-sponsored project on urban poverty, one survey was undertaken in four cities of different population size and economic activities (i.e., Jaipur, Ludhiana, Mathura and Ujjain). These cities were picked up from the list of sixty-four cities prepared specifically for the urban renewal mission (JNNURM). The primary survey enables us to comment on certain aspects of well-being of the slum dwellers in these four cities. While Jaipur and Ludhiana are two million plus cities, Mathura and Ujjain are relatively small in size. Again, Ludhiana is an industrial city while Jaipur being a state capital, a tourist centre and also a trade centre has a significant spread of the services sector. Mathura and Ujjain are both religious cities and between the two, the latter is absolutely stagnant. Such a mix of cities enables us to perceive well-being of the slum dwellers in a context which involves large variations.

From the measurement point of view, various dimensions of poverty, rather than only income or consumption poverty, need to be considered to assess well-being. However, we could consider only those dimensions which are quantifiable. The following variables have been combined to construct the household specific well-being index: household size (HHSZ), child-woman ratio (CWR), per capita consumption expenditure (PCE), proportion of persons in the household who reported illness (ILL), percentage of household members who acquired at least primary level education (PRIM), percentage of members in the age group 15 to 59, which is a proxy for adult potential earners (PER15-59), percentage of working individuals (WM), age of the household head/principal earner taken as a proxy for experience in the job market (AG), health expenditure per capita (HPC) and per capita household income (HHPCI).

Household size is likely to reduce the well-being because the earnings and the related gains get distributed among a large number of individuals with an increase in the number of members. Similarly, households with greater child-woman ratio indicate a higher rate of fertility and thus the economic gains get shared among a large number of children. As the percentage of ill members in the household rises, the income loss due to work-loss and, also, extra expenditure for curative purposes tend to increase, reducing the well-being level of the household. Health expenditure per capita on *a priori* basis may raise the well-being of the

household if it is incurred for protective purposes, enhancing productivity. On the other, it may reduce well-being if it is incurred at the expense of consumption of essential items.

The other variables are expected to improve well-being. Per capita household income (HHPCI) and per capita consumption expenditure (PCE) raise the well-being because higher income and higher consumption enhance the accessibility to better quality life and health. Similarly, with a rise in the percentage of household members who acquired at least primary level education (PRIM), the accessibility to better jobs and incomes and also awareness about health and children's education improves. The percentage of members in the age group 15 to 59 which is a proxy for adult potential earners (PER15-59), the percentage of working individuals (WM), and the age of the household head or principal earner which is a proxy for experience in the job market (AG) contribute to household income positively.

Since these variables are heterogeneous, it is difficult to combine them to indicate an overall living standard of the households. Hence, factor analysis was conducted, and using the factor loadings as weights, variables were combined to generate a composite index of well-being, denoted as WELLINDEX(i). This was repeated for each of the significant factors (factors with eigenvalues greater than one).

$$WELLINDEX(i) = \sum_{j=1}^n FL_{j(i)} X_j \text{ where, FL is the factor loading, } j = 1, \dots, n$$

corresponding to the number of variables, and i represents the ith significant factor.

In the second stage, the composite indices generated on the basis of factor loadings for each of the significant factors were combined using the proportion of eigenvalues as weights:

$$WELLINDEX = \sum_{i=1}^k \left[\frac{EV(i)}{\sum EV(i)} \right] WELLINDEX(i) \quad k < n \text{ where, } i \text{ ranges from } 1 \text{ to } k, \text{ the}$$

number of significant factors.

Using the varimax rotation technique (in order to obtain statistically independent factors), results of the factor analysis are derived which suggest the presence of only one significant factor in each of the four cities (Table 3.5). The factor loading of household size takes a negative sign, which suggests that it reduces the well-being of the households. Household income per capita and consumption expenditure per capita both take positive factor loadings though in terms of magnitude they are moderate like that of household size. On the higher side are child-woman ratio, percentage of household members in the age bracket 15 to 59 and proportion of the number of working members to the total household size. While the child-woman ratio reduces the well-being as reflected in terms of negative factor loadings, the other two variables take a positive coefficient. Education, though highly moderate in terms of magnitude, shows a positive effect except in Jaipur. Health expenditure per capita also shows a positive effect though magnitude of the factor loadings is quite low.

Table 3.5: Factor Loadings from the Significant Factor

Variable	Jaipur	Ludhiana	Mathura	Ujjain
HHSZ	-0.2424	-0.2870	-0.2387	-0.21306
PCE	0.31847	0.36047	0.39325	0.36662
PRIM	-0.09208	0.17426	0.14379	0.14023
HHPCI	0.34237	0.30792	0.28774	0.34142
HPC	0.04937	0.10	0.15056	0.10359

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CWR	-0.65278	-0.84593	-0.81161	-0.79265
ILL	0.06632	0.0145	0.06734	0.03419
PER 15-59	0.77230	0.78747	0.78868	0.77967
AG	0.16166	0.9205	0.20811	0.15901
WM	0.61494	0.43949	0.39971	0.32805
Eigen Value	2.255 (22.28)	2.8278 (24.84)	2.484 (24.205)	2.4205 (22.55)

Note: Figures in parentheses represent the percentage of total variation explained by the significant factor.

The well-being index has been constructed using the factor loadings as weights. It indicates that in Jaipur and Ludhiana 26 percent and 32 percent of the slum households respectively are located in the bottom-two size classes (Table 3.6). However, in Mathura and Ujjain, which are much smaller than the other two cities and also lack growth dynamism, the corresponding figures are 57 percent and 61 percent respectively. Thus, the well-being index even among the low-income households seems to have a positive association with city size and it tends to vary with the nature of the city. It is interesting to note that these figures are substantially lower than the incidence of consumption poverty, which is 66.8 percent in Jaipur, 43.6 percent in Ludhiana, 75 percent in Mathura and 88.2 percent in Ujjain. This would tend to suggest that even when consumption poverty is high, many other facilities which are available in the cities contribute to the well-being of the population. However, we may note that even in the so-called dynamic cities, the percentage of slum households located in the bottom-size classes is not negligible either, suggesting that growth alone cannot eradicate poverty.

Table 3.6: Size Distribution of Households as Per the Well-being Index

Variable	Jaipur	Ludhiana	Mathura	Size	Ujjain
Upto 200	1.2	3.6	3.6	Upto 200	8
201 – 400	24.6	28.2	49.2	201- 400	53
401 – 600	37.4	29.8	24	401 – 600	27.4
601 – 1000	27.8	25	14.2	601 – 1000	8.8
1001 – 1500	6.6	9.2	3.6	1001 – 1500	2.8
1501 and above	2.4	4.2	1.4	1501 and above	

Thus, to conclude, large cities are said to be more productive, i.e., more demand-induced employment opportunities are available in large cities which grow in response to large quantum of investment undertaken therein. In terms of several socio-economic development indicators, we verified that they tend to improve with a rise in city size. Economic globalization has not reduced the intra-urban or rural-urban growth differentials. The agglomeration economies continue to exist because the new forces in the present context of economic globalization have emerged to substitute the forces which explained their prevalence around two decades back and have been on the decline. This is, however, not to deny the considerable overlaps that may exist between informal sector employment, poverty, slums and other disamenities in large cities.

In the next step, we tried to assess if the well-being of those in the low-income households tends to vary across cities. Since the large cities are more productive as reflected

in terms of a wide range of socio-economic indicators, the low-income households in large cities are likely to be better-off in large cities relative to their counterparts in small urban settlements. Based on a wide range of variables, the well-being index has been computed for each of the slum households in the sample. Micro evidence suggests that large cities tend to improve the well-being of the population even among the low-income households. The percentage of slum households at the bottom-size classes is much larger in the stagnant and small urban settlements compared to the large and relatively dynamic ones. However, several of the sample households even in large cities are located in the bottom-size classes. For them to experience an upward mobility, the urban employment programmes are pertinent. Most of the urban-specific programmes in India largely emphasize the importance of basic amenities to the urban poor and infrastructure need of the cities. However, safety net for the low productivity urban informal sector workers is essential for reducing the intensity and the incidence of urban poverty. Besides, improvement in health and educational support can have long lasting effect on poverty.

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3.2 AGGLOMERATION ECONOMIC WEBER [AGGLOMERATION ECONOMIES AND LOCATION DECISION-MAKING OF FIRMS IN LOCATION-TRIANGLE APPROACH]

The location-triangle model was initially developed by Weber (1909), applying the relationship between physical distance and transportation costs, which was originally explored by Launhardt (1885). Weber included the notion of trade-off interaction between transportation costs and agglomeration economies with respect to the economy of labour in order to specify the optimal firm location by setting two different extracting sites of inputs for processes and one location of consumption for selling the final products. Regarding external terms of agglomeration economies in his period of time, it was solely necessary to consider the localization type of economy, which was also indicated by Marshall (1890) as the concentration of specialized industries in particular localities.

Since the initial establishment of the model framework by Weber, the location-triangle model was further expanded by Moses (1958), Khalili *et al.* (1974) and Mai and Hwang (1992), those who attempted generalizations by introducing the homogeneous production function, the homothetic production function and the condition of market demand, respectively. These advanced methods are commonly known as the Weber-Moses location-triangle model.

However, during these expansions, agglomeration economies were almost fully dropped from the model framework and this may cause certain difficulties to apply for more recent location-economic analysis.

Agglomeration economies are divided into two parts as internal and external dimensions. According to the categorization by Parr, each dimension can be further categorized under three criteria, namely, economies of scale, scope and complexity. In the external dimension, these are also referred to as localization, urbanization and activity-complex economies. While this paper mainly focuses on these external forces, internal forces have also important roles when the location model involves in upstream and downstream external linkages between different neighbour firms within the industry. The concern of this paper is to reveal a missing relationship between location triangle and agglomeration economies. As introduced earlier, the established location-triangle analysis employed at most the localization type of agglomeration economies, which are referred to the spatially-constrained economies of scale.

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In order to enable the analysis to investigate urbanization and activity-complex economies in addition to localization economies, the central place system, particularly, market area analysis should be encouraged to employ in this framework. By applying the established framework of market areas, an alternative hypothetical model is developed here, which demonstrates the determination of optimal firm location for different types of conditions.

Market area analysis was systematically formalized by Lösch (1944), which examines how products are distributed to an economic plane under the given conditions of output price, density of demand and distribution transportation costs. This areal framework validates the studies of different sizes and shapes of regions, spatial distributions of labour, households and types of production orientation. In this part, we shall emphasize upon the central place theory which deals with the urban hierarchical structure. Those contributions were made by Christaller (1933) and Losch (1944) as initial attempts, and Mulligan (1982) and Parr (2002b) for more detailed investigations. These may have particularly important roles for the analysis of firm location and agglomeration economies with respect to localization and urbanization economies. In addition to these agglomeration elements, activity-complex economies become more common to be observed in modern industrial structures. These are relevant to vertical integration or specialization, if the economies are internal to the firm. The vertical integration was systematically formalized by Stigler (1951) and applied to the vertical specialization and trade in Hummels *et al.* (1995), and the idea was also given to fragmentation of production by Jones and Kierzkowski (2005). Furthermore, the recent operational and location changes in the relationship between headquarter and production plant was attempted by Silva and Hewings (2007). Under these progresses, the framework of location-triangle model lost its significance due to exclusions of agglomeration criteria. However, there are still rooms to investigate the optimal firm location from the approach of location-triangle model, if the neglected elements are properly taken into account. Here, instead of attempting a modification of the generalized Weber-Moses framework, it is aimed to re-examine the original Weber model in order to avoid complication of the argument and to reveal the fundamental nature of location-triangle analysis and the studies of agglomeration economies.

Agglomeration Economies and the Location-triangle Model

Agglomeration economies are spatially-constrained internal and external economies. As introduced earlier in the previous section referring to Parr, spatially-constrained internal economies have three dimensions in terms of scale, scope and complexity. First, the internal economies of scale can be relevant to the horizontal integration. In other words, a larger quantity of output achieves the more cost reduction for processing a product as long as the average cost curve falls. Secondly, the internal economies of scope may be referred to the lateral integration, which can be exemplify that a variety of production enhances more opportunities of revenues. A representative case is a motorbike company who also produces motorboats, audio speakers and music instruments. Finally, the internal economies of complexity can be relevant to the vertical integration, which achieves lower-cost production by an integrated process within a single firm than operations by different firms.

In addition, spatially-constrained external economies also have three dimensions, commonly known as localization, urbanization and activity-complex economies. First, localization economies can be referred to the original Weber model that the economic concentration at a particular location creates the economy of labour. In addition, as indicated in Marshall (1890), localization economies also include joint action for input extraction and specialized services. Secondly, urbanization economies are typically available at the metropolitan area, brought by advantages of concentration on the variety of economic activity.

These economies include administrative accessibility, well-organized infrastructure, variety of labour supply and highly-advanced systems of communication and transportation. While it is excluded from the analysis in this paper, the inclusion of central place system validates to examine urbanization economies with respect to hierarchical spatial structure. Further details should be referred to the notion of functional system in Parr (2007). Finally, activity-complex economies are commonly observed in modern advanced industries, where upstream and downstream stages have important roles for processing. These can be exemplified by the Ford campus of automobile-assembly plant in Chicago and the aerospace industries complex in Toulouse.

Those elements of agglomeration economies can be examined within the framework of the location-triangle model. In order to integrate these different approaches, it is initially necessary to set a model under the following conditions. There are multiple firms those who produce different products. However, some of inputs such as coppers are common to use during the processing stages. Also, the place of consumption for the final product of each firm is assumed to place at the same location, therefore, certain parts of infrastructure facilities such as the network of transportation can be shared among these firms. Under these conditions, an alternative location-triangle model is investigated in the following section.

An Alternative Location-triangle Model

In order to examine the notion of agglomeration economies within the framework of location-triangle model, an alternative model considers three independent firms in an economic plane. These are defined as firms A, B and C, those who are engaging productions in a particular economic space. First, firm A produces q_A , which has a place of consumption at MK, using inputs RM_1 and RM_2 for processing this particular product. Similarly, firm B produces q_B , which is also consumed at MK, using inputs RM_2 and RM_3 . In addition, firm C produces q_C , which has a place of consumption at MK, and uses two different inputs RM_2 and RM_4 . As commonly assumed in the established location-triangle model, each firm determines the optimal firm location where the aggregate transportation costs are minimized. Here, transportation costs have three types. First, shipping costs between the first input and the firm location, secondly, costs between the second input to the firm location as well as costs between the firm location and the place of consumption. These costs for inputs are relevant to assembly transportation costs, and costs for the final product are referred to distribution transportation costs.

In this paper, each firm is assumed to bear these transportation costs. In other words, transportation costs are regarded as the elements of production costs. Therefore, each firm attempts these costs to keep at minimum level. The minimization of transportation costs is affected by the value and bulkiness of shipping goods, in addition to the physical distance between two relevant locations. As a result, the structure of production function also has an important role for the determination of the firm location. In this way, for instance, the optimal firm locations of each firm A, B and C may be given as points P_A , P_B and P_C , which are respectively plotted in Fig. 3.1. From the above assumptions, the point P_A satisfies the minimization of the sum of transportation costs from RM_1 to P_A , from RM_2 to P_A , and from P_A to MK. Similar discussions are applied for locations P_B and P_C of firms B and C, respectively.

However, if these firms have certain opportunities of agglomeration economies by locating at immediate nearby each other, the optimal locations of three firms may be given at a specific single point. There are three different scenarios shown as follows. First, they may

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locate at a common-use raw material site and have the advantage of localization economies, if the raw material extraction or other production-related co-operation is jointly organized. Secondly, the location can be at the metropolitan area, if the economies of urbanization and accessibility to the place of consumption have important roles for all three firms. Here, the place of consumption may be treated as the center of metropolitan area in the location-triangle model, while this assumption is not revealed in their original framework. Finally, one more different location incentive can be considered in cases of activity-complex economies for more advanced industries. In this way, the optimal location varies depending upon spatial proximity both to raw material sites and to the place of consumption. Moreover, each corresponding transportation cost element also affects this location decision-making process. These aspects are further detailed individually in the following section.

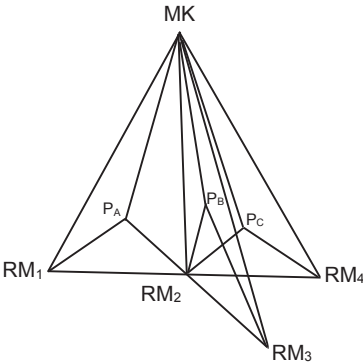


Fig. 3.1: Location-triangles of Three Firms

Hypothetical Analysis

Firm Location and Localization Economies: First, a consideration is given to examine the relationship between firm location and localization economies. From the assumption in the previous section, all three firms need to use the common input 2 RM. As a result, they may locate at LP in Fig. 3.2, and have certain opportunity to share the process of raw material extraction. At the same time, other types of localization type of economy such as the economy of labour and specialized services can be also available under this circumstance. Such agglomeration force is encouraged, particularly, if the shipping cost of 2 RM to the firm location is significantly high level, while the shipping cost to the place of consumption is relatively lower level. If the price of land is significantly high level at populated areas, the lower price of land may be an incentive to locate at raw material sites those are normally situated at local regions of a country. Such areas are also suitable for productions which need good quality of air, water, soil and space.

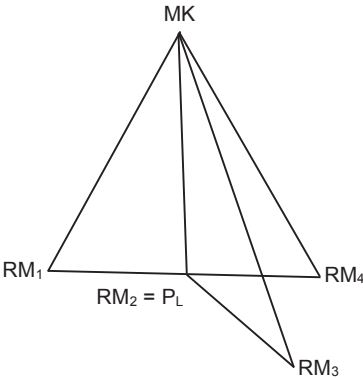


Fig. 3.2: Location-triangle and Localization Economies

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Finally, it should be noted that this alternative location is situated within each critical isodapane of all three firms. In other words, transportation costs of other raw materials are needed to be lower enough to cover the relocating production site within each critical isodapane, which represents the maximum level after the lines of aggregate minimum transportation costs that radiate in all directions from the center of the original firm location.

Firm Location and Urbanization Economies: Urbanization economies are usually available at the center of market area. It implies that the optimal firm location can be situated at the center of an area. However, there are a number of exceptions where the optimal location may not be the center of market area. This can be seen for firms those who supply products as intermediate, which are purchased by downstream firms as household-unrelated commodities. These are the cases where the condition of centrality of market area and supply area is not satisfied. By contrast, the place of consumption may be at the center of market area, if the products of this operation are the final goods or commodities for households. In this case, these firms are not necessarily locating closely to each other, as urbanization economies are separately available to entire economic activity who locates at this area. Such criterion is a remarkable difference to other types of agglomeration economies, which location proximity to other economic activity is required. In this scenario, the optimal firm location may be preferred to situate at the center of area at P_U in Fig. 3.3.

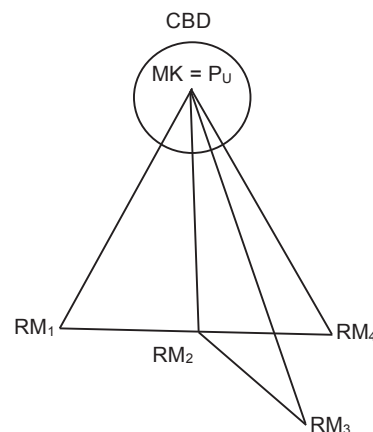


Fig. 3.3: Location-triangle and Urbanization Economies

It should be noted that urbanization economies do not solely work as an incentive to locate three firms together. As a result, it is more plausible for this scenario to consider that there are also spatially-constrained economies of scale or complexity, which are exclusively available at the metropolitan area, in addition to the advantages of urbanization economies. Since the optimal firm location is at or very close to MK , the distribution costs between the firm location and the place of consumption become negligibly small. As a result, the overall physical distance of transportation is minimized, while assembly transportation costs between raw material sites and the firm location are higher than the original firm locations.

Firm Location and Activity-complex Economies: If the products of three firms are similar but solidly product differentiated, the concentration of the production may bring certain cost savings by joint production at some processing stages during the processes. As shown in Fig. 3.4, the optimal firm location P_X may be somewhere between raw material sites and the place of consumption MK . If the transportation system from P_X to MK is possible to share among these three firms, the distribution transportation costs may be saved by enhancing the economies of scale. However, the optimal firm location still approaches toward

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the center MK, if the joint cost-saving distribution is significantly high level. By contrast, if the assembly transportation contains bulky and high-cost structure, they are locating close to raw material sites.

Also, the presence of CBD also leads to a similar outcome. namely, the larger CBD locates the firm away from the center in order to avoid highly price of land, congestion and pollution. It can be referred to the centrifugal forces of urbanization economies or more simply urbanization diseconomies. In this way, agglomeration economies and transportation costs have important roles to solve the problem of optimal firm location.

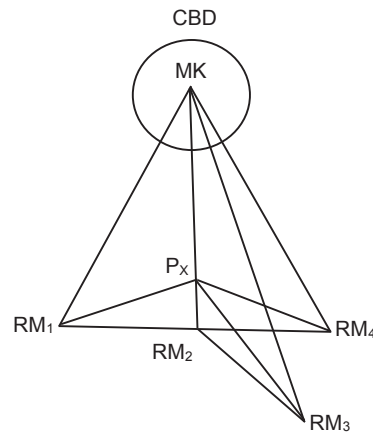


Fig. 3.4: Location-triangle and Activity-complex Economies

Policy Implications

In order to generalize the alternative framework, the following cost function of a representative firm is given:

$$\text{Min } C = ((w_i + t_i \cdot d_i) x_i + (w_j + t_j \cdot d_j) x_j + \alpha \cdot t_k \cdot d_k \cdot q_k) \cdot \beta \quad \dots(1)$$

where w_i = price of input i , t_i = transportation cost rate for i , d_i = distance from the input site i to the firm location, x_i = the amount of input i , w_j = price of input j , t_j = transportation cost rate for j , d_j = distance from the input site j to the firm location, x_j = the amount of input j , α ($0 < \alpha < 1$) = cost saving index by sharing the distribution transportation system, t_k = distribution transportation rate, d_k = distance from the firm location to the place of consumption, q_k = the quantity of product, and β ($0 < \beta < 1$) = index of the economies of agglomeration.

Here, α and β are zero, if each firm establishes their plant location separately. In that case, each firm can minimize the sum of distance d_i , d_j and d_k . By contrast, the sum of distance cannot be minimized when a firm locates together with other two firms in order to obtain opportunities of agglomeration economies and shared distribution costs. In that case, α and β are set non-zero and certain cost saving may be available. This is a trade-off interaction between agglomeration economies and physical distance in Weber sense. However, a remarkable difference is that this analysis also includes the cost-saving opportunity of distribution transportation costs. The evaluation can be provided as follows. First, each firm does not locate together, if the benefit of α and β are less than the cost increase by additional distance of d_i , d_j and d_k . Otherwise, each firm locates together and the optimal firm location varies depend on the conditions given in Table 3.1.

As an exception, it should be noted that these firms are not locating at the place of consumption, if the diseconomies of urbanization are set significantly high level. In that case,

there is a centrifugal force from the center and the optimal location is away from the center. In this circumstance, the parameter may be exceptionally set more than 1 as the impact of diseconomies such as pollution, congestion and highly price of land. In addition, the outcome can be affected by the formations of production function and demand curve of the product, although this analysis limits the scope of the analysis within a simplified framework.

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Table 3.7: The Location Decision-making of Firms and the Condition

Location	Condition
the raw-material site i or j	$t_i > \frac{t_j + t_k}{2}$ or $t_j > \frac{t_i + t_k}{2}$
the place of consumption	$t_k > \frac{t_i + t_j}{2}$
somewhere between above locations	Otherwise

Thus, to conclude, it is revealed that the notion of agglomeration economies is excluded from the Weber-Moses model and this causes potential issues to examine the optimal firm location that involves complex structures of industrial organization. An alternative hypothetical model is introduced to the original Weber model, which includes the trade-off interaction between localization economies and transportation costs. In addition, other parts of agglomeration such as urbanization and activity-complex types are also added to the alternative model by means of importing the framework of central place system. While this examination solely includes market area analysis, the introduction of supply area analysis may enable the alternative framework to deal with upstream and downstream production linkages.

3.3 LOCATIONAL AGGLOMERATION (AGGLOMERATION BENEFITS AND LOCATION CHOICE) THEORIES OF LOCALIZATION

Localization, the geographic concentration of particular industries, could arise through a variety of mechanisms. The general category we are interested in, agglomeration effects, includes all economies that are an increasing function of the number of nearby firms. The cumulative location choices that constitute the process of agglomeration allow accidents of history to influence the long-run geographical pattern of industry. Local expansion of a sector sows the seeds for further expansion by increasing the supply of the factor that made the location attractive in the first place, rather than simply bidding up the price of a given stock. Theoretical attempts to formalize agglomeration effects have focused on three mechanisms that would yield such positive feedback loops: inter-firm technological spillovers, specialized labour, and intermediate inputs.

The vague and general concept of technological spillovers is probably the most frequently invoked source of agglomeration effects. Useful technical information seems to flow between entrepreneurs designers, and engineers in a variety of industries. A large part of the spillovers between foreign-owned firms may include the flow of experience-based knowledge on how to operate efficiently in a given state. Physical proximity may enhance knowledge flows by making casual communication less costly. Since technological spillovers are usually impossible to measure, we know little about the geographical extent of these spillovers, the degree to which they operate within industries versus between industries, and the extent to which they flow between firms of different national origins. While the prosperity of the high-technology cluster in Silicon Valley and the high-fashion cluster in Milan may

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arise from local knowledge spillover, less ephemeral stories involving specialized labour and parts may play equally important roles.

As indicated by Marshall localized industry creates a pooled market for workers with specialized skills. This attracts workers for two reasons. First, as argued by David and Rosenbloom (1990), if the fortunes of individual firms are not perfectly correlated, the spatial concentration of industry is advantageous to laid-off workers who will be able to find new jobs with other firms. Hence, an increased number of firms reduces the likelihood that a worker will suffer a long period of unemployment. This reduced risk will ultimately benefit the firms as well by increasing the supply of specialized labour and reducing the risk premium embodied in the wage. Rotemberg and Saloner (1990) propose what could be seen as a complementary effect. Workers in a given location will be more inclined to invest in industry-specific human capital if they feel confident of their ability to appropriate the benefits. A monopsony situation might allow the employer to capture the benefits instead. Thus, by mitigating the hold-up problem, agglomeration generates the development of more industry-specific skills.

Krugman argues that the combination of scale economies and moderate transportation costs will encourage the users and suppliers of intermediate inputs to cluster near each other. Such agglomerations reduce total transportation costs and generate large enough levels of demand to warrant efforts to produce highly specialized components. This will attract assemblers which in turn encourages new arrivals and additional specialization.

The just-in-time inventory system employed by many Japanese manufacturers raises the total cost of transporting parts because it requires flexible and punctual deliveries. Due to the importance, this system places on reliability and trust. It may also encourage specialization in the form of long-term relationships. These arguments suggest that agglomeration effects will exert a particularly strong influence on Japanese manufacturers as they attempt to transplant their production systems to North America.

While this section emphasizes upon agglomeration models of industry localization, a simple alternative hypothesis, endowment-driven localization, draws on traditional trade theory. The latter part of this section will explain the strategy how industries will concentrate in regions with favourable factor endowments. For instance, sawmills might congregate in a particular state to take advantage of its abundant supply of high quality timber. A broad view of factor-endowments would include man-made inputs whose supply is not affected by the output of any particular industry.

In both theories of localization, firms in the same industry cluster geographically; however, only in the presence of agglomeration externalities does the clustering add to the attractiveness of the location. For instance, the existence of an immobile and exogenously supplied input would tend to attract investment from industries which use that input intensively. However, as firms congregate, the location becomes less attractive since competition among users bids up the price of the input. A corresponding phenomena could occur on the demand side if exogenous forces had promoted the concentration of downstream demand for a particular industry. These considerations suggest an important difference between the theories — agglomeration benefits could result in two states with identical endowments receiving very different shares of the investment in any particular industry. This will estimate the magnitude of industry-level agglomeration effects and assess their importance in location decisions.

3.4 TRANSPORT COST AND LOCATION

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Transport Cost

Understanding the role of transport in decisions made by businesses on where to locate or relocate is a crucial element in our ability to assess the impact of our transport system on people's lives. This is a complex subject area. There are many types of businesses — each with their individual transport needs and considerations — and the task of unpacking and isolating the influence of transport is a complicated and difficult process. As such, there is very little significant consensus concerning the overall effects of transport on business location and wider economic development and it is recognized that considerations need to be made almost entirely on a case-by-case basis. Naturally, this reflects the differing needs and demands relating to different firms the various characteristics different locations provide. The review itself breaks these issues down into a number of areas — the impact of technology; by business type; firm characteristics, labour supply; spatial scale and growth or displacement. This section, highlights a number of generic considerations the review has identified, inherent when thinking about the role of transport on businesses.

Transport as Part of a Package

Where transport is of obvious importance, is where improvements in the transport system opens up new, previously untapped areas and markets. However, as noted above, improvements in the transport system in itself would not usually be thought sufficient to stimulate (re)location. It is important, therefore, that investment is considered as part of a wider package in support of other factors or initiatives supporting other economic or social regeneration factors and spatial policies. New transport infrastructure may influence business location, but this can often involve displacing business from one area to another. This can be beneficial if redistribution from congested to stagnant areas; however, evidence suggests that transport investment will tend to displace business activity towards congested areas.

The Logistics Sector

A further factor which may explain a firm's degree of responsiveness to transport is the recent expansion in the logistics market. The increased speed and complexity of distribution networks has meant a significant increase in the number of firms outsourcing many of their transport functions to specialist firms in recent years. As such, direct transport considerations have become less important and become more secondary as specialist logistics companies take on the role. As logistics firms develop their distribution networks to incorporate practices such as Just-in-time delivery, an issue of increasing importance is the reliability of the transport network. A number of studies noted that it was not the amount of time taken that was important to logistics firms, but being able to deliver when scheduled. For example, it was suggested that whether a delivery takes 8 hours or 5 hours is relatively unimportant. The key consideration, is that the delivery firm can rely on the journey taking 8 hours, so that it can be factored into the timing of the logistics chain. It is argued that this is an area of increasing significance and importance although the impact and demands of the changing logistics industry is an area not currently well understood.

Cost of Transportation: The cost of transportation can sometimes determine whether a customer transaction results in a profit or a loss for the business, depending on the expense incurred in providing transportation for a customer's order. Faster modes of transportation generally cost more than slower modes. So although shipping an order overseas by airplane is much faster than transporting by ship, it can cost as much as 20 times more. Such a cost

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difference might not justify the use of the faster way of transporting the goods. Supply chain managers must, therefore, carefully consider the cost of transporting goods when determining whether to move product and how to move product in the most economical manner.

Objectives of the Transportation Management

These objectives are stated as follows:

1. Describe the basic concepts of transportation management and its essential role in demand fulfillment.
2. Identify the key elements and processes in managing transportation operations and how they interact.
3. Identify principles and strategies for establishing efficient, effective, and sustainable transportation operations.
4. Explain the critical role of technology in managing transportation operations and product flows.
5. Define the requirements and challenges of planning and moving goods between countries.
6. Discuss how to assess the performance of transportation operations using standard metrics and frameworks.

Strategy of Transportation

The strategy of transportation can be segregated into three broad heads, i.e.,

1. “Transportation: The Basics” provides a foundation for transportation operations, including a survey of transportation modes, the economics of transportation, and the array of transportation service providers.
2. “Transportation for Managers” provides a customer’s perspective on transportation, including insights on designing a logistics network, selecting services, and evaluating performance. Content is provided on key aspects of transportation management, including strategy formation, technology deployment, and international supply chain operations.
3. “Transportation in 2013 and Beyond” is dedicated to contemporary issues in logistics, including sustainability, and offers an outlook on the future of transportation. Throughout the text, we feature important terms and concepts that are essential for supply chain professionals who are responsible for transportation activity to understand. In this first chapter, we continue by illustrating the role of transportation in the logistics function, the supply chain, and the larger economy.

Transportation and Logistics

Logistics is defined as “that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services and related information from the point of origin to the point of consumption in order to meet customers’ requirements.” Transportation is represented in this expression through the work flow. Transportation provides the flow of inventory from points of origin in the supply chain to destinations, or points of use and consumption. Most businesses manage both inbound and outbound logistics. Inbound logistics involves the procurement of materials and goods from supplier locations. Outbound logistics involves the distribution of materials and

goods to customer locations. Therefore, transportation is necessary on the inbound and outbound sides of the business.

The definition of logistics mentions not only the forward flow and storage of goods, services, and related information, but also the reverse flow.

Inventory sometimes flows in the reverse direction. Reverse logistics refers to the role of logistics in product returns, source reduction, recycling, materials substitution, reuse of materials, waste disposal, and refurbishing, repair, and remanufacturing. So, transportation not only delivers material and products to customers, but also moves reusable and recyclable content to companies that can use it. Figure 3.5 shows the forward and reverse flows managed by logistics.

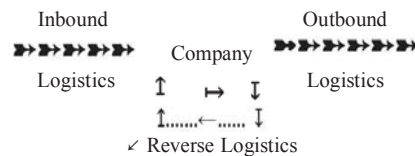


Figure 3.5: Forward and Reverse Flows in Logistics

Inbound and Outbound Logistics: Transportation is only one activity responsible for providing time and place utilities through inbound and outbound logistics. Logistics also involves forecasting demand, planning inventory, and storing goods as well as delivering them. Optimized logistics performance means that these activities are working closely together so that the customer of the logistics service is satisfied with the service, yet the cost the company incurs is minimized. This optimal performance requires an understanding of how the various logistical decisions and actions affect service for customers and total cost.

Consider, for instance, that a company seeks to minimize its investment in inventory. The company elects to hold all its inventory in one central warehouse location, for it has been shown that consolidated inventory reduces inventory investment. Warehousing cost should also be minimized because the company is maintaining only a single facility instead of several locations. Customers located close to the central warehouse will be pleased with this decision because the company must travel only a short distance to deliver items to these nearby customers. However, customers located farther from the central warehouse are likely to be disappointed. They will ask for faster transportation to reduce the order lead times. This might involve using faster means of transporting the goods, which, as noted, tends to cost more than using slower modes. In sum, holding inventory in one central location might reduce inventory and warehousing costs, but it will increase transportation costs. The business might also be at risk of losing sales to competitors who can offer shorter and more reliable order lead times.

Supply Chain Strategy: Conversely, a supply chain strategy that seeks to minimize transportation cost will likely not represent an optimal solution for the company. This might call for shipping orders to customers in large volumes and using slow means of transportation. Requiring large order quantities and using slow forms of transport are two more ways to disappoint customers and risk losing business to competitors. So although transportation is usually a sizeable expense for a company, and often the largest expense in the function of logistics, supply chain managers must consider the interrelationships among the various logistical actions and costs. Trade-offs are often associated with these decisions, and the company's customers are also affected. The recognition of interrelationships among transportation, inventory, warehousing, information exchange, and customer service is the embodiment of a systems approach. The manager seeks to optimize the performance of the

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logistics system instead of optimizing a singular element of the system. This book, therefore, treats transportation as one important element of the logistics system.

Selection of the Region

Selecting a region for setting up an enterprise is dependent on the following factors:

Availability of Raw Materials: The availability of good quality raw materials in required quantity at close hand is very crucial for the success of a new enterprise. The region must have abundant supplies of atleast the chief raw material required by the firm. Such a location helps to ensure continuity of production and reduces the transport costs. Few raw materials such as minerals, perishable food, cotton etc. play a vital role in influencing the location of the plant. For e.g., paper manufacturing plants require a regular supply of a large quantity of pure water and are, therefore, generally located near river banks.

Supply of Labour: The availability of the required grade of labour, i.e., skilled, semi-skilled or unskilled is an important factor influencing the location of the industry. Besides, the cost and productivity of labour, attitude of trade unions and the state of industrial relations in a particular region are also important. This also explains concentration of certain industries in certain states.

Proximity to the Product Market: An industry should ideally be located close to the market for the product produced by the firm. This on one hand reduces the cost of transporting the finished product to the market. On the other hand, it ensures maximization of profits by selling the goods at a competitive price. Generally, in case of the industries having national and international markets, plants are spread over wide geographical areas to have close proximity to all markets. In case of regional demand, plants are located near to the immediate market.

Availability of Transport Facilities: A factory requires transport facilities both for getting its raw materials as well as for reaching its finished products to the market. Hence, location is to be chosen in such a way that its total transport cost is the lowest. Of the two elements of transport cost, which one will have a decisive influence on the decision of location will depend on the characteristics of the raw materials and the nature of the manufacturing process. If the factory requires bulky commodities like iron ore, limestone, etc., it should be situated nearer to the source of these raw material. But, if the manufacturing process is such that the raw materials lose a substantial part of its weight like in the case of the chemical and pharmaceutical products, the factory should be located nearer to the market. Therefore, a region which provides adequate transport facilities attracts industrialists.

Supply of Power: With increased mechanization, a location which ensures a regular and adequate supply of power and fuel for the business has become an indispensable requirement.

Climatic Factors: Certain types of industries require a particular type of climate, e.g., flour mills need a dry climate while cotton mills require a humid climate. Natural factors are particularly important in extractive industries like plantations, fishing, agriculture, etc. Climate influences even the capacity to work on the part of the workers. But, the technological advancements like artificial humidification and air conditioning have reduced the importance of climate as a factor.

Government Regulations and Policies: Central Government and the State Governments have made several policy announcements from time to time in order to encourage development of industries. Various incentive schemes have been provided to

attract investment especially in backward areas. All this has become an important factor while selecting a suitable location.

Law and Order: Every entrepreneur is concerned about law and order as well as the political stability of the area around which he wants to set up his industry. It is only natural for every entrepreneur to locate his unit in those areas which are not subject to riots and political disturbances. No industrialist can ignore such national and strategic considerations while selecting the location of the industry.

Existence of Complementary and Competitive Industries: Such a location on one hand provides backward and forward linkages for the industries and on the other hand it provides a competitive environment for them. It increases the supply of the required raw materials and enhances the demand for the goods produced. It improves the labour market by attracting both skilled and unskilled manpower. It also improves the banking, credit and communication facilities in the area. It brings into existence various commercial services like warehousing, packing, forwarding, grading, appraising, advertising, etc. which helps in the growth and expansion of all the business firms in the particular area.

3.5 LOCATIONAL INTERDEPENDENCE

Changes in the Business Environment

The environment within which different businesses operate is complex and ever changing. Advances in ICT provision has altered this context in a number of significant ways which have an impact on the way the world and transport is viewed and utilized. Improvement in Communication Technology (ICT) has allowed us to develop new ways of working and communicating instantaneously with a large number of people, spread across a range of physical locations and distances and provided us with the potential flexibility to work wherever and whenever we want. This is a complex interrelationship with better communication potentially reducing the need for travel, but on the other hand reinforcing or possibly expanding travel demand as new markets and localities are opened. This is still a relatively nascent area of study and not surprisingly, there is little hard evidence — nor consensus — over the potential impacts that ICT has on travel demand.

A Necessary, But Not a Sufficient Condition

Compiled from business surveys, important factors commonly cited as important in considering a location include:

- (i) the quality and scope of physical and business infrastructures;
- (ii) factor cost and supply, especially labour;
- (iii) market demand and links to international markets;
- (iv) institutional infrastructure and networks;
- (v) a culture supporting civicness and entrepreneurship;
- (vi) indigenous company growth;
- (vii) agglomeration economies;
- (viii) technological development;
- (ix) as well as more social factors such as climate, lifestyle, image and crime rates.

Although some of these have an element of transport within these, none directly relate to transport *per se*.

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As a general rule, studies suggest that transport is only an important factor, once the decision to set up in an area has been taken. This is thought to be attributable to a number of factors:

- (i) The review notes that — within certain parameters, such as, access to airports interchanges where absolutely necessary — levels of transport provision are generally seen as ubiquitous within developed countries and as such, transport is seen as a necessary, but not a sufficient condition for influencing business location.
- (ii) Transportation costs are typically found to be only a very small proportion of firms' total costs — usually less than 5 percent. As such, any improvements to the transport infrastructure is likely to yield small cost savings and gains to firms.
- (iii) The decision to move may be prompted by transport difficulties and inaccessibility. However, it is argued that the transactions cost to any change in transport may be too high to enable the firm to respond fully to a change in transport costs. Therefore, the review notes that businesses are likely to change operations in discrete steps, and it is only when certain cost thresholds are reached that it becomes efficient to the firm to revise its number or location of depots.

It should be noted therefore that although influential, transport costs are not the primary business location driver on an international and national scale. An interesting conclusion to be drawn from the review is that on the one hand, transport being such a small proportion of a firm's costs implies that minor changes in provision and function of the infrastructure is likely to have little impact on businesses. Improvements in transport provision, therefore, are only likely to have a limited impact since firms are only making savings on a small proportion of cost. However, this assumes firms have perfect information on their costs. The review identified that current and expected levels of services provided by transport infrastructure (e.g., the quality, reliability, time, the width of the supplier or customer market and financial costs of journeys using it etc.) are a crucial component in the actual location decisions themselves. To this end, perceptions of improved travel time were considered an important factor in considering business investment. It is important to note, however, that research has historically tended to focus on the provision of new transport – opening up new markets and opportunities for businesses – rather than improving existing provision and this latter issue requires further investigation.

Urban and Regional Policies

A number of issues arise regarding the modelling of urban and regional policies. The issue of whether infrastructure investment or transport policy will consolidate firms in their existing locations or encourage reorganization or restructuring. SACTRA (1999) states that the spatially differentiated production model offers a possibility of estimating this effect. It is exceptionally difficult to measure the degree of embeddedness of an airport in its local economy and to assess the supply linkages and chains to the local economy and employment. It seems logical, however, to argue that smaller regional airports are much less capable of stimulating additional jobs in their regions. We would ask what the impacts are of location development policies on the long-term market stability of the industrial company. This is considered in more detail below.

Location Policies and Long-term Market Stability

The question of market stability is specific to impacts of policies on stability of industrial companies, and by extension to market segments. Policies that attract business to a

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location, through subvention or other incentive, act to influence the market for services, and the choices made by companies in location. Similarly, policies that influence the location rather than the company will also have a knock-on effect on the economics of the location for incoming investment. Various sources refer to this as dynamic macroeconomics and employ equilibrium models to predict impacts for location and best location for company operation.

A number of strands emerge in the literature; these concern concepts of Globalization, Business Cycle, Market Stability and Equilibrium Modelling. In its global context, companies are increasingly seeking incentives to locate in a particular location (Bates, 1996). As the flexibility of the company increases, often technology led so the ability to seek financial and operation incentives increases. Regions and authorities compete to invest in location attractors, in some instances modelling costs and gains against other government services. (LOCI – the Location Impact Model cited in Bates provides a review of the competing demands on investment). The situation appears inherently unstable, with companies moving in where greatest incentives are offered. Moshirian (2003) talks in terms of global financial forces, and argues that a holistic approach may be required to achieve financial stability. Business cycle research tends toward a company-based approach. Ireland (2003) sees the concept of macroeconomic stability as linked to business cycle stability. There being a link between the stability of the company, and the stability of the location. Cogley and Nelson (1995) suggesting that GNP growth appears to have a trend-reverting as companies seeking investment, incentive and growth.

Modelling and impact assessment appears widely in the literature, and should provide a methodological basis for assessment of policy impacts. Much analysis centres on Equilibrium Modelling (Ingram and Whiteman 1994, DeJonga *et al.*, 2000) identifying correlation between inputs to a neo-classical business cycle model and external environment, policy application and incentive. Sudden change ‘shock’ to the marginal efficiency of investment, as potentially resulting from incentive or change in incentive, provides a significant catalyst to business fluctuation. Greenwood *et al.* (1998) shocks and transmission mechanism may be important elements of business cycles. According to Guo (2003), a positive spending shock can lead to simultaneous increases in output, consumption, investment, employment and real wage.

A positive investment results in positive benefit, also noted in Aiyagari *et al.* (1992) are positive benefits from input, while uncertainty of incentive and fluctuation provide negative concerns and may result in movement or churn the impact on output and employment of a persistent change exceeds temporary change.

Concerning variability, the impact of following one or a range of policies affecting business location varies by location and dependent upon external economic and productive factors. However, it is equally clear that policies attract businesses to a specific location will have an impact on the market, and may in turn affect the long-term stability of the company and market sector, as well as impacting on the region or country concerned.

Areas of Common and Generic Measures for Policy Implications

Market Stability (Macroeconomic Stability) is seen to relate to any factor that influences the ability of a market to operate within a given sphere. Policies which affect business location may impact directly on markets, changing the nature of competition within the market or indirectly, by changing the nature of markets for alternative or substitutable products. Regions with established intervention may also recognize that reduction or change in intervention may impact on market stability. An example for change in intervention is

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apparent in European subvention of Agriculture (Common Agricultural Policy) and as a result of trade negotiations of the GATT. Impacts can be identified in three areas: those dependant upon type of policy being applied, those dependent upon regional characteristics and those de pendant upon company characteristics.

Policy Type and Impacts

Trends arising as a result of differences in regional and national policies:

Transport, Services/Infrastructure, Investment, Taxation, Region Type and Impacts, Urban Planning Policy Zoning Restrictive access, Compact patterns of urban development, Local Tax Incentive, Local Rent Incentive, Local Services Incentive, Industry type and impacts, Quality Control, Quantity Control, Environment Control Training or Education Policy. Further, there is a need to relate to issues planning policies need to consider in developing longer-term spatial patterns, specifically:

- (i) What issues are specific to company stability
- (ii) What issues are specific to market stability
- (iii) How are they defined
- (iv) How are they measured
- (v) How are they evaluated

Research Development

The quantification of impacts resulting from corporate and market instability and the relationship between incentive or policy and markets is significant in assessing the impacts of individual policies. Literature addresses various issues pertinent to this assessment but will need to be drawn out further to establish linkages and measurable dependencies.

Two areas of common measurement exist: equilibrium analysis and business cycle analysis. Both include external factors, cost, location dependencies, and could form the basis of methodology for wider analysis.

These might be seen as a bottom-up approach — what does a company seek to encourage development, and what are the impacts of location-based changes in these factors?

We would suggest the following specific areas.

- (i) A principal area of study would be to investigate the impact that continually changing incentive and counterincentive has on the ability of the company or/market to function.
- (ii) Issues that planning policies need to consider in developing longer term spatial patterns.
- (iii) What methodologies may be required to define, measure and evaluate these patterns?

3.6 THE IMPORTANCE OF TRANSPORT IN BUSINESS' LOCATION DECISIONS (LOCATION AND DECISION CRITERIA)

Business location has been taken to involve each of the various components of location change, involving businesses that move all or part of their activities into or away from an area (relocation), but also businesses that start up or stay in an area (location). The decision to locate (or relocate) will be influenced by specific pressures on the business (e.g., external factors such as the state of the economy; or internal factors such as lack of space to expand),

as well as the range of alternatives that the business has (location, logistic, production, or financial alternatives etc.).

Internationally mobile firms will usually have a wider range of alternative locations, while small businesses usually relocate nearby so as not to lose staff and customers. The definition of business can cover not just commercial businesses but also other organizations (e.g., third-sector or government). Change is usually measured in terms of numbers of firms or employment (and type of employment; e.g., full- or part-time; quality of jobs etc.) but could be measured in other terms (e.g., turnover). It can be useful to disaggregate the differing effects of transport in terms of each component of change, although most of the applications of the theories or models considered below focus primarily on change in total employment or firm numbers.

Theoretical Underpinning

Business Location and Firms' Decision-making Processes: Determinants of business location are multifaceted, complex and interactive. However, it is necessary to provide a framework in which these can be classified. Within a national context, businesses will locate where they have best access to markets and factors of production. Access to markets and inputs (including employees, links to suppliers, knowledge of and access to production and product technology changes, market knowledge), and their availability, quality and costs, will be influenced by transport infrastructure, and increasingly by telecommunications or ICT infrastructure.

There may also be other financial factors like taxes, government grants or perceived or real non-economic factors influencing location such as — quality of the physical environment; low crime rates; and access to quality school and leisure facilities etc. When faced with international location decisions, businesses are also likely to take into account factors like current and expected political stability, regulations, exchange rates, taxation and freedom from restrictive legislation etc.

Thus, however, successful cities require proximity factors and those factors which are most effective in influencing the location decisions of organizations, i.e.,

- (i) existing institutions specialising in innovations in technology and work practices;
- (ii) good transport links;
- (iii) access to risk and venture capital;
- (iv) a lifestyle that may attract highly mobile knowledge workers.

In addition to the attraction of a location (pull factors), there may be push factors which lead to a business moving, all or in part, from an area (e.g., due to expansion or congestion etc.). Let us now outline few theoretical approaches to business location. At a policy level, emphasis has generally been given to location factors. During the last decade, Porter's Competitiveness Model has been prominent amongst regional development and national policy makers, though the model has been criticized. Porter's model emphasizes transport and communications as important factors that affect the competitiveness of a region and of businesses within the region. It gives greater prominence to one factor that has arguably been relatively neglected by policy makers — i.e., the effect of transport on international competitiveness for any country as a whole and also for the international competitiveness of individual regions. Of increasing importance is likely to be the effect of changing logistics on business organizations and their location and how transport influences this, although there is relatively little published evidence on how these interact. Policy makers have also implicitly

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and explicitly used export base theory, as government support has generally been restricted to export industries (i.e., exporting from the region, which would exclude local retailers and service providers from getting assistance) although this does not necessarily have an explicit transport element.

Classification of Theoretical Approaches: There are many overlapping approaches, theories or models concerned with the location of business and the influence of different factors on this. Some examples are:

- (i) neo-classical models based upon free;
- (ii) behaviouralist models focusing mainly on the individual business behaviour and assuming that decisions are made with limited information, resulting in the choice of satisficing, not optimal, locations;
- (iii) institutional models which argue that economic activities are the result of external factors such as values and institutions. Factors such as mergers and take-overs are important in influencing the location of business;
- (iv) economic base models focusing upon industries that export from the region or locality;
- (v) location theories considering different specific factors and the importance of agglomerations of economic activity and regional characteristics;
- (vi) cumulative causation theory where success breeds success (or lack of success can lead to a downward spiral for an area);
- (vii) core-periphery models which focus on the different functions of regions and particularly the relationships between core regions and peripheral ones. Access and transport often being crucial as to whether one is within the core or determining a region's relationship to the core; industrial district models focusing on the importance of networks, entrepreneurship, innovation, co-operation, flexible production and specialization that help to make a successful regional economy — initially using the example of the success of northern Italy;
- (viii) innovative milieu models focus upon the importance of the cultural and institutions (i.e., wide synergies among local actors which give rise to fast innovation processes) in successful regional economies; and
- (ix) the competitive advantage theory of Porter;

Useful overviews of neo-classical and behaviouralist models can be found in McCann (2001) and comparisons of theoretical approaches in McCann (1998).

Importance of Location Characteristics

The characteristics of the region and the interaction and synergy of these characteristics are key to identifying the likely attractiveness and development of a location. For example, industrial structure, the quality and scope of physical and business infrastructures, factor cost and supply, market demand including links to international markets, institutional infrastructure and networks, a 'culture' supporting 'civicness' and entrepreneurship, indigenous company growth, agglomeration economies (incorporating static and dynamic externalities) and technological development, are all important to the development of regions. In addition, inter-regional relationships (e.g., in terms of transport and communication costs) and overlapping intra-regional factors such as inputs, agglomeration economies and production networks need to be fully considered.

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Importance of non-economic factors, such as climate, crime rates and other quality of life measures have also been highlighted as important in attracting business investment. The pleasant working and living climate of the Mediterranean 'Arc' or 'European Sunbelt' has contributed to the attraction of new high-tech and service businesses.

Further evidence for the importance of non-economic factors is also considered. Effectiveness of regional development agencies may also be important. Abilities to develop and utilize new technologies (products and production processes) are important for a firm and affects location choice.

Research on the Development of Successful Technological Regions

Technological change includes access to new technologies and help in utilizing them, propensity to innovate and opportunities for skilled staff so that they may be retained in the region. Hence, the competitive advantages for firms and people in regions are based on various, overlapping, factors according to different authors but based around forms of agglomeration economies or clusters of industries; flexible production and specialization; competition with rival firms, pressure from customers, specialized suppliers and factor inputs such as labour and technology; economies of scale and also dynamic inter-industry clusters. Networks of formal and informal relations between organizations are important for regional growth as well as wider untraded interdependencies such as labour markets, public institutions and locally or nationally derived rules of action, customs, understanding and values. Hence, policies need to address these issues as well as the physical and direct business support and labour supply issues, particularly in peripheral regions with limited levels of economic development and where large historic out migration may weaken the institutional base. Relative effectiveness of regions in providing the necessary economic, social and physical infrastructure is important to maximise the opportunities presented by the existing and future industrial structure and development opportunities.

Cluster Theory and Competitiveness

The nature of business competition and co-operation in an area or region will have implications for business location decisions. Level of competitiveness of different geographical areas varies considerably. A competitive environment will allow more firms to operate and therefore attract business or assist the expansion of existing or new indigenous businesses. Good transport provision in an area will increase effective market size and competition in any given area, thus allowing a greater number of businesses to operate. Without good transport links, markets are likely to become segmented (separated), thus reducing competition and the potential for new businesses to enter.

Role of Transport in Business Location Decisions

This sub-section aims to focus on the theory of transport-related drivers of business location. It provides an overview of literature examining whereby, and mechanisms by which, changes in transport infrastructure and costs impact upon business decisions. To put this in context, SACTRA noted that changes in transport costs have economic effects through:

- (i) the location decisions of firms;
- (ii) their influence on regional patterns of commerce;
- (iii) incentives to invest and to innovate;
- (iv) the commuting and migration decisions of households.

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Transport improvements can influence location decisions through market and competitiveness changes, such as costs of delivery or increased reliability of logistics systems and lower costs of access to supplies; labour market impacts through access to a larger pool of labour, which might have efficiency benefits; land and property impacts arising through access to land for business development and expansion or the attraction of mobile investment.

Looking at some of the mechanisms behind these effects, investments in transport infrastructure can have a direct economic effect by reducing transportation costs for firms and increasing the effective size of regional and local markets. This in turn creates new growth opportunities for successful companies and increases the attractiveness of an area to new businesses. The Treasury (2001) state that falling transportation costs may allow some economic activities to move to lower growth regions, as this enables firms to reorganize and outsource certain aspects of their production to take advantage of lower costs of production in peripheral, low-wage regions.

Empirical Evidence

Here, we shall study more recent empirical evidence drawn from a range of reports and academic studies. It examines the empirical evidence for the relative importance of factors that influence business location and the specific role of transport within these. These are often behaviouralist type studies, asking businesses what factors influence their choices.

Drivers of Location

Firms have to determine the availability of a suitable labour force at an appropriate cost as part of their location decisions. Firms may choose a location based on the cost and quality of labour, and market accessibility, balanced against other transport costs. The survey of local authority economic development officers indicates that issues such as the availability of suitable sites and a skilled workforce are as important as transport, if not more so, to investors when they choose where to locate. However, following are the most important factors in deciding where to locate. These are — availability of qualified staff; easy access to markets; external transport links; quality of telecommunications; availability of office space; internal transport; and number of languages spoken; the availability of a technologically skilled and customer-service-focused workforce; property availability at a reasonable cost was also a factor; the college and university systems are a definite asset to a growing company; and the availability of excellent public transport adds to the effective size of the labour market.

Role of Transport

Road Infrastructure: As regards the most important factors cited by businesses when making the decision to locate were:

- (i) cost of premises;
- (ii) quality of site environment;
- (iii) access to customers;
- (iv) availability of suitable sized site.

A study by the Welsh Economy Research Unit (1997) on economic development in Merthyr implies that improved road access has been an important factor in influencing the location decisions of recent investors. As a result, in addition to direct transport cost savings for existing businesses, there have been even greater wider benefits in terms of income and employment from new business investment. However, recent Welsh Government evidence has highlighted the importance of putting transport factors in context, citing cases where

labour quality issues have deterred new business investment in the valleys, despite the presence of new road transport infrastructure.

Ernst & Young (1996) found that congestion and the unreliability of trips adds to business costs, particularly for companies in the service sector and those serving urban areas. Although they note that through improvements in logistics, transportation unit costs have fallen in real terms over the past 5 years for many businesses. SACTRA (1999) argues that to overcome these problems, substantial investment is needed to improve the existing network to ensure competitiveness, primarily road, heavy rail, urban public transport and airports.

Transport Interchanges

McCalla studied 196 manufacturing and wholesaling firms in the areas around eight Canadian inter-modal freight terminals — three seaports, three airports and two rail yards. They found that transportation land use dominated other industrial land use, and crucially, that linkages between industry and the transport hubs were weak, i.e., businesses in proximity to the terminals make relatively little use of the facilities and very few businesses indicated that proximity to the terminal was a primary location consideration. They found that the industrial location-transport terminal relationship was indirect, business was located there because of the high level of accessibility found in the terminal zones.

Accessibility and Labour Supply

The OECD (2002) report concludes that accessibility is one of the wider benefits from transport infrastructure investment, and that improvements in accessibility can increase the market size for labour. This finding is backed up by Trinder (2001), who argues that this may be due to reductions in job search time, cost and accessibility (e.g., convenience, comfort, reliability and safety of travel). Trinder also states that although other factors such as planning and other urban policies have an effect, transport efficiency does influence the location of both firms and workers. SACTRA (1999) notes that transport affects not just labour as an input to production (commuting), but also as an input to other activities (social, leisure, etc.) that constitute the final demand for an increasing set of activities and therefore influence the market for goods and services. This will affect a business through direct, and induced demand. There is, therefore, evidence that the influence of transport on labour supply can be an important component of business location.

While transport is a factor in determining labour supply for businesses, there is more debate over whether labour supply itself is elastic to changes in transport. In other words, are improvements in transport in a given area likely to induce workers to move to or from that area? If not, this makes the choice of business location all the more important. SACTRA (1999) finds that in most studies carried out, transport factors were not a major influence in causing people to move either employment or residential locations, although it may influence choice of location once the decision to move has been taken. So, transport may influence local moves rather than, for instance, inter-regional moves. So, it is important to distinguish the different spatial scale of choice. Trinder (2002) argues that workers may be encouraged to migrate into an area with improved transport to take advantage of lower house prices made possible by the extension of the effective commuting area, and may also be attracted by improved living conditions that the transport improvements bring. This is supported by SACTRA (1999), which states that transport acts as an input to both commuting and other (social and leisure) activities. EEDA (2000) note that infrastructure investment might alter the perceived accessibility of places, thereby attracting inward investment, regardless of any change in actual accessibility. This is also noted by others in relation to air and rail

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infrastructure. They also state that transport infrastructure can play an important role in supporting industry clusters by increasing labour catchment areas and enhancing intra-area interactions. In relation to inward investment, they find transport investment to be an important factor in firms' location decisions, and therefore a useful policy for regions competing for mobile investment.

Limitations of the Influence of Transport on Location

There is further evidence that points to the limitations of transport-related factors in influencing business location decisions. SACTRA (1999) notes that traditional approaches have suggested that because transport costs are generally a relatively small proportion of total business costs, we can expect the response to any change in transport costs to be small, although transport costs might have a larger role if we assume that they are more variable than other costs of production, thus increasing the relative their impact. However, the transactions cost to any change in transport may be too high to enable the firm to respond fully to a change in transport costs. Therefore, businesses are likely to change operations in discrete steps, and it is only when certain cost thresholds are reached that it becomes efficient to the firm to revise its number or location of depots.

Ernst & Young (1996) note that fixed costs, such as terminal and vehicle standing costs, can make up a large proportion of transport operating costs and therefore improvements to transport infrastructure will reduce only the variable (i.e., transport movement) elements of cost. This implies that transport infrastructure improvements will have a limited effect on business location decisions as other factors such as land costs, vehicle purchase price and depreciation will also be major decision criteria. Indeed, SACTRA argues that it is not sensible in general to attribute any product market benefits and hence any price or cost margin benefits, to individual road and transport schemes. Alternatively, transport improvements alone are unlikely to boost the market share, turnover or profitability of businesses. An exception to this is where the new link makes possible economic activities that are inherently fixed in location and for which transport costs are a significant proportion of total costs, for instance, mining, quarrying, forestry and fishing. In this case, transport investments may reduce costs to the threshold where it becomes commercially viable to engage in a new activity.

Lawless and Gore (1999) argue that transport, in particular public transport, is of fairly minimal importance in explaining business location decisions, with only 7 percent of their Sheffield case study sample of 300 indicating that public transport was a main push factor in location. In this case, they were considering primarily relatively local (re)location. Majority of businesses in the LRT investment area indicated that they did not believe that the investment would change the amount of business they had and this increased only slightly in a follow-up survey 2 years later. Good road access was listed as important by over 30 percent of respondents; however, the study was not designed to test the impact of a new road scheme.

There is also evidence, although somewhat speculative, to support the argument that certain types of transport infrastructure development may cause businesses to relocate out of an area, particularly at the micro level. For example, the Scottish Executive (2000) report highlights that many local businesses in Edinburgh blame new style bus lanes for a decrease in turnover, mainly due to parking restrictions. Similar concerns have also been raised regarding congestion charging.

Thus, to sum up, there is a wide body of knowledge stretching back to the 19th century outlining the theoretical transport-related drivers of business location, taking into account a

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range of economic and non-economic theories. This initial review indicates that transport is a factor in business location decisions but is neither the only, nor the most important factor. There are cases where the linkages between transport investment in isolation and industrial location appear to be weak or indirect. However, there is strong evidence to suggest that while not sufficient, adequate transport may be a necessary condition for business location. Of fundamental importance is the need to distinguish the influence of transport on long distance (re)locations (e.g., long distance intra-regional, inter-regional or international) and relatively local business location decisions where transport infrastructure changes are likely to be more influential. It is, therefore, important to address in more depth the following questions regarding the precise relationship of the nature of the linkages between transport and business location. In other words, there is a need to ‘unpack’ the role of transport in determining business location in different circumstances.

Because the factors influencing location are inherently dynamic in nature, theories that ignore them, or treat them as static, are likely to be incomplete. Some of the questions that are raised help form the basis of our literature review in the following chapter. In particular, the following factors influence the relationship between transport and business location decisions:

- (i) Changing business organization due to changing circumstances, globalization and complexity, including the role of logistics to business location, technology and transport provision and requirements.
- (ii) The spatial scale that the decision is taken at (international, national, inter-regional, intra-regional and local) including the merits of different regions.
- (iii) Firm characteristics (e.g., size, sector, ownership, function).
- (iv) The issue of growth versus redistribution, i.e., do transport investments generate new activity or merely cause relocation of existing activity? This is strongly linked to the scale of the analysis, as inter-regional moves may be considered as growth for one region, but redistribution at a national level.

Role of Transport in Business Location

In order to assist in identification of issues relevant to current policy issues, summaries are separated into Air Transport and Infrastructure; Strategic Networks; and Localized Networks. Further, it is divided into six sections considering the influence of transport according to: changes in business organization, firm characteristics, labour supply, travel to work and social inclusion; spatial scale and growth versus displacement.

Changes in Business Organization and Technology

The interaction between transport provision, business and infrastructure is an established element of the production cycle. As the markets for production and consumption develop, so do the demands on transport provision and use. Recent changes in business organization and structure are affected by a range of factors ranging from an increased reliance on a global marketplace and new technologies, in particular ICT to local and intra-regional issues of access to retail services. Similarly, transport provision and the nature of the relationships between the supplier of transport services and the consumer has developed. This is in part as a result of the changes in the global marketplace and in part as a driver of the decisions that allow for the development of wider market opportunities.

Transport of raw materials, semi-finished goods and products between points of production and consumption forms the basis of the supply chain, while further elements of retail consumption include consumer access to goods and services.

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Theoretical approaches relate spatial location to systems, including those of production, in which movement of goods and people is a function of distance, cost and need. Classic theories (Von Thunen; Alonso and Losch) provide relevant concepts of distance and cost equilibrium within which the role of transport can be clearly identified. Complex business structures have emerged as a result of changes in world markets, the emergence of global corporations, and increasing expectations of suppliers. Development of world and regional markets in turn increases dependencies on the transport infrastructure facilitating movement. Outman (1975) identifies three areas of this relationship: economic activity, demographic activity and transportation facilities. As the nature of business develops, so the demand and need for transport services change, but so do demands on the workforce. This in turn impacts on the use and needs of personal transport. Shared commercial and personal infrastructure (e.g., Highways) can be impacted upon by either transport form, the one impacting upon the other. Equally, developments in the provision of transport services, their reliability and the perception of accessibility all play a part in the location decisions of the company, its suppliers and consumers of its product(s). Transport is not a separate element in business decision-making, but an integrated and vital component of the logistics of operating a business, impacting upon and influenced by changes in the business, business economies, location-specific demographics and existing travel patterns.

Changes Because of Globalization

Change in the structure of businesses is an inherent facet of the business economy. Recent changes range significantly from an increased reliance on a global marketplace, to local and intra-regional issues of access to retail services. Similarly, transport provision and the nature of the relationships between the supplier of transport services and the consumer has developed. This is in part as a result of the changes in the global marketplace, and partly as a driver of the decisions that allow for the development of the wider market opportunities. Gillis and Casavant (1994) observe a shift in manufacturing and secondary industrial markets from own account to contracted and third party service provision, i.e., an increasing reliance on the use of externally contracted services. In transport terms, this is witnessed by the growth of the logistics and total distribution providers including express freight and logistics services companies. Economies of scale achieved within the transport sector by logistics providers act to reduce the costs of provision of the transport element of a business, together with increased complexity and benefit of using Intelligent Transport Systems (ITS) in the delivery of the logistics 'product'.

Key to the increasing globalization of industry is the provision of quality air transport. Air services have a vital role in reducing travel times, increasing accessibility and therefore improving economic efficiency and productivity. Critical factors in companies' decisions to locate near an airport include the need for rapid delivery of products (air freight) and for international business travel. Airports serve an important role in attracting inward investment, particularly from overseas, help to stimulate and sustain the growth of local businesses by opening up new markets and supply chains. Of course of particular importance for air transport is the level of services provided (e.g., direct flights to relevant locations at suitable times or good interconnections) and surface access as well as the actual physical infrastructure.

Businesses in computing, software, research and development, biotechnology and some food manufactures as well as the banking, finance and insurance are heavily dependent on air freight and air services. However, research has shown that the most important factor

governing whether a company needs to be near an airport appears to be the degree to which the company is involved in multinational trading or contacts.

Airports can promote the 'clustering' of businesses, whereby a number of interlinked manufacturing and service activities are concentrated in one place. Airports are frequently the focus of clusters of businesses serving the aviation industry directly or requiring easy and frequent access to air services, and to freight-oriented businesses and business parks. Companies in many clusters are directly related to air-dependent services, such as aircraft maintenance or the manufacture of aeronautical parts. Wider clusters may develop of industries dependent on frequent air transport such as business services and high technology manufacturing. Additionally smaller, more localized clusters of businesses may develop in areas such as catering, cleaning and security that may provide accessible employment for local people.

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Transport of Goods as an Element in the Supply Chain

McCann (1998) notes that transport costs are only part of logistics costs, estimating this at between 10 percent and 30 percent. He concludes, transport costs, although central to classical location theory, are empirically of very little significance in explaining overall costs faced by firms. Having said that, it is important to examine where and how transport fits in to the logistics process, as other transport factors such as timing, reliability and perception of cost can be as important as cost itself. Movement of goods both upstream and downstream of elements of the manufacturing process has become typified by inclusion within the wider production process. The transport elements of the production become internalized to the costs and pressures of the wider supply structure. Tighter control of delivery and use of stock, Just-in-time (JIT) practices, and a demand for added value in components (part finished and partial component assembly) increases demands on the logistics elements of the supply chain.

Possibly as a result of this, the way transport and logistics companies operate has developed with a reappraisal of modal combinations. As an example, traditional rail using industries, such as the Royal Mail have moved in a large part to road and air transport. Speed of delivery and distance attainable are improved, benefiting from the faster mode(s), while facility requirements change as a result. Transshipment points between the old and the new infrastructures may be required, introducing a further element of potential delay and costs. Transshipment and the accuracy of information exchange may be a particular issue where third party facilities are used, airports, shipping terminals and/or railway services handle many differing operators shipments and may add delay in the total logistics chain.

Demands placed on businesses and supply are also changing, in line with increased accuracy and flow of information, and in terms of consumer expectations. Multinational and large firms have maintained and increased the complexity of their operations while reducing own account transport requirements, while many smaller-sized companies have developed around geographical and technical clusters resulting in changed demand and reducing costs of transport provision. Ellison and Glaeser (1997) observe that the presence of one firm in a location reduces transport costs for subsequent firms and this forms a driver for geographic concentrations. There are also secondary transport influences that impact on the reliability and costs of transport within the logistics chain. ITS and communication systems have impacted on the perceived and actual reliability of the transport element. Ability for customers to track and trace products in real time improves the reliability and reduces the need for stock holding, while internet and automated ordering and customer handling reduces the costs of provision.

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Further Development of Logistics ‘Models’ and Changing Impacts upon Transport**Role of Transport Firms in Location**

As firms increasingly outsource transport services, it is the impact of transport infrastructure upon freight companies, rather than actual manufacturers or service companies, that becomes key in many circumstances. For instance, a firm may not be concerned with transport as once the goods leave the factory it is up to the freight company to deliver. So, the unit of analysis may most appropriately be the freight companies and their networks, economies of scale, scope etc. (and it may be these economies of scale, scope etc. of the freight companies that may influence overall transport costs in a region, rather than the simple transport costs of a single manufacturer). The existing and potential, networks of these freight companies may then be a necessary, but not sufficient, condition for a firm’s location.

Widening Role of Assembly and Transport

Changing pattern of logistics especially (but not solely) in manufacturing has potentially profound implications for the role and impact of transport upon employment location (consumer service companies are also greatly affected by logistics changes but front line premises are more dependent upon the best customer location, although warehousing may be affected by logistical changes). Taking logistics to mean the management and flow of inputs through an organization, then the operation and control of logistics is undergoing change. Just-in-time production has been used for some decades (some argue that its original introduction was based upon Japanese firms trying to reduce the cost of inventories and not to do with transport *per se*). Just-in-time does not necessarily imply close geographical proximity between supply source and customer, but rather factors such as certainty and precise timing of delivery. The increase in Build-to-order products or requirements for rapid adjustments to changing sales, often on a national or supra-national scale, suggests that supplying and transporting components needs to improve in terms of speed and flexibility. Also increasing emphasis is given to small batch deliveries to dispersed customers. Further moves have been made to reduce storage and other inventory costs and also, importantly, administration costs, through delivery direct to the production line, so that inputs do not need to be stored, but also they do not need to be counted as any shortfall or surplus of inputs will be identified at the end of the production process. Strict quality penalties can also further transfer risk and obligations to the suppliers. Increasingly, this has moved even further with suppliers responsible for pre-assembly (including packaging) of components, so a partially assembled component is delivered to the production line. In addition, many firms have been moving towards global sourcing, so only one (or perhaps two to avoid over-reliance) firms needs to supply components, or services, globally. This can force smaller firms into difficult choices (e.g., one Scottish firm had to decide whether to set up a new supply centre in California as its main customer in Scotland had moved towards single global sourcing. This involved important risks for the firm, but if it did not expand overseas, it would lose a major customer). This trend could be moved to dealing with other inputs such as staff, where a subcontractor may be responsible for ensuring that a particular function is provided for within a wider production process (i.e., an intense form of outsourcing). This may have profound impacts upon transport and transport firms. First, increased speed, reliability and certainty of transport links between firms and suppliers, and firms and their final customers is increasingly important. Also transport firms may have to get increasingly involved in the preassembly of components (or assemblers or suppliers need to become more involved with transport services). This is likely to influence the location of their depots and possibly the

merging of depots and assembly functions. In either case, this should affect the location of employment. The global sourcing also forces firms to reorganize their entire firm and distribution system and leads to consolidation in the freight industry and an increase in assembly.

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Role of Changing Technology in Business Location

There has been a considerable amount of research, stretching back several decades, concerning the potential for changing technology, in particular the implementation of Information and Communication Technologies (ICTs) to facilitate e-working or teleworking from remote locations. Arguments by Weber (1909, 1929), Castells (1993, 1996) and Cairncross (1997) have suggested that the rise of technology will diminish the importance of business location as communication over distance becomes easier. ICTs can also lower costs of communication and can lead to improved efficiencies in production and logistics. Implemented in parallel to the development of traditional transport services, ICTs have had an impact on location and transport choices and this is expected to increase.

E-working

Huws and O'Regan (2001) define e-work as — any work which is carried out away from an establishment and managed from that establishment using information technology and a telecommunications link for receipt or delivery of the work. A study by the European Commission (2002) highlighted the results of the EU EMERGENCE Project which showed that under current technology, approximately 10 million new e-workers are likely by 2010, however, if changes in technology continue at the current rate, this is likely to reach 27 million by 2010. The study found that the most common forms of e-work have become use of remote offices, such as call centres, and employment of multi-locational workers, rather than fully home-based e-work. The study found that the single biggest (and most rapidly growing) sector is outsourcing driven by the search for technical expertise, cost and quality. Huws and O'Regan (2001) identified eight factors that appear to influence e-work location. These are — relative service sector salaries; graduate availability; language; time zone; telecommunications infrastructure; trust or previous contact; internet literacy; economic development and 'openness'.

Studies have shown that workers in lighter industries are more able to engage in e-work, i.e., telecommute, work from home or split work between locations (Graham, 1998), although Corporation of London (2002) notes that video conferencing and other technologies provide useful communication aids, but are not a substitute for face-to-face meetings when it comes to client relationship building. E-work can also involve the outsourcing of work *en masse* to remote locations, for instance, to take advantage of low rates of taxation and/or labour costs. A commonly cited example would be the outsourcing software production to India and business services to the Cayman Islands.

There are, however, arguments as to the extent to which e-work can influence location and substitute for conventional travel. Huws and O'Regan (2001) argue from the results of an empirical study that the skills of the workforce and technical expertise in a region are the most important drivers of location and that this leads to a clustering of similar firms. They argue that transport factors play a minimal role; therefore the potential for e-work to influence location through substitution is limited. A study by the Home Office Partnership and Hague Consulting Group (1997) estimated that uptake of teleworking in the Cambridge area could result in traffic reduction of between 4 percent and 8 percent, mainly in the morning peak, which is a significant but modest figure. A similar study by Amárach

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Consulting (1999) estimated traffic reduction figures from telecommuting in Dublin to be around 1 to 1.5 percent.

A report by HOP Associates (2000) states that problems expanding telecommuting result partly from an industrial age culture, i.e., an inherited model of work that involves belonging to a company, having a designated workplace and commuting. Other problems identified were social isolation, quality issues, and lack of employer support.

Technology, Production and Logistics

Freeman (2002) states that ICTs have had a significant impact on the location and transport choices through lower costs of communication and can lead to improved efficiencies both in terms of production and in terms of logistics. This does, however, vary dependent upon the nature of ICT application. In addition, evidence from Greenaway and Nelson (2000), and Venables (1998) implies that changes in the firm, use of automated production, differing patterns of labour forces and fragmentation of the production process has increased the need for carriage over distance in some elements of the production process, and led to the development of new trade theories.

Influence of Transport Varies by Firm Characteristics

Particular types of firms have particular needs for transport. Historically, the movement of perishable goods by train increased the range of their market and for example, encouraging the development of dairy sectors in the South and West of England. Current transport speed and service levels are more evenly distributed across a wider spatial area. However, differing firm types still demand differing transport provision, and are influenced differently by the infrastructure and transport operations. Nicolaidis and Dobson (1975) model clusters of homogenous populations, including industries, on the basis of common pattern of preferences. Changes in the firm, use of automated production, differing patterns of labour forces and a fragmentation of the production process has increased the need for carriage over distance in some elements of the production process. These led to the development of new trade theories and models in the 1980s including increasing distance trade barrier and market access issues. Individual sectors are also documented in terms of their dependencies on transport as a factor of production.

Sectoral Differences

The Business Service Sector: Phelps (2001) identify transport and communication as first ranked factor in choice of location for business service sectors. Analysis suggests that the banking, finance and insurance sectors are heavily dependent on air freight and air services. As well as requirements for rapid delivery by air, business travel is also a critical factor in many companies' decision to be near an airport. This highlights the importance of air travel to business investment as a whole.

Retail: Retail business location differs significantly from manufacturing and industrial requirements, as it is normally the consumer that collects goods, rather than the producer that delivers them. Transport influences on location have as much to do with consumer accessibility as producer supplier requirements. Typically, mass retailing has seen a move away from city centres, where access for private vehicles may be restricted, to peripheral locations where access is increased. The result has been a proliferation in many western economies of out-of-town retail centres easily accessible to the private motorist and equally to the supplier delivering goods to outlets. However, a number of factors have developed

against this trend. As with the most of the western nations, has experienced a split between mass retail — tending to become established in ‘Out of Town’ shopping locations on the urban periphery, and specialist sale within the central area. What Audretsch (1998) sees as a paradox — the importance of local proximity precisely at a time where scale appears to dominate economic activity — highlights the divergent pressures on the location of businesses by type influenced by and impacting upon transport facilities and use. The city centre location is, therefore, experiencing a comeback, both in terms of the specialist retailer for whom mass access by private transport is not as significant a factor, and as a result of reaction against out-of-town shopping by consumers and legislators.

Manufacturing: Manufacturing investment remains an important component of overall FDI, although its relative share has declined in recent years. Manufacturing and technology industries have also experienced location-specific pressures identifiable by sector. Agglomerations (concentrations) of industries, and the benefits of proximity of similar industries and their suppliers and or consumers is noticeable in different sectors. Ellison and Glaeser (1997) identify a propensity to agglomeration, in specified Standard Industrial Classification (SIC) codes, i.e., a clustering of business of a given industry in the same location. Natural propensity exists in industry types dependent on natural resources (ship building is given as an example), while benefits of reducing transport costs are often cited as factors in the location of similar industries in the same location. Almeida and Kogut (1997) argue that choice of location is particularly important to manufacturing businesses, citing Silicon Valley semiconductor manufacturers as an example. Such businesses require being located in the proximity of businesses in the same cluster to allow face-to-face networking and ensure competitiveness. In this sub-sector, transport is a secondary location factor.

Light industrial and electronics sector companies appear to favour new computing parks with particular characteristics. These are often located at the periphery of the city and in open and preserved greenland. Examples of this can be found in most countries, including the UK, such as Cambridge Technology Park and Tandem (formerly Wang and Compaq) in Sterling. The location and form of these parks often leads to the production of reverse commuting from inner cities to the outer sub-urban locations. Also there is often a spatial mismatch between some labour tasks to company location. In terms of FDI, IT and communications equipment sector accounts for only around 3 percent of total investment flows, although the value of this may be higher.

Gillis and Casavant (1994) highlight the following regarding manufacturing location:

- (i) Investment in road infrastructure is a key to the location values of light industrial and commercial businesses;
- (ii) Air freight has an increasing impact on the development of some areas of manufacturing;
- (iii) Development of a regional economy should encompass parallel ICT and ITS.

Analysis suggests that computing, software, research and development, biotechnology and certain food manufactures are heavily dependent on air freight and air services. Many of these sectors are producers of high-value, low-weight products, with an international customer base that demands rapid delivery. Typically these companies are in high-tech, knowledge-intensive industries. Sectors with a high degree of research activity, such as biotechnology and pharmaceuticals, need easy access to air services, because their staff are often highly mobile and their competitive position depends on accessing external sources of expertise and information. The manufacturing sector only accounts for around 15 percent of

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demand for inter-industry air services, although much of this demand can be accounted for by the higher order activities within the sector that the regions are trying to attract. In addition, research has shown air transport links to be important for manufacturing businesses that require face-to-face meetings and that the quality of air transport provision is an important determinant of perceived location quality. Electronics and computing industry businesses remain the most adaptable to ICT and other electronic developments. Evidence suggests, however, that the benefits of agglomeration are significant to these industries. In contrast, heavy industry is likely to incur the highest transport costs, and have the highest location dependencies. The workforce is less likely to telecommunication than in lighter industry and service sectors.

Tourism: In tourism, although natural assets are fixed, transport infrastructure can influence the viability of investments that maximize the economic potential of these assets. An example might be a road leading to a mountain area that allows development of a ski resort. In addition to road access, the importance of air transport in tourism has been highlighted. SACTRA notes regarding tourist attractions that as natural assets are fixed in location, transport costs are a significant proportion of total costs and tourism is important to many peripheral economies. It is also important to cities (e.g., cheaper air travel has permitted greater inward and outward short stay and other tourism). However, transport costs in this case are borne mainly by the consumer, not the service provider. In some case, slow transport may be part of the tourist experience (e.g., single track roads or ferries), but this only operates at a local level and good access to the region is still required. It also notes that there are problems in measuring the effect of transport on tourism, as the tourist 'industry' is comprised of multiple sectors. SACTRA recommends that further research be undertaken into the effects of transportation on tourism due to the importance that this industry plays in the economic performance of many fragile economies.

Firm Size: It is suggested that the impacts of transport infrastructure reflect the scale of the business itself. A multinational enterprise necessarily needs to move products across national boundaries and is influenced the most by the ability to operate on a large scale internationally. This does not, however, remain the case for smaller scale companies sourcing internationally, in which international movements are often contracted to either supplier or third party. The same can be demonstrated downstream of production, in which small- and medium-sized enterprises are considered more likely to contract to third parties than operate own account. An exception to this exists at the local urban level where retailers with a community or neighbourhood district are providing delivery to consumers, such as local supermarket delivery services. Mairé and Sedillot identify a correlation between physical size of business and scale of location, including access to raw materials for manufacturing production; historical possession and location possession for secondary industry; knowledge and concentration for technology industry.

Button *et al.* (1995) in an empirical study based on a survey of 939 firms in new premises in west-central Scotland found bus links had a greater importance for large firms (probably for travel-to-work for lower skilled workers). They found that the quality of transport infrastructure did not induce firm migration but influenced location decisions once firms had decided to move.

Ownership of Business: Leitham *et al.* (2000) carried out an empirical stated preference study of 40 firms in west-central Scotland. They found that different types of firms (e.g., foreign inward investors, UK inward investors and local firms) varied in their views as to the importance of transport and of different modes and of different proposed transport

infrastructure investments. Specifically firm location factors were found to vary according to the origin of the firm — classified as local relocations; foreign inward investors and branch plants sourced from national bases. The importance of road links to location choice varied considerably between these groups with the latter rating motorway links the highest of any of the groups of firms. In contrast, overseas sourced branch firms found road links largely unimportant, being outweighed primarily by considerations of workforce and premises. Local relocations fell into two distinct groups with respect to the importance attached to road links (between relatively important and non-important), whilst considering the other factors simultaneously.

Similarly, using different data, Button *et al.* (1995) found that there were important differences in the type influence of different types of transport infrastructure investment on firm location. Road and air infrastructure had a greater impact on inward investment than endogenous firms (with roads particularly important for inward investment and airports for overseas inward investment). Because of the importance of air transport to foreign inward investors, it is useful to examine the effects of air transport provision in more detail. In this, air transport study drew upon consultation with a wide range of interested organizations and individuals. The study examined, among other issues, the effects of developing air transport on business and the economy. Feedback on positive effects linked to business investment are as follows:

- (i) good air transport links to and from regional airports are an important factor in decisions about inward investment and location of business;
- (ii) airports brought in tourism and inward investment;
- (iii) airports boosted GDP and provided many thousands of jobs;
- (iv) airports provided arteries for trade and investment in the global economy.

There were some concerns raised regarding negative effects of air transport that could impact on business location decisions including:

- (i) overheating of local economies in areas of high employment (such as the South East), leading to labour shortages, wage inflation, increased land and house prices;
- (ii) damage to small firms;
- (iii) road congestion;
- (iv) regional imbalance caused by concentration in the South East;
- (v) accessibility to skilled workforce and road links, rather than air links, are more important for air links and cause less environmental damage, in particular for short and medium trips.

Labour Supply, Travel to Work and Social Inclusion: Access to labour is often cited as the most important determinant of business location. Conversely, the location of firms and the subsequent ways they source their labour supply can also have an effect on transport efficiency and job accessibility. Because of this, it is important to identify:

- (i) how do transport factors influence business' ability to source labour?
- (ii) what are the impacts of business location on travel to work and commuting?
- (iii) does firm location and transport provision impact on the ability of socially excluded people to access employment?

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Labour Accessibility: In this section, we shall study the evidence examining how transport affects business' ability to access labour supply and how this in turn can influence location.

The Influence of Transport on Labour Supply: There exists a body of literature assessing the impact of transport infrastructure on labour accessibility. The OECD (2002) report found accessibility to be one of the wider benefits from transport infrastructure investment. It stated that improvements in accessibility can increase the market size for labour, but noted that this could have positive or negative implications for the region in question (for example, if an area of high unemployment was opened up to increased labour market competition). Additionally, EEDA (2000) stated that transport infrastructure can play an important role in supporting industry clusters by increasing labour catchment areas and enhancing intra-area interactions. Bruinsma *et al.* (1997) found that road construction was beneficial to travel and perceived travel times; this would increase the effective labour supply of businesses in the area. Trinder puts forward evidence that investment in transport infrastructure can reduce the search time for job seekers, which will increase the potential labour supply for businesses in the area. Felsenstein (2002) argues that suburbanization of the labour supply, i.e., a movement of the residential population from the city to the suburbs, has resulted from changes in the accessibility or cost equilibrium and is largely related to transport infrastructure. In other words, transport factors do not just increase firms' access to an existing fixed supply of labour, but can be instrumental in inducing labour itself to move. Although such labour migration has been found to be selective with lower skilled people left behind.

The Influence of Labour Supply on Location: Looking at evidence for the mechanisms by which labour accessibility can influence location, Phelps *et al.* (2001) argue that part of the reason for the recent urban to rural shift in location experienced in the UK can be explained by companies retaining a large majority of labour inputs from immediate and local vicinity. They argue some elements of an observed urban-rural shift may centre on the phenomenon of borrowed size — the formation of agglomeration of firms and other factors (including labour) with similar interests. Small firms may locate in small settlements while having access to specialized labour from nearby conurbations.

Whereas Phelps (2001) consider the impacts of borrowed scale as positive to labour production, Keeble and Tyler (1995) suggest the 'Ruralization' of a business as an opportunity for reducing workforce size. Their study provides a review of a shift, seen as generic, of industry away from city centre locations to urban periphery and rural locations.

Felsenstein (2002) from the theory of suburbanization argues that move of population out of the centre, impacts on the move of some industry sectors to the periphery partly as a result of following the population for market share. At the city scale, the factors that impact on the residential population are driving forces for the light industrial and commercial businesses with limited barriers to movement. This finding is significant, as a disparate body of empirical evidence suggests the opposite sequence, i.e., people follow jobs. However, it is important to distinguish literature that refers to short distance migration (e.g., intra-regional or within a city) and long distance (inter-regional) migration. High technology flagship employment centres such as science parks and government laboratories have been credited with producing the seeds of metropolitan expansion.

Travel plans: A recent policy tool used by the government has been the promotion of Travel Plans, formerly known as Green Transport Plans. Travel Plans are basically packages of practical measures to encourage staff to use alternative commuting methods to single

occupancy cars, and to reduce the need to travel to work or as part of work, at all. A report by the Department showed that the take up of Travel Plans has been limited among private sector businesses, but more successful in certain areas of the public sector. Among the findings were that:

- (i) 24 percent of local authorities, 61 percent of hospitals and 50 percent of higher education establishments had a travel plan in place;
- (ii) however only 7 percent of the businesses surveyed had a travel plan in place or were developing one, and only 4 percent were considering one.

The figure for businesses is low, but the report highlighted that that 22 percent of businesses might be encouraged to implement a travel plan if provided with more assistance by the local authority in their development. The report concludes that there may be a case for more Central Government guidance for local authorities in helping businesses to implement plans. The reasons for take up, or lack of take up of travel plans was also examined in the Department for Transport report. It concluded that, the main motivation for local authorities was to 'lead by example' – they felt that they could best to persuade businesses to take up travel plans if they had one of their own, i.e.,

- (i) the main incentive for hospitals was pressures on parking space;
- (ii) the main reason for higher education establishments was to gain planning permission — those who did not develop one reported lack of funding and time to be the main obstacles.
- (iii) the primary motive for businesses was environmental reasons, and the main impediments were lack of financial support from Central Government.

The report noted that one possible method to increase the attractiveness of travel plans to businesses would be to offer employees a tax-free sum for surrendering their parking space. It was also noted that there were currently tax disincentives for companies running work buses.

Transport, Business Location and Social Inclusion: The right employment location and transport provision can have positive social inclusion impacts by connecting workers and potential workers in vulnerable social circumstances to employment. Conversely, the wrong location or lack of transport can reduce employment accessibility, with negative inclusion impacts. For instance, the location of a bank call centre in an out-of-town location with ample car parking but poor public transport to the site will limit the employment opportunities for those without private transport. The OECD (2002) Report concluded that transport infrastructure investment could have positive (through increased accessibility and mobility) or negative effects on social inclusion within a region.

The Policy Agenda: The ODPM Social Exclusion Unit report highlights the importance of accessibility planning in reducing social exclusion. Accessibility planning is the co-ordinated transport, business and inclusion planning to identify those most at risk and take action to increase employment access. The report identifies the following issues, i.e.,

- (i) People may be prevented from accessing employment and services because they are socially excluded. In particular, the lack of access to private transport is a barrier;
- (ii) Inappropriate location of employment and services combined with poor transport provision act to reinforce social exclusion;

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- (iii) Negative transport externalities also impact on socially excluded people as they are often affected by traffic noise and pollution.

Groups at Risk: Specific groups at risk have been highlighted. Hamilton and Jenkins (2000) in an analysis of secondary data sourced mainly from UK government statistics, found that poor transport limits women's employment and quality of life, as women rely more upon trip-chaining and off-peak travel (due to part-time work). They suggest that reforming public transport to meet the needs of women would have commercial, inclusion and environmental benefits. In addition, evidence shows that women can face constraints in their travel patterns, and hence employment opportunities, due to household responsibility — the 'household responsibility hypothesis' — has been advocated by Pickup (1989) and Turner and Niemeier (1997). McQuaid (2001) found that socio-economic factors such as females, having dependent children and low education levels were more influential in determining shorter potential travel times of job seekers (and hence the chance of gaining employment) than provision of public transport, accessibility or access to private transport. The Select Committee on Education and Employment (1998) reported that lone parents were at a disadvantage in getting to work as only 35 percent have access to a car, compared with 90 percent of couples with children. Similarly, McGregor (1998) found that travel problems, connected with child care, low wages and part-time work can act as a barrier to employment and that some employers also discriminated on travel-to-work grounds. Residents of rural areas are at risk from exclusion, particularly if they do not have access to private transport. A survey of unemployed job seekers in the north of Scotland highlighted that despite the majority of these job seekers holding current driving licences, relatively few had access to their own transport. The cost of owning and running a vehicle was cited as the main reason for this. For 54 percent of long-term unemployed, the sample of the costs associated with private transport were viewed as an important barrier to work.

Business Relocation: Houston (2001) conducted a retrospective longitudinal study of firms who relocated to decentralized locations within the Glasgow conurbation. He found that when firms relocated to decentralized locations difficulties were created for certain groups of workers that could not relocate or move house, particularly lower paid and lower skilled workers and those dependent on public transport, especially women. Houston stated that improvements in transport infrastructure would partially alleviate this, however, there is a problem in that decentralized locations are more difficult to service by public transport.

Studies in the US have identified the problem of employment shift to sub-urban areas not served by public transport. This creates problems for inner-city residents, particularly black and manual workers. Likewise, in the US, Goldenberg in a US study of unemployed and evaluation of a project to link transport measures into employment initiatives, found that problems exist where jobs move from urban centres to outlying areas not served by public transport.

Tackling the Problem: The ODPM Report states that promoting inclusion through accessibility will involve improvements to the planning and delivery of local transport and the location of employment and key services in accessible locations. Existing planning policy guidelines are designed to promote the location of employment in accessible areas by ensuring that new business developments that employ large numbers of people are located in urban centres and/or near public transport interchanges. A number of micro-level studies have sought to evaluate specific investments in addressing social inclusion. Grant (2001) examines the role of transport in combating exclusion in Liverpool. He argues that because of the specific nature of transport demands by each community, transport planning must involve

early engagement with the community to ensure that such demands can be properly examined and realistic aspirations established. He also notes that due to the complexity of journey demands, investment in smaller-scale community-based transport projects may be the most effective solution to transport exclusion. He gives the example of flexible demand-responsive transport at below taxi cost, running alongside main line services. Other evidence comes from Goldenberg who found that in several demonstration projects, the transportation services provided through the initiative enabled individuals to get a job or to increase work to a full-time basis. Zenou (2000) used a theoretical model based on the residence of workers relative to employment in a monocentric city and found that improving transport by subsidizing commuting costs of all workers reduces urban unemployment, but increases inequality, whereas a policy of subsidizing transport for only the unemployed reduces inequality but increases unemployment. Hine and Mitchell (2001) argued that improvements to transport services can help promote social inclusion, particularly among the elderly, those without a car who live in peripheral estates, low income groups, bus users and women.

Grants for driving lessons and even towards the cost of a car have been used to reduce social exclusion caused by lack of accessibility. Stafford found that possession of a driving licence increased the chance of finding work among men and women aged 18-24. This may be because of travel-to-work issues, but also because a driving licence is often an essential part of an employer's person specification and/or is seen as a proxy for motivation.

Around the UK, regional airports are seen as a potential focus for local economic development and regeneration and can help to boost previously rundown areas as part of wider regeneration strategies. Airports can facilitate the generation of business clustering and help to attract inward investment and boost tourism. While the presence and growth of an airport near deprived areas is only one of a whole host of fact that can contribute to regeneration, it is nevertheless an important one for improving employment prospects and promoting economic growth in local communities. The inward investment and tourism that airports attract can also help to regenerate areas, as with the new McCausland hotel, the Hilton and Posthouse Hotels that have recently opened in the heart of Belfast. It has been estimated that around 180,000 people are employed directly by the aviation sector in the UK and a further 200,000 indirect jobs are supported by the sector. The study estimates that, on average, 1.3 indirect jobs are created for every direct job in the aviation sector, although this will vary from airport to airport and with circumstances. Induced employment multipliers for regional airports have been produced by ECOTEC (2001). These estimate jobs not directly related to the aviation industry that are generated by the aviation sector. The multiplier varies between regions and airports, but evidence points to an average figure of around 0.3 induced jobs created for every direct job at UK regional airports.

There is also evidence to suggest that Information and Communication Technology (ICT) may be of use in order to overcome problems of social exclusion caused by lack of mobility. Examples include SACTRA (1999), which reported that telematics could substitute for journeys, facilitate initiatives such as community car clubs, provide on demand special transport and improve information on public transport routes and times. Grieco argued that ICT may be able to enhance the mobility of excluded people through: quality information and timetabling; intelligent and in-home reservation systems; on-demand transport for those working unsociable hours; expanding the role of the third sector through private car use where deregulated bus services fall short of service requirements; and through the extension of car clubs to cover low-income areas. In addition, Carter and Grieco (2000) note that ICT

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provides possibilities for breaking down gender, class and racial boundaries, assisting in delivery of the New Deal and improving the transport environment.

Influence of Transport Varies by Spatial Scale

The geographic scale of analysis influences the apparent impact of transport and the significance of its constituent elements. Similarly, the role that transport plays in providing locational advantage differs by spatial scale, type of company and time dependencies of product elements. SACTRA states the case put forward by business for transport investment, that an efficient transport network is vital to a strong economy at local, regional and national level, by providing access to labour, suppliers and customers. Transport costs can, therefore, influence the location of economic activity between towns, regions and countries. The needs and determinants of the relationship between business and transport vary further by the nature of spatial distribution, whether in terms of upstream input supply, distributed production or extent of the spatial distribution of consumers.

Linkages between Spatial Scale and Transport: What Audretsch sees as a paradox — the importance of local proximity and geographic clusters precisely at a time when globalization seems to dominate economic activity — and highlights divergent pressures on location of businesses influenced by and impacting upon transport facilities and use. Transport and its influence on business location varies by the spatial scale of the markets of production and supply. Significant are the distances required to source materials, the spatial distribution of the business itself, and the distances required to transport products downstream to customers.

Storper identifies within trade and location theory forces that could lead to locational dispersion (comparative advantage) or locational concentration (scale economies) in the face of global markets. Spatial scale impacts on the role and importance placed on transport in the choice of location, while access to infrastructure will in turn impact on the competitive advantage of the location. Transport influences are addressed equally as contributors to locational advantage — a driver of globalization, and influenced by regional business location — a driver of comparative advantage. Fujita (1999) provides the broad picture of linkages between both approach and discipline with reference to the work of Walter Isard. An Economic Geography approach to location and spatial economy defines the theory of location and space economy, as embracing the total array of economic activities, with attention paid to the geographic distribution of inputs and outputs and the geographical variations in prices and costs. The influence of space and location are allied to the cost of locating, and implicitly the availability of transport facilities.

Cost elements are also explicit factors in the Lösch spatial equilibrium model (Paelinck and Kulkarni, 1999). The desire to minimize transport costs equates to profit maximizing behaviour of the company. Scale is significant to cost and contributory to benefits in production. The needs and determinants of the relationship vary both by company complexity and geographical scale. This varies further by the nature of spatial distribution, whether in terms of upstream input supply, distributed production or extent of the spatial distribution of consumers or customers. It is not, however, appropriate to seek a general equilibrium of production. The prevailing concepts of general equilibrium in the tradition of Walras, Pareto, and Hicks fail to consider spatial dimensions explicitly. More importantly, the framework of such a general equilibrium analysis based on perfect competition is not comprehensive enough to incorporate the particular effects of transport and spatial costs on the distribution of economic activities in space. As the scale of production is increased, complexity of transport,

and its costs increase. Extended transport chains contain monopolistic elements, reduced choice of transshipment locations, access to airports etc.

Transport supply and effective performance of the differing modes is significantly affected by the scale and distances being covered. International travel that necessarily crosses oceans necessitates particular forms of transport services, air or sea rely on the efficiencies of the port and transfer facilities typical of those transport modes, while land based international, national and regional scales are influenced by more localized factors. The following sections explain these points in more detail.

International Scale: Dimitrios provides an extensive analysis of the location decisions across national boundaries. International trade issues and spatial modelling were examined by several studies, including Benson and Hartigan (1983, 1984, 1987), Stegman (1983), Porter (1984) Hatzipanayotu (1991), and Herander (1997) who employ Hotelling-type spatial models. (Spatial models recognize that distance separates households and firms and incorporate a cost in economic transactions among them.) These models add a geographical dimension to economic activity both within and cross-national borders in order to provide a convenient mean to examine the issue at hand. Factors that are likely to impact upon the cost and efficiency of the operation include the following:

- (i) Availability of air and sea routes;
- (ii) Transport costs and extent/impact of competition in transport market;
- (iii) Efficiencies of interchange points, perceived and actual delay;
- (iv) Efficiencies of routes taken, non-stop, direct and hubbed services.

Role of Transport: The Pidea (1984) study reported the findings of a major survey of manufacturing businesses in three peripheral regions of Europe (Scotland, Northern Ireland and the Republic of Ireland) and one central location (the Ruhr in Germany). The study examined the role of transport costs on business location decisions and sought to determine what, if any, disadvantages were faced by peripheral regions seeking to attract business investment. The research produced a number of interesting findings. Businesses in peripheral regions did not face substantially higher transport costs, i.e.,

- (i) Most businesses did not regard transport costs as a major factor in location decisions.
- (ii) Most businesses regarded transport costs as relatively unimportant to competitiveness compared with other factors, e.g., Marketing.
- (iii) Where transport was mentioned, the most important factors were reliability, with speed and cost less important.
- (iv) Peripheral areas were not generally perceived to have higher transport costs than the central region.
- (v) Where transport was mentioned as a significant factor, potential shipment distance was the main determinant of businesses perceptions of transport costs.
- (vi) Strength of the knowledge based economy;
 - (a) cosmopolitanism and culture;
 - (b) social polarization;
 - (c) environmental sustainability and;
 - (d) fragmentation of governance and resource allocation.

Notable from the above list is the absence of any factors related directly to transport, although environmental sustainability could be seen as depending partly on an adequate

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public transport network. As a cautionary note, it should also be recognized that the dominant proportion of FDI flows (e.g., over 80 percent to Scotland in 1999) are accounted for by non-contestable (in location terms) mergers and acquisitions (Scottish Executive, 2002) and therefore, transport factors are likely to be able to influence a maximum of around 20 percent of capital inflow decisions. In other words, the majority of inward investment decisions are triggered by factors other than the desire to physically relocate operations; therefore, the potential of transport to attract FDI is limited. This does not mean that transport has no role in attracting FDI, just that the impact of transport investments is likely to be small when measured as a percentage of total FDI into a country.

Supra-national Scale: The supra-national scale is applied to groups of countries operating free trade areas, or with multinational agreements for free movement within specified areas. These included the EU, EEA and North American Free Trade areas. Combesa and Linnemer (2000) observe that the development of free trade areas have impacted on the location of businesses and (partially as a result of this) led to the development of new transport priorities. Influence from supra-national authorities, such as the Commission of the European Communities may also impact on the direction and influence of transport within the EU and include the following:

- (i) Reducing the impact of each mode through cleaner engines, cleaner fuels, new fuels and in the case of road freight, energy efficient truck design;
- (ii) Action on driver's training and behaviour;
- (iii) Switching to environmentally friendly modes of transport, e.g., rail, coastal shipping, waterways and any of these in combination with road transport;
- (iv) Reducing the actual number of vehicles running, vehicle kilometres and tonne kilometres by increasing load factors (reducing empty or partly loaded running of lorries);
- (v) Improving routing, utilizing new information technology to maximize backloading, consolidate deliveries, sharing loads and pick-up deliveries with other companies.

National and Inter-regional Scale: Transport factors may influence the location of businesses within a nation state, in other words between regions of a country. Factors likely to influence location decisions include the following:

- (i) Extent and nature of competition in transport market
- (ii) Efficiencies of interchange points
- (iii) Efficiencies of modes
- (iv) Policy impacts on transport operations

Intra-regional and Local: While the evidence for the role of transport in inter-regional location decisions is conflicting, there appears to be more conviction that transport may be able to influence location decisions at an intra-regional level. Businesses may chose to locate in a given region due to a wide range of economic conditions such as labour supply, access to markets. Factors likely to influence location decisions include the following:

- (i) Location specific
- (ii) Historical bias in infrastructure
- (iii) Impacts of micro-level infrastructure change
- (iv) Regional and local restrictions on traffic movement

Growth versus Displacement

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The OECD (2002) Report highlights the need to distinguish between overall growth and the redistribution of benefits following a transport infrastructure investment in order to avoid double counting. To expand on this, an investment in transport is likely to have two impacts on the immediate locality:

- (i) there will be genuine additional economic growth brought about through lower travel costs, increased efficiency, extra employment and social inclusion, and the indirect and induced impacts of these;
- (ii) there will also be a movement, or ‘displacement’ of economic activity away from areas with less well developed infrastructure, or where investment has not been made.

In the latter case, there is no net economic benefit, *ceteris paribus*, as the activity has merely been moved from one geographical location to another. Any benefit will be dependent on the nature of the areas in question, e.g., a redistribution of activity from one group to another or from a congested area to a less well developed area will help spread growth evenly and help ease inflationary or capacity pressures. Other prominent studies also raise this issue. SACTRA makes the point that the role of transport in influencing business location implies displacement from one area to another and therefore not all jobs created can be regarded as additional. The STAG report argues that few transport infrastructure investments in Scotland are likely to have a net impact at a Scottish level, because they will usually induce movement of economic activity, such as business location, from one area to another.

Thus, to conclude, transport is an influential, but not the only or even the most important, reason for business location decisions. Good transport links, both internal and external, are part of a portfolio of area assets that potential investors consider when making location decisions. It is also clear that the importance and effect of transport varies depending on firm characteristics, characteristics of the locality and external conditions. Most studies that we identified focused on the effects of new transport infrastructure in a before and after scenario. There appears to be much less literature examining the impact of existing infrastructure and infrastructure management.

Although specific findings are highlighted above, it is worth bringing out a number of key issues that have emerged from above explanation:

- (i) Evidence has shown that transport costs are often a relatively small proportion of total costs, but that it is perceived costs, in terms of money, reliability and time that are equally or more likely to influence location decisions.
- (ii) Related to the above point, it is the location of specialist logistics firms, rather than transport infrastructure, that may increasingly attract other businesses. Transport has an increasing influence on these specialist firms but less influence on manufacturing and service firms.
- (iii) The location of FDI in the UK (particularly business service and high-tech manufacturing), is influenced by air transport, workforce and premises, whereas domestic investment is more dependent on road transport.
- (iv) Measures to increase accessibility are most likely to be effective if addressed at a local level, for instance, improvements to local public transport and grants for driving lessons.
- (v) Relocation of business to suburban and other decentralized areas creates accessibility problems and also makes retrospective public transport provision more difficult.

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- (vi) Something that emerged as a strong finding was that the effectiveness of urban transport schemes is dependent on complementary urban development policies. Evidence suggests either policy in isolation to be less effective.
- (vii) Transport factors are more likely to influence intra-regional than inter-regional location decisions. In other words, they influence the decision of where to locate within a region once that region has been chosen.
- (viii) New transport infrastructure can often involve displacing business and employment from one area to another, even within a region.

3.7 SUMMARY

1. Agglomeration economies or external economies of scale refer to the benefits from concentrating output and housing in particular areas.
2. In the process of economic development, urbanization and industrialization share a close nexus, not only industrialization leads to urbanization but also urbanization has productivity-augmenting effects on industry.
3. The level of urbanization in the Indian context unlike the historical experience of several developed countries at comparable levels of per capita income and growth has been quite low.
4. In order to highlight the association between several variables simultaneously, the factor analysis is considered to be appropriate as it does not get into the cause-effect relationship though at the same time it churns out the commonalities among different variables.
5. Economic globalization has not reduced the intra-urban or rural-urban growth differentials.

3.8 SELF ASSESSMENT QUESTIONS

I. Fill in the Blanks

1. The location-triangle model was initially developed by _____.
2. Agglomeration economies are divided into two parts as _____ and _____.

II. True and False

1. Regarding external terms of agglomeration economies, it was solely necessary to consider the localization type of economy.
2. Transportation costs are regarded as the elements of production costs; therefore, each firm attempts these costs to keep at minimum level.

III. Multiple Choice Questions

1. Factors likely to influence location decisions include _____.
 - (a) Extent and nature of competition in transport market
 - (b) Efficiencies of interchange points
 - (c) Efficiencies of modes and policy impacts on transport operations
 - (d) All of the above

2. Factors that are likely to impact upon the cost and efficiency of the operation include the following _____.
- (a) Availability of air and sea routes
 - (b) Transport costs and extent/impact of competition in transport market
 - (c) Efficiencies of interchange points, perceived and actual delay and efficiencies of routes taken, non-stop, direct and hubbed services
 - (d) All of the above

NOTES**Short Answer Questions**

1. Explain in brief about the 'Supra-national Scale'.
2. Write short notes on 'Linkages between Spatial Scale and Transport'.

Long Answer Questions

1. Critically illustrate 'Agglomeration Economies and Location Decision-making of Firms in Location-triangle Approach'.
2. Explain in detail about the importance of Transport in Business' Location Decisions.

3.9 KEY TERMS

- Agglomeration
- Urbanization
- Well-being Index

3.10 KEY TO CHECK YOUR ANSWER

- I. 1. Weber, 2. internal; external dimensions.
- II. 1. True, 2. True.
- III. 1. (d), 2. (d).

UNIT III: BASIS OF CENTRAL PLACE THEORY AND GROWTH POLES

4

Chapter

THE CENTRAL PLACE THEORY, GRAVITY MODEL AND GROWTH POLES

Objectives

This Chapter is focused on the following objectives:

- Central Place Theory (Christaller's)
- The rank size rule
- Gravity Model
- Growth Poles

Structure:

- 4.1 Central Place Theory (Christaller's)
- 4.2 The Rank Size Rule
- 4.3 Gravity Model
- 4.4 Growth Poles
- 4.5 Summary
- 4.6 Self Assessment Questions
- 4.7 Key Terms
- 4.8 Key to Check Your Answer

4.1 NODAL HIERACHY: CENTRAL PLACE THEORY (HIERARCHY) (CHRISTALLER'S)

Central Place Theory (CPT) is an attempt to explain the spatial arrangement, size and number of settlements. The theory was originally published in 1933 by a German geographer Walter Christaller who studied the settlement patterns in southern Germany. In the flat landscape of southern Germany, Christaller noticed that towns of a certain size were roughly equidistant. By examining and defining the functions of the settlement structure and the size of the hinterland, he found it possible to model the pattern of settlement locations using geometric shapes.

Assumptions

Explanation of Some Terms: Central Place, Low Order, High Order, Sphere of Influence

1. A Central Place is a settlement which provides one or more services for the population living around it.

2. Simple basic services (e.g., grocery stores) are said to be of low order while specialized services (e.g., universities) are said to be of high order.
3. Having a high order service implies there are low order services around it, but not *vice versa*.
4. Settlements which provide low order services are said to be low order settlements. Settlements that provide high order services are said to be high order settlements.
5. The sphere of influence is the area under influence of the Central Place.

NOTES**Details of the Theory**

The theory consists of two basic concepts:

1. threshold – the minimum population that is required to bring about the provision of certain
2. range of good or services – the average maximum distance people will travel to purchase goods and services

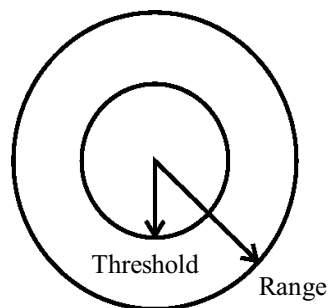


Fig. 4.1: Basic Concept of Central Place Theory

From these two concepts, the lower and upper limits of goods or services can be found. With the upper and the lower limits, it is possible to see how the central places are arranged in an imaginary area (fig. 4.1).

Arrangement of the Central Places/Settlements

As transport is equally easy in all direction, each central place will have a circular market area as shown in C in the following diagram, i.e., fig. 4.2.:

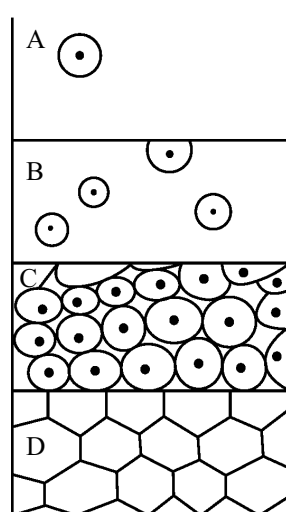


Fig. 4.2: Arrangement of the Central Places

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However, circular shape of the market areas results in either unserved areas or over-served areas. To solve this problem, Christaller suggested the hexagonal shape of the markets as shown in D in the above diagram. Within a given area, there will be fewer high order cities and towns in relation to the lower order villages and hamlets.

For any given order, theoretically the settlements will be equidistance from each other. The higher order settlements will be further apart than the lower order ones. The three principles in the arrangement of the central places:

Christaller noted three different arrangements of central places according to the following principles (fig. 4.3):

1. The marketing principle ($k = 3$ system);
2. The transportation principle ($k = 4$ system);
3. The administrative principle ($k = 7$ system).

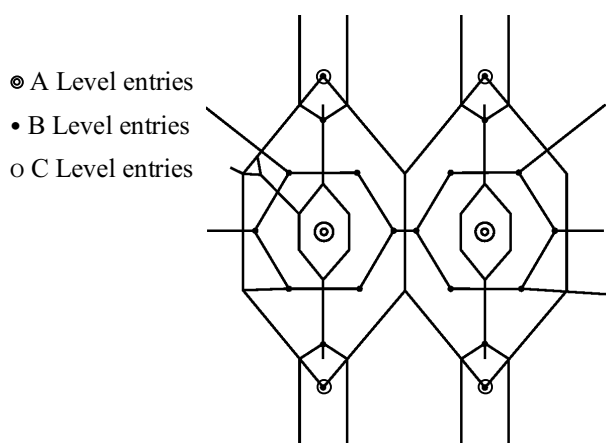


Fig. 4.3: The Marketing Principle

1. The Marketing Principle: The following diagram shows the arrangement of the central places according to the marketing principle. There are three orders of central places. (Note: There can be many orders of settlement.) (a) First order service center providing first order services (b) Second order service center providing second order services. (c) Third order service center providing third order services.

The different orders of settlements arrange themselves in a hierarchy. Generally speaking, lower is the order, larger is the number of settlements and higher the order, greater is the area served. If the arrangement of the settlements is according to the principle $k = 3$, the theoretical number of settlements will progressively divide the previous order by 3 as shown in the following table:

Table 4.1: Order of Settlements

	Cumulative Total	Actual Number
7th order	1	1
6th order	3	—
6th order	9	—
4th order	—	—
3rd order	—	—
2nd order	—	—
1st order	—	—

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One high order central place is serving three (including itself) of the next lower order central places. The relationship of the market area between a lower order center and the centers of the higher level can also be indicated by the value 3.

2. The Transportation Principle: Christaller pointed out that the marketing principle is an awkward arrangement in terms of connecting different levels of the hierarchy. As an alternate arrangement, Christaller suggested that central places could be organized according to what he called the transport principle. The traffic principles states that the distribution of central places is most favourable when as many important places as possible lie on one traffic route between two important towns, the route being established as straightly and as cheap as possible. The more unimportant places may be left aside. According to the transport principle, the central places would thus be lined up on straight traffic routes which fan out from the central point. When central places are arranged according to the traffic principle, the lower order centers are located at the midpoint of each side of the hexagon rather than at the corner. Thus, the transport principle produces a hierarchy organized in a $k = 4$ arrangement in which central places are nested according to the rule of four.

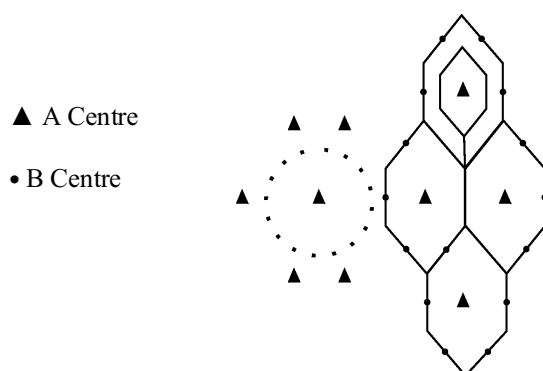


Fig. 4.4: The Transportation Principle

The following table shows how the $k = 4$ principle can be interpreted:

Table 4.2: Level of Hierarchy Equivalent Number of Central Places

Equivalent Number of Marker Areas	Dominated by Higher Order Center	Dominated by Higher Order Center
1. Metropolis	1	1
2. City	3	4
3. Town	12	16
4. Village	48	64
5. Hamlet	192	256

3. The Administrative Principle: Christaller's other suggested organizing principle was based upon the realization that from a political or administrative viewpoint centers, it was unrealistic for centers to be 'shared'. Any pattern of control which cuts through functional units is potentially problematical. Christaller suggested that an arrangement whereby lower order centers were entirely within the hexagon of the higher order center would obviate such problems. Such a pattern is shown in the following diagram. All the six lower order centers are fully subordinate to the higher order center which, therefore, dominates the equivalent of seven market areas at the next lowest level as shown in fig. (4.5).

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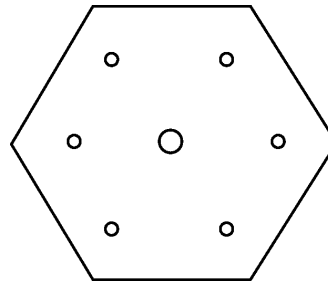


Fig. 4.5: Administrative Principle

Evaluation of Central Place Theory

The pattern of cities predicted by central place theory may not hold because of the failure to meet initial assumptions.

1. Production costs may vary not only because of economies of scale but also by natural resource endowments (i.e., not a homogeneous plain).
2. Transportation costs are not equal in all directions.
3. Rural markets (initially households) are not evenly distributed.
4. Non-economic factors (culture, politics, leadership) may be important.
5. But competitive practices may lead to freight absorption and phantom freight (other forms of imperfect competition).

What are the Advantages of Central Place Theory?

The theory does a reasonably good job of describing the spatial pattern of urbanization. No other economic theory explains why there is a hierarchy of urban centers. According to Heilbrun, a hierarchy is by definition a systematic arrangement of the classes of an object. In this case, the object is economic centers, large and small. The central place hierarchy provides a description of the relationship between a central place — higher order place and its tributary areas — lower order places. Once this hierarchy is pointed out, anyone can see it.

Central place theory does a good job of describing the location of trade and service activity. It also does a good job of describing consumer market oriented manufacturing. Trade and service activity has an increasing relevance as the US economy shifts from manufacturing to services over time. Small-town community economic developers can secure quite specific, relevant information about what kind of trade or service enterprise will likely work, and what kind of enterprise will not likely work in a given small community.

Christaller's model will never be found in the real world because, large areas of flat land are rare, with the presence of relief barriers channeling transport in certain directions

1. Government intervention can dictate the location of industry – Perfect competition is unreal with some firms making more money than others.
2. People vary their shopping trends and thus are not always going to the nearest centre. Besides, people or resources are also never perfectly distributed as Christaller envisaged in this regard.

Applications to Economic Development

Applying the central place theory, many studies have been done regarding to establishments and retail viability.

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For instance, in his article, Shonkwiler (1996) summarized important knowledge already established by other researches.

1. Average transportation costs per purchase are lowered by multipurpose shopping trips.
2. The consumer might find it desirable to shop at multiple locations on a single trip.
3. Not only population but demographic characteristics, socio-economic structure, potential expenditures, and shopping behaviour are the most important factors to explain spatial clustering.
4. Although a major tenet of central place theory was that producers tend to locate as far as possible from competitors, firms may recognize the advantages of agglomeration and the benefit of centrality that result from adjacent location.
5. The development of central places depends on factors such as transport costs, expenditure shares for relevant goods and the cost characteristics of stores.
6. Planning commissions continue their efforts on industrial recruitment while the pursuit of other development strategies such as retail sector expansion may be overlooked.

Moreover, in his statistical analysis of rural retail business, Shonkwiler (1996) concludes, retail business interdependencies exist and minimum demand threshold values for various retail sectors are sensitive to the presence or absence of other type of retail firms.

Additionally, in his regression analysis to rural communities, Mushinski (2002) concludes incorporating explicit geographic interdependence between establishments in a place and sources of supply and demand in neighbouring areas exists and is particularly significant on the supply side. Moreover, outlying establishments tend to reduce the number of establishments in a place, which underlines the importance of spatial competition in retail development.

4.2 THE RANK SIZE RULE

Rank size distribution, or the rank size rule (or law), describes the remarkable regularity in many phenomena, including the distribution of city sizes, the sizes of businesses, the sizes of particles (such as sand), the lengths of rivers, the frequencies of word usage and wealth among individuals. All are real-world observations that follow power laws like Zip's law, the Yule distribution or the Pareto distribution. If one ranks the population size of cities in a given country or in the entire world and calculates the natural logarithm of the rank and of the city population, the resulting graph will show a log-linear pattern. This is the rank size distribution.

Theoretical Rationale

One study claims that the rank size rule works because it is a shadow or coincidental measure of the true phenomenon. The true value of rank size is, thus, not as an accurate mathematical measure (since other power law formulas are more accurate, especially at ranks lower than 10) but rather as a handy measure or rule of thumb to spot power laws. When presented with a ranking of data, is the third-ranked variable, approximately one-third the value of the highest-ranked one? Or, conversely, is the highest-ranked variable approximately ten times the value of the tenth-ranked one? If so, the rank size rule has possibly helped spot another power law relationship.

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Simple Rank Size Distributions

In case of city populations, resulting distribution in a country, a region or the world will be characterized by its largest city, with other cities decreasing in size relative to it, initially at a rapid rate and then more slowly. It results in a few large cities and a much larger number of cities orders of magnitude smaller. For instance, a rank 3 city would have one-third the population of a country's largest city, a rank 4 city would have one-fourth the population of the largest city and so on.

While any log-linear factor is ranked, the ranks follow the Lucas numbers, that consist of the sequentially additive numbers 1, 3, 4, 7, 11, 18, 29, 47, 76, 123, 199, etc. Like the more famous Fibonacci sequence, each number is approximately 1.618 (the Golden ratio) times the preceding number. For instance, the third term in the sequence above, 4, is approximately 1.6183, or 4.236; the fourth term, 7, is approximately 1.6184, or 6.854; the eighth term, 47, is approximately 1.6188, or 46.979. With higher values, the figures converge. An equiangular spiral is sometimes used to visualize such sequences.

Known Exceptions to Simple Rank Size Distributions

While Zipf's law works well in many cases, it tends to not fit the largest cities in many countries. A 2002 study found that Zipf's Law was rejected for 53 of 73 countries, far more than would be expected based on random chance. The study also found that variations of the Pareto exponent are better explained by political variables than by economic geography variables like proxies for economies of scale or transportation costs. A 2004 study showed that Zipf's law did not work well for the five largest cities in six countries. In the richer countries, the distribution was flatter than predicted. For instance, in the United States, although its largest city, New York City, has more than twice the population of second-place Los Angeles, the two cities' metropolitan areas (also the two largest in the country) are much closer in population. In metropolitan area population, New York City is only 1.3 times larger than Los Angeles. In case of other countries, the largest city would dominate much more than expected. For instance, in the Democratic Republic of the Congo, the capital, Kinshasa is more than eight times larger than the second-largest city, Lubumbashi. When considering the entire distribution of cities, including the smallest ones, the rank size rule does not hold. Instead, the distribution is log-normal. This follows from Gibrat's law of proportionate growth.

Because exceptions are so easy to find, the function of the rule for which analyzes cities today is to compare the city systems in different nations. The rank size rule is a common standard by which urban primacy is established. A distribution such as that in the United States or China does not exhibit a pattern of primacy, but countries with a dominant primate city distinctly vary from the rank size rule in the opposite manner. Thus, the rule helps to classify national (or regional) city systems according to the degree of dominance that exhibited by the largest city. Countries with a primate city, for example, have typically had a colonial history that accounts for that city pattern. Now, if a normal city distribution pattern is expected to follow the rank size rule (i.e., if the rank size principle correlates with central place theory), then it suggests that those nations or regions with distributions that do not follow the rule have experienced some conditions that have altered the normal distribution pattern. For instance, the presence of multiple regions within large countries like that of China and the United States tends to favour a pattern in which more large cities appear than would be predicted by the rule. By contrast, small countries that had been connected (e.g., colonially or economically) to much larger areas will exhibit a distribution in which the

largest city is much larger than would fit the rule, compared with the other cities — the excessive size of the city theoretically stems from its connection with a larger system rather than the natural hierarchy that central place theory would predict within that one country or region alone.

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4.3 GRAVITY MODEL

The gravity model in economics was until relatively recently an intellectual orphan, unconnected to the rich family of economic theory. This review is a tale of the orphan's reunion with its heritage and the benefits that continue to flow from connections to more distant relatives.

Gravity has long been one of the most successful empirical models in economics, ordering remarkably well the enormous observed variation in economic interaction across space in both trade and factor movements. The good fit and relatively tight clustering of coefficient estimates in the vast empirical literature suggested that some underlying economic law must be at work, but in the absence of an accepted connection to economic theory, most economists ignored gravity. The authoritative survey of Leamer and Levinsohn (1995) captures the mid-90's state of professional thinking: These estimates of gravity have been both singularly successful and singularly unsuccessful. They have produced some of the clearest and most robust empirical findings in economics. But, paradoxically, they have had virtually no effect on the subject of international economics. Textbooks continue to be written and courses designed without any explicit references to distance, but with the very strange implicit assumption that countries are both infinitely far apart and infinitely close, the former referring to factors and the latter to commodities. Subsequently, gravity first appeared in textbooks in 2004 (Feenstra, 2004), following on success in connecting gravity to economic theory.

Reviews are not intended to be surveys. The gravity model licensed to be idiosyncratic, scants or omits some topics that others have found important while it emphasizes some topics that others have scanted. Major emphases and omissions are intended to guide the orphan to maturity. An adoptive parent's biases may have contaminated my judgement, caveat emptor, incorporating the theoretical foundations of gravity into recent practice has led to richer and more accurate estimation and interpretation of the spatial relations described by gravity. The harvest reaped from empirical work applying the gravity model is recently surveyed elsewhere.

From a modelling standpoint, gravity is distinguished by its parsimonious and tractable representation of economic interaction in a many country world. Most international economic theory is concentrated on two country cases, occasionally extended to three country cases with special features. The tractability of gravity in the many country case is due to its modularity: the distribution of goods or factors across space is determined by gravity forces conditional on the size of economic activities at each location. Modularity readily allows for disaggregation by goods or regions at any scale and permits inference about trade costs not dependent on any particular model of production and market structure in full general equilibrium. The modularity theme recurs often below, but is missing from some other prominent treatments of gravity in the literature.

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Traditional Gravity

The story begins with setting out the traditional gravity model and noting clues to uniting it with economic theory. The traditional gravity model drew on analogy with Newton's Law of Gravitation. A mass of goods or labour or other factors of production supplied at origin i , Y_i , is attracted to a mass of demand for goods or labour at destination j , E_j , but the potential flow is reduced by distance between them, d_{ij} . Strictly applying the analogy,

$$X_{ij} = Y_i E_j - d_{ij}^2$$

gives the predicted movement of goods or labour between i and j , X_{ij} . Ravenstein pioneered the use of gravity for migration patterns in the 19th century UK. Tinbergen (1962) was the first to use gravity to explain trade flows. Departing from strict analogy, traditional gravity allowed the coefficients of 1 applied to the mass variables and of 2 applied to bilateral distance to be generated by data to fit a statistically inferred relationship between data on flows and the mass variables and distance. Generally, across many applications, the estimated coefficients on the mass variables cluster close to 1 and the distance coefficients cluster close to -1 while the estimated equation fits the data very well: most data points cluster close to the fitted line in the sense that 80-90 percent of the variation in the flows is captured by the fitted relationship. This fitted relationship of traditional gravity improved while supplemented with other proxies for trade frictions, like the effect of political borders, common language and the like.

Notice that bilateral frictions alone would appear to be inadequate to fully explain the effects of trade frictions on bilateral trade, because the sale from i to j is influenced by the resistance to movement on i 's other alternative destinations and by the resistance on movement to j from j 's alternative sources of supply. Prodded by this intuition, the traditional gravity literature recently developed remoteness indexes of each country's average effective distance to or from its partners $\sum_j d_{ij}/Y_i$ was commonly defined as the remoteness of country j) and used them as further explanatory variables in the traditional gravity model, with some statistical success.

The general problem posed by the intuition behind remoteness indexes is analogous to the N -body problem in Newtonian gravitation. An economic theory of gravity is required for an adequate solution. Because there are many origins and many destinations in any application, a theory of the bilateral flows must account for the relative attractiveness of origin-destination pairs. Each sale has multiple possible destinations and each purchase has multiple possible origins: any bilateral sale interacts with all others and involves all other bilateral frictions. This general equilibrium problem is neatly solved with structural gravity models. For expositional ease, the discussion will focus on goods movements from now on except when migration or investment are specifically treated.

Frictionless Gravity Lessons: Taking a step toward structure, an intuitively appealing starting point is the description of a completely smooth homogeneous world in which all frictions disappear. Developing the implications of this structure yields a number of useful insights about the pattern of world trade. A frictionless world implies that each good has the same price everywhere. In a homogeneous world, economic agents everywhere might be predicted to purchase goods in the same proportions when faced with the same prices. In the next section, the assumptions on preferences and/or technology that justify this plausible prediction will be the focus, but here the focus is on what the implications are for trade patterns. In a completely frictionless and homogeneous world, the natural benchmark prediction is that $X_{ij} / E_j = Y_i / Y$, the proportion of spending by j on goods from i is equal to

the global proportion of spending on goods from i , where Y denotes world spending. Any theory must impose adding up constraints, which for goods requires that the sum of sales to all destinations must equal Y_i , the total sales by origin i , and the sum of purchases from all origins must equal E_j , the total expenditure for each destination j . Total sales and expenditures must be equal, i.e.,

$$\sum_i Y_i - \sum_j E_j = Y$$

One immediate pay-off is an implication for inferring trade frictions. Multiplying both sides of the frictionless benchmark prediction, $X_{ij}/E_j = Y_i/Y$ by E_j yields predicted frictionless trade $Y_i E_j / Y$. The ratio of observed trade X_{ij} to predicted frictionless trade $Y_i E_j / Y$ represents the effect of frictions along with random influences. (Bilateral trade data is notoriously rife with measurement error.) Fitting the statistical relationship between the ratio of observed to frictionless trade and various proxies for trade costs is justified by this simple theoretical structure as a proper focus of empirical gravity models.

Thus far, the treatment of trade flows has been of a generic good which most of the literature has implemented as an aggregate: the value of aggregate bilateral trade in goods for example. But the model applies more naturally to disaggregated goods (and factors) because the frictions to be analyzed below are likely to differ markedly by product characteristics. The extension to disaggregated goods, indexed by k , is straightforward.

$$X_{ij}^k = \frac{Y_i E_j^k}{Y^k} = s_i^k b_i^k Y^k \quad \dots (1)$$

Here, $s_i^k = Y_i^k / Y^k$ is country i 's share of the world's sales of goods class k and $b_i^k = E_j^k / Y^k$ is country j 's share of the world spending on k , equal to world sales of k , Y^k .

The notation and logic also readily apply to disaggregation of countries into regions and indeed a prominent portion of the empirical literature has examined bilateral flows between city pairs or regions, motivated by the observation that much economic interaction is concentrated at very short distances in aggregate gravity applications (i.e., most applications), it has been common to use origin and destination mass variables equal to Gross Domestic Product (GDP). This is conceptually inappropriate and leads to inaccurate modelling unless the ratio of gross shipments to GDP is constant (in which case the ratio goes into a constant term). A possible direction for aggregate modelling is to convert trade to the same value added basis as GDP, but this seems more problematic than using disaggregated gravity to explain the pattern of gross shipments and then uniting estimated gravity models within a superstructure to connect to GDP. That is the strategy of the structural gravity model research program reviewed here. Equation (1) generates a number of useful implications:

1. big producers have big market shares everywhere,
2. small sellers are more open in the sense of trading more with the rest of the world,
3. the world is more open the more similar in size are countries and the more specialized are countries,
4. the world is more open the greater the number of countries, and
5. world openness rises with convergence under the simplifying assumption of balanced trade.

As for implication 1 big producers have big market shares everywhere, this follows because, reverting to the generic notation and omitting the k superscript, the frictionless gravity prediction is that:

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$$X_{ij}/E_j - s_i$$

Implication 2, small sellers are more open in the sense of trading more with the rest of the world follows from:

$$\sum_{i \neq j} X_{ij} E_j - 1 \quad Y_j / Y - 1 \quad S_j$$

Using $\sum_j E_j = \sum_j Y_j$, balanced trade for the world.

Implication 3 is that the world is more open the more similar in size are countries and the more specialized are countries. It is convenient to define world openness as the ratio of international shipments to total shipments, $\sum_j \sum_{i \neq j} X_{ij} / Y$. Dividing (1) through by Y^k and suppressing the goods index k , world openness is given by:

$$\sum_j \sum_{i \neq j} X_{ij} / Y - \sum_j b_j (1 - s_j) - 1 - \sum_j b_j s_j$$

Using standard statistical properties

$$\sum_j b_j s_j - N^{\tau} b s \sqrt{\text{Var}(s) \text{Var}(b) + 1/N}$$

where N is the number of countries or regions, Var denotes variance, $\tau b s$ is the correlation coefficient between b and s and $1/N - \sum_i s_i / N - \sum_j b_j / N$, the average share. This equation is derived using standard properties of covariance and the adding up condition on shares.

Here, $\text{Var}(s)$; $\text{Var}(b)$ measures size dissimilarity while the correlation of s and b , $\tau b s$, is an inverse measure of specialization. Substituting into the expression for world openness:

$$\sum_j \sum_{i \neq j} X_{ij} / Y = 1 - 1/N - N^{\tau} b s \sqrt{\text{Var}(s) \text{Var}(b)} \quad \dots (2)$$

Implication 3 follows from equation (2) because similarity of country size shrinks the variances on the right hand side while specialization shrinks the correlation $\tau b s$.

The country size similarity property has been prominently stressed in the monopolistic competition and trade literature. (It is sometimes taken as evidence for monopolistic competition in a sector rather than as a consequence of gravity no matter what explains the pattern of the b 's and s 's.) The specialization property has also been noted in that literature as reflecting forces that make for greater net international trade, the absolute value of $s_j - b_j$. Making comparisons across goods classes, variation in the right hand side of (2) is due to variation in specialization and in the dispersion of the shipment and expenditure shares. Notice again that the cross-commodity variation in world openness arises here in a frictionless world, a reminder that measures of world home bias in a world with frictions must be evaluated relative to the frictionless world benchmark. Country size similarity also tends to increase bilateral trade between any pair of countries, all else equal. This point is seen most clearly with aggregate trade that is also balanced, hence $s_j = b_j$. Equation (1) can be rewritten as:

$$X_{ij} = s_{ij}^i s_{ij}^j \frac{(Y_i + Y_j)^2}{Y}$$

where $s_{ij}^i \equiv Y_i / (Y_i + Y_j)$, the share of i in the joint GDP of i and j . The product $s_{ij}^i s_{ij}^j$ is maximized at $s_{ij}^i = s_{ij}^j = 1/2$, so for given joint GDP size, bilateral trade is increasing in country similarity. (With unbalanced trade or specialization, an analogous similarity property holds for the bilateral similarity of income and expenditure shares. Let $\gamma_j = E_i / Y_j$. Then the same equation as before holds with the right hand side multiplied by j .) A more novel implication of equation (2) is that, implication 4, world openness is ordinarily increasing in

the number of countries. Increasing world openness due to a rise in the number of countries reflects the property that smaller countries are more naturally open and division makes for more and smaller countries. This effect is seen by differentiating the left hand side of $\sum_j \sum_{i \neq j} X_{ij}/Y - 1 \sum b_j s_j$ yielding $\sum_j (b_j ds_j + s_j db_j)$. Increasing the number of countries tends to imply reducing the share of each existing country while increasing the share (from zero) of the new country. The preceding differential expression should thus ordinarily be positive. The qualification 'ordinarily' is needed because the pattern of share changes will depend on the underlying structure as revealed by the left hand side of equation (2). On the one hand, the average share $1/N$ decreases as N rises, raising world openness. On the other hand, the change in the number of countries will usually change

$$\tau_{bs} \sqrt{\text{Var}(s) \text{Var}(b)}$$

in ways that depend on the type of country division (or confederation) as well as indirect effects on shares as prices change. (The apparent direct effect of N in the first on the right hand side of (2) vanishes because $1/N$ scales

$$\sqrt{\text{Var}(b) \text{Var}(s)}$$

A practical implication of this discussion is that inter-temporal comparisons of ratios of world international trade to world income, to be economically meaningful, should be controlled for changes in the size distribution and the number of countries, a correction of large practical importance in the last 50 to 100 years. Alternatively, measures of openness meant to reflect the effects of trade frictions should be constructed in relation to the frictionless benchmark. Applied to aggregate trade data, gravity yields implication 5, world openness rises with convergence under the simplifying assumption of balanced trade for each country, The right hand side of equation (2) becomes $N \text{Var}(s) + 1/N$ under balanced trade, and per capita income convergence lowers $\text{Var}(s)$ toward the variance of population. Baier and Bergstrand use the convergence property to partially explain post-war growth in world trade/income, finding relatively little action, though presumably more recent data influenced by the rise of China and India might give more action. Pointing toward a connection with economic theory, the plausible hypothesis of the frictionless model and the shares s_i and b_j must originate from an underlying structure of preferences and technology. Also, the deviation of observed X_{ij} from the frictionless prediction reflects frictions as they act on the pattern of purchase decisions of buyers and the sales decisions of sellers, which originate from an underlying structure of preferences and technology.

Structural Gravity

Modelling economies with trade costs works best if it moves backward from the end-user. Start by evaluating all goods at user prices, applying demand side structure to determine the allocation of demand at those prices. Treat all costs incurred between production and end use as being incurred by the supply side of the market, even though there are often significant costs directly paid by the user. What matters economically in the end is the full cost between production and end use, and the incidence of that cost on producer and end-user. Many of these costs are not directly observable, and the empirical gravity literature indicates the total is well in excess of the transportation and insurance costs that are observable.

The supply side of the market under this approach both produces and distributes the delivered goods, incurring resource costs that are paid by end-users. The factor markets for those resources must clear at equilibrium factor prices, determining costs that link to end-user prices. Budget constraints require national factor incomes to pay for national expenditures

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plus net lending or transfers including remittances. Below the national accounts, individual economic agents also meet budget constraints. Goods markets clear when prices are found such that demand is equal to supply for each good. The full general equilibrium requires a set of bilateral factor prices and bilateral goods prices such that all markets clear and all budget constraints are met.

This standard description of general economic equilibrium is too complex to yield something like gravity. A hugely useful simplification is modularity, subordinating the economic determination of equilibrium distribution of goods within a class under the superstructure determination of distribution of production and expenditure between classes of goods. Anderson and van Wincoop call this property trade separability. Observing that goods are typically supplied from multiple locations, even within fine census commodity classes, it is natural to look for a theoretical structure that justifies grouping in this way. The structural gravity model literature has uncovered two structures that work, one on the demand side and one on the supply side.

Modularity (trade separability) permits the analyst to focus exclusively on inference about distribution costs from the pattern of distribution of goods (or factors) without having to explain at the same time what determines the total supplies of goods to all destinations or the total demand for goods from all origins. This is a great advantage for two reasons. First, it simplifies the inference task enormously. Second, the inferences about the distribution of goods or factors is consistent with a great many plausible general equilibrium models of national (or regional) production and consumption. Modularity also requires a restriction on trade costs, so that only the national aggregate burden of trade costs within a goods class matters for allocation between classes. The most popular way to meet this requirement is to restrict the trade costs so that the distribution of goods uses resources in the same proportion as the production of those same goods. Samuelson (1952) invented iceberg melting trade costs in which the trade costs were proportional to the volume shipped, as the amount melted from the iceberg is proportional to its volume.

The iceberg metaphor still applies when allowing for a fixed cost, as if a chunk of the iceberg breaks off as it parts from the mother glacier. Mathematically, the generalized iceberg trade cost is linear in the volume shipped. Economically, distribution continues to require resources to be used in the same proportion as in production. Fixed costs are realistic and potentially play an important role in explaining why many potential bilateral flows are equal to zero. More general non-linear trade cost functions continue to satisfy the production proportionality restriction and thus meet the requirements of modularity, but depart from the iceberg metaphor. Bergstrand derived a joint cost function that is homogeneous of degree one with Constant Elasticity of Transformation (CET). This setup allows for substitution effects in costs between destinations rather than the cost independence due to fixed coefficients in the iceberg model. Bilateral costs have a natural aggregator that is an iceberg cost facing monopolistically competitive firms. A nice feature of the joint cost model is its econometric tractability under the hypothesis of profit maximizing choice of destinations. While potentially more realistic, the joint cost refinement turns out to make relatively little difference empirically.

Arkolakis (2008) develops a non-linear (in volume) trade cost function in which heterogeneous customers are obtained by firms with a marketing technology featuring a fixed cost component (running a national advertisement) and a variable cost component (leafletting or telemarketing) subject to diminishing returns as the less likely customers are encountered. Because of the Ricardian production and distribution technology, resource requirements in

distribution remain proportional to production resource requirements. Arkolakis shows that the marketing technology model can rationalize features of the firm level bilateral shipments data that cannot be explained with the linear fixed costs model. His setup is not econometrically tractable but is readily applicable as a simulation model. In all applications based on the preceding cost functions, proxies for costs are entered in some convenient functional form, usually log-linear in variables such as bilateral distance, contiguity, membership of a country, continent or regional trade agreement, common language, common legal traditions and the like. More generality in trade costs that violates the production proportionality restriction comes at the price of losing modularity.

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Demand Side Structure

The second requirement for modularity can be met by restricting the preferences and technology such that the cross effects in demand between classes of goods (either intermediate or final) flow only through aggregate price indexes. This demand property is satisfied when preferences or technology are homothetic and weakly separable with respect to a partition into classes whose members are defined by location, a partition structure called the Armington assumption. Thus, for example, steel products from all countries are members of the steel class. Notice that the assumption implies that goods are purchased from multiple sources because they are evaluated differently by end-users, goods are differentiated by place of origin.

It is usual to impose identical preferences across countries. Differences in demand across countries, such as a home bias in favour of locally produced goods, can be accommodated, understanding that ‘trade costs’ now include the effect of a demand side home bias. In practice, it is very difficult to distinguish demand side home bias from the effect of trade costs, since the proxies used in the literature (common language, former colonial ties, or internal trade dummies, etc.) plausibly pick up both demand and cost differences. Henceforth, trade cost is used without quotation marks but is understood to potentially reflect demand side home bias. Declines in trade costs can be understood as reflecting homogenization of tastes. Separability implies that each goods class has a natural quantity aggregate and a natural price aggregate, with substitution between goods classes occurring as if the quantity aggregates were goods in the standard treatment. The separability assumption implies that national origin expenditure shares within the steel class are not altered by changes in the prices of non-steel products, though of course the aggregate purchase of steel are effected by the aggregate cross effect. Homotheticity ensures that relative demands are functions only of relative aggregate prices. The first economic foundation for the gravity model was based on specifying the expenditure function to be a Constant Elasticity of Substitution (CES) function (Anderson, 1979). Expenditure shares in the CES case are given by:

$$X_{ij}/E_j = \left(\frac{\beta_i p_i t_{ij}}{P_j} \right)^{1-\sigma} \quad \text{..... (3)}$$

where P_j is the CES price index, σ is the elasticity of substitution parameter, β_i is the ‘distribution parameter’ for varieties shipped from i , p_i is their factory gate price and $t_{ij} > 1$ is the trade cost factor between origin i and destination j . The CES price index is given by

$$P_j = \left(\sum_i \left(\beta_i p_i t_{ij} \right)^{1-\sigma} \right)^{1/(1-\sigma)} \quad \text{..... (4)}$$

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Notice that the same parameters characterize expenditure behaviour in all locations; preferences are common across the world by assumption. Notice also that the shares are invariant to income, preferences are homothetic.

The ‘distribution parameters’ β_i bear several interpretations. They could be exogenous taste parameters. Alternatively, in applications to monopolistically competitive products, β_i is proportional to the number of firms from i offering distinct varieties. Countries with more active firms get bigger weights. In long-run monopolistic competition, the number of firms is endogenous. Due to fixed entry costs, bigger countries have more active firms in equilibrium, all else equal. The number of active firms contributes to determining the Y_i ’s that are given in the gravity module.

The other building block in the structural gravity model is market clearance at delivered prices $Y_i = \sum_j X_{ij}$. Multiplying both sides of (3) by E_j and summing over j yields a solution for $\beta_i p_i^{1-\sigma}$

$$\beta_i p_i^{1-\sigma} = \frac{Y_i}{\sum_j (t_{ij}/P_j)^{1-\sigma} E_j}$$

Define the denominator as $\pi_i^{1-\sigma}$

Substituting into (3) and (4) yields the structural gravity model:

$$X_{ij} = \frac{E_j Y_i}{Y} \left(\frac{t_{ij}}{P_j \pi_i} \right)^{1-\sigma} \quad \text{..... (5)}$$

$$(\pi_i)^{1-\sigma} = \sum_j \left(\frac{t_{ij}}{P_j} \right)^{1-\sigma} \frac{E_{ij}}{Y} \quad \text{..... (6)}$$

$$(P_j)^{1-\sigma} = \sum_i \left(\frac{t_{ij}}{\pi_i} \right)^{1-\sigma} \frac{Y_i}{Y} \quad \text{..... (7)}$$

The second ratio on the right hand side of (5) is a decreasing function (under the empirically valid restriction $\sigma > 1$) of direct bilateral trade costs relative to the product of two indexes of all bilateral trade costs in the system. Anderson and van Wincoop (2003) called the terms P_j and π_i inward and outward multilateral resistance. Note that $\{P_j^{1-\sigma}$ and $\pi_i^{1-\sigma}\}$ can be solved from (6)-(7) for given $t_{ij}^{1-\sigma}$ ’s, E_j ’s and Y_i ’s combined with a normalization. Multilateral resistance is on the face of it an index of inward and outward bilateral trade costs, but because of the simultaneity of the system (6)-(7), all bilateral trade costs in the world contribute to the solution values. This somewhat mysterious structure has a simple and intuitive interpretation: inward and outward multilateral resistance measure average buyer’s and seller’s incidence of trade costs respectively. The incidence interpretation follows because the uniform preferences assumption in demand implies that the seller in effect makes a single shipment at a uniform markup factor π_i to a world market with a share determined by:

$$\frac{Y_i}{Y} = \left(\frac{\beta_i p_i}{P_w} \right)^{1-\sigma} \quad \text{..... (8)}$$

The right hand side of (8), referring to the general form (3), is interpreted as the global expenditure share on the good from i in a hypothetical unified world market, where the world price index:

$$P_w = (\sum_i (\beta_i p_i \pi_i)^{1-\sigma})^{1/(1-\sigma)}$$

is solved from summing (8). $P_w - 1$ is a convenient normalization of this hypothetical world price. Then with given $\beta_i p_i$'s the normalization

$$(\sum_i (\beta_i p_i \pi_i)^{1-\sigma})^{1/(1-\sigma)} - 1$$

is a useful normalization in solving for multilateral resistances with (6)-(7). The factor π_i is straightforwardly interpreted as the sellers' incidence of trade costs from origin i . The interpretation of π and P as buyers' and sellers' incidence generalizes the elementary economics idea of incidence in the one good case. If the actual set of trade costs were to be replaced with hypothetical trade costs

$$\tau_{ij} = \pi_i P_j$$

market clearance and budget constraints (6)-(7) would still hold with the initial equilibrium shares, hence the sellers' factory gate prices would remain the same and the aggregate buyers' prices would remain the same. In this sense, the set of bilateral t_{ij} are equivalent to the set of T_{ij} 's that decompose into the product of buyers' and sellers' incidence factors. (Unlike the one good case, it is the aggregate sales and purchases that are constant; bilateral flows would change in the hypothetical equilibrium.) The model (5)-(7) is for a generic good. Anderson and van Wincoop argue theoretically for estimating disaggregated gravity while Anderson and Yotov demonstrate that aggregation bias is large in practice. For disaggregated gravity, all variables and parameters (5)-(7) should be understood as having superscript k 's to denote the goods class in question. When accounting for substitution between goods classes, aggregate expenditure (or the cost of intermediate inputs) is given by the expenditure (or cost) function $C(P_j, \dots, P_j^k)u_j$, where $C(\cdot)$ is the aggregate cost of living index for j and u_j is the utility of the representative agent (or quantity of aggregate output). Then, by Shephard's Lemma, $E_j^k = P_j^k \delta C(\cdot)/\delta P_j^k$. Each class of goods has expenditure shares described by (3)-(4) but amended to add superscript k to every variable and parameter.

The buyers' and sellers' incidence measures are usefully interpreted as the incidence of TFP frictions in distribution. They contrast with standard TFP-type measures of productivity in distribution. The sectoral TFP friction in distribution is defined by the uniform friction that preserves the value of sectoral shipments at destination prices:

$$t_i^k = \sum_j t_{ij}^k y_{ij}^k / \sum_j y_{ij}^k$$

where y_{ij}^k denotes the number of units of product class k received from i at destination j . t_i^k is a Laspeyre's index of outward trade frictions facing seller i in good k .

The TFP measure t_i^k is useful for analyzing distribution productivity of the world economy as a whole, but it is misleading for purposes of understanding comparative economic performance and the national patterns of production and trade. t_i^k gives the sellers' incidence only under the partial equilibrium and inconsistent assumption that all incidence falls on the seller i . Anderson and Yotov show that in practice these differences are significant: Laspeyre's TFP measures and the incidence of TFP in distribution differ in magnitude and in the case of inward measures the correlation between them is low. For consistency of the gravity modules with full general equilibrium, involving allocation across the sectors k in each country, the π 's are normalized in each sector k for given parameters and 'factory gate' price p_i^k by

$$\sum_i (\beta_i^k p_i^k \pi_i^k)^{1-\sigma} - 1 \quad \dots (9)$$

In practice, when analyzing a gravity module, it is often convenient to normalize one of the P 's to one. The choice of normalization is irrelevant to distribution of the goods because only relative incidence matters.

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Now return to the interpretation of the gravity equation (5), reproduced below for convenience.

$$X_{ij} = \frac{Y_i E_j}{Y} \left(\frac{t_{ij}}{\pi_i P_j} \right)^{1-\sigma}$$

The right hand side is the product of two ratios. The first ratio is the predicted frictionless trade flow given the E's and Y's, $Y_i E_j / Y$. The second ratio is, thus, interpreted as the ratio of predicted (given the t's) to predicted frictionless trade. The useful measure of Constructed Home Bias (Anderson and Yotov) is interpreted as the predicted value of internal trade of i with itself to the predicted value of internal trade in the frictionless equilibrium. Constructed Home Bias is, thus, given by:

$$CHB_i = \left(\frac{t_{ii}}{\pi_i P_i} \right)^{1-\sigma} \quad \text{..... (10)}$$

CHB varies substantially by country, product and time due to changing expenditure and supply shares, even when gravity coefficients are constant.

Policy makers are often focused on overall import penetration ratios such as $\sum_{i \neq j} X_{ij} / E_j$ and the analogous ratio $\sum_{i \neq j} X_{ji} / Y_j$ for exports. These concerns are acute for certain goods classes. The import and export penetration ratios are a linear function of CHB for any goods class k:

$$\sum_{i \neq j} X_{ij}^k / E_j^k = 1 \left(t_{jj}^k / P_j^k \pi_j^k \right)^{1-\sigma} Y_j^k / Y^k \quad \text{..... (11)}$$

$$\sum_{i \neq j} X_{ji}^k / Y_j^k = 1 \left(t_{jj}^k / P_j^k \pi_j^k \right)^{1-\sigma} E_j^k / Y^k \quad \text{..... (12)}$$

Anderson and Yotov show that CHBs vary a lot across goods and more importantly for policy concerns, they exhibit a lot of inter-temporal movement due to changing world shipment shares at constant t_{ij}^k 's, implying a lot of explanatory power over the import and export ratios.

The interpretation of the second ratio in (5) applies straightforwardly to any bilateral flow: it is equal to the ratio of predicted bilateral trade to predicted frictionless trade, hence $(t_{ij} / \pi_i P_j)^{1-\sigma}$ is the 'constructed trade bias' on the link from i to j due to the buyer's bilateral incidence from i relative to the average buyer's incidence for country j. Alternatively, the same statistic viewed from the exporter's viewpoint is due to the bilateral seller's incidence relative to the average seller's incidence. Bilateral trade flows shift about due to changes in production and expenditure shares of world shipments, as implied by the frictionless gravity model, but also due to the general equilibrium force of share changes that alters incidence even when trade costs t_{ij} are constant.

The gravity model also readily disaggregates within countries, allowing useful investigations of inter-regional vs. international trade costs. Indeed, the development of the structural gravity model (Anderson and van Wincoop, 2003) was provoked to solve a puzzle posed by one of the most provocative and useful empirical findings of the traditional gravity literature.

McCallum (1995) found that crossing the Canadian border had an enormous trade destroying effect on the trade flows of Canada's provinces. Canada's provinces were found by McCallum to trade 22 times more with each other than with US states, all else equal. This was too large to make sense as a component of bilateral trade costs t_{ij} .

Structural gravity solved the puzzle by showing that the border dummy variable in McCallum's traditional model reflected the effect of multilateral resistance. The border dummy in the McCallum regression shifts the ratio of inter-provincial trade to province-state trade. Because it is a traditional gravity regression, it does not control for multilateral resistance. Using (5) to form this ratio for a pair of such flows in the structural gravity model and rearranging terms yields, for British Columbia's exports to adjacent Alberta and across the US border to adjacent Washington.

$$\frac{X_{BC,AB}}{X_{BC,WA}} = \left(\frac{T_{BC,WA}}{T_{BC,WA}} \div \frac{P_{AB}}{P_{WA}} \right)^{\sigma-1}$$

The expression on the right hand side of the equation reflect not only the direct trade cost increase at the US border that raises $T_{BC,WA} = T_{BC,AB}$, but the effect of the ratio of multilateral resistances for a province and a state, in this case Alberta and Washington, P_{AB}/P_{WA} . Since Canada's provinces must do far more of their trade with the outside world than do US states (Canada is about one tenth the size of the US in GDP), the provinces naturally have higher multilateral resistance than the states, thereby greatly increasing interprovincial trade. In McCallum's traditional gravity regression, the border dummy variable has a regression coefficient that is an average of such terms, though a biased estimate of it due to the omission of the multilateral resistance controls from his regression. Estimating the structural gravity model, Anderson and van Wincoop (2003) found a more plausible border cost component of t_{ij} , in the range of 20 percent to 50 percent.

Inter-regional vs. international trade cost implications of structural gravity were further developed by Anderson and Yotov (2009). They offer a decomposition of incidence into domestic and international components and calculate sellers' incidence for Canada's provinces on trade within Canada as compared to trade with the rest of the world. They find that while incidence overall declined substantially from 1990-2002, it was entirely on the external trade; sellers' incidence on domestic trade remained constant. Similar investigations are likely to provide a useful context for regional integration policy in many countries and economic areas around the world where separatism and economic integration are important concerns. Notice that the trade flows in (5) are invariant to a uniform rise in trade costs (including costs of internal shipment). This follows because (6)-(7) imply that raising all t_{ij} 's by the factor $\lambda > 1$ will raise each π and P by the factor $\lambda^{1/2}$. This formal homogeneity property has useful empirical content: if the world really were getting smaller uniformly, the gravity model would be unable to reveal it. The empirical literature tends to indicate little change in gravity coefficients, contrary to intuition about globalization driven by falling communications costs and improving quality of transport but consistent with uniform shrinkage of resistance to trade.

Anderson (1979) was the first to derive gravity from the Armington/CES preference structure, noting that Armington preferences implied a bilateral trade flow gravity equation of the form of (5) that would require controlling for the importer and exporter trade cost indexes. By using a units choice to set all equilibrium factory gate prices equal to 1, Anderson's 1979 derivation concealed how (5)-(7) formed a conditional general equilibrium module that would be the foundation for the very useful comparative statics to come a generation later. The comparative statics of inward and outward multilateral resistance were first used by Anderson and van Wincoop (2003). Recognition that multilateral resistance is interpreted as incidence is in Anderson and Yotov (2009).

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Supply Side Structure

An alternative derivation of a mathematically equivalent structural gravity model was proposed by Eaton and Kortum (2002), based on homogenous goods on the demand side, iceberg trade costs, and Ricardian technology with heterogeneous productivity for each country and good due to random productivity draws from a Frechet distribution. Despite CES structure for the intermediate goods demand, in equilibrium the share of goods demanded from i by country j is determined only on the supply side; the influence of σ disappears into a constant term. In equilibrium, each country will be assigned a sub-set of the goods, and except for knife-edge cases it is the only supplier of these goods. The bilateral trade flows obey the same equations as (5)-(7). $1 - \sigma$ is interpreted as $-\theta$ where θ is the dispersion parameter of the Frechet distribution. In contrast to the Armington/CES model, all action is on the extensive margin of trade. Eaton and Kortum derive their model for one 'sector' only, a specification generalized by Costinot and Komunjer (2008), so that θ_k is the dispersion parameter for the distribution describing productivity draws in sector k . The Ricardian structure of supply leads to a very simple general equilibrium superstructure, an appealing feature that has led to a growing literature combining estimation and simulation.

Chaney (2008) derives a similar supply side gravity structure based on Ricardian productivity draws from a Pareto distribution where the dispersion parameter of the Pareto distribution plays essentially the same role as θ in the Eaton-Kortum model. For each firm, changes in variable trade costs act on the intensive margin, but for the total sectoral bilateral trade flow these effects disappear and the aggregate effect is effectively on the extensive margin of trade. Chaney's model includes a fixed cost of export for monopolistically competitive firms, and in equilibrium the elasticity of substitution aspects the pattern of trade by being part of the elasticity of equilibrium trade volume with respect to the fixed cost.

Zeroes: In practice, many potential bilateral trade flows are not active. The data presented to the analyst may record a zero that is a true zero or it may reflect shipments that fall below a threshold above zero. In addition there may be missing observations that may or may not reflect true zeroes. The prevalence of zeroes rises with disaggregation, so that in finely grained data a large majority of bilateral flows appear to be inactive. Finally, over time, the small bilateral flows in finely disaggregated data appear to wink on and off. The zeroes present two distinct issues for the analyst: appropriate specification of the economic model and appropriate specification of the error term on which to base econometric inference. Discussion of the specification of the error term is deferred to the section on estimation. In specifying the economic model, zero trade flows present a problem for the CES/Armington model of demand and the Eaton-Kortum supply side structure. With elasticities of substitution greater than one (or the equivalent dispersion/comparative advantage parameter restriction for the Eaton-Kortum model), the empirically relevant case, some volume will be purchased no matter how high the price. One way to rationalize zeroes is to modify the demand specification so as to allow 'choke prices' above which all demand is choked off. A start is made by Novy (2010) who derives gravity in a highly restricted one slope parameter translog expenditure function case that allows for zeroes in demand. More general translog treatments are feasible and desirable. Anderson and Nearly (2005) present a general homothetic preferences structure, showing that multilateral resistance is defined and solved from a similar equation system once the functional form and its parameters are specified, along with data on shipment and expenditure shares.

An alternative economic specification explanation retains CES/Armington preferences and rationalizes zeroes as due to fixed costs of export facing monopolistic competitive firms.

If no firm in i is productive enough to make incurring the fixed cost of exporting to j profitable (given the cost of production in i , variable trade cost t_{ij} and willingness to pay in j), then zero trade results. Helpman, Melitz and Rubinstein (HMR, 2008) develop this idea. The selection effect determines which markets are active and also determines a volume effect V_{ij} due to productivity heterogeneity among firms whereby markets that are active have a greater or lesser numbers of firms active depending on the same selection mechanism. The gravity model becomes:

$$X_{ij}^k = \frac{E_j^k Y_i^k}{Y^k} V_{ij}^k \left(\frac{t_{ij}^k}{P_j^k \pi_i^k} \right)^{1-\sigma_k}$$

$$(\pi_i^k)^{1-\sigma_k} k - \sum_j \left(\frac{t_{ij}^k}{P_j^k} \right)^{1-\sigma_k} k \frac{V_{ij}^k E_j^k}{Y^k}$$

$$(P_j^k)^{1-\sigma_k} k - \sum_i \left(\frac{t_{ij}^k}{\pi_i^k} \right)^{1-\sigma_k} k \frac{V_{ij}^k Y_i^k}{Y^k}$$

HMR report results suggesting that this mechanism is indeed potent, and that inference without accounting for it biases estimates of the variable trade costs downward.

The key mechanism is a Pareto productivity distribution of potential trading firms. The Pareto distribution is capable of capturing the empirical observation that the largest and most productive firms export the most and to the most destinations. The Pareto distribution allows a tractable estimation procedure that requires only aggregate bilateral trade data, an important advantage because firm level trade data is not widely available. In practice, identification of the parameters in estimating the HMR model requires a plausible exclusion restriction — a proxy for the fixed cost of export that is not also a proxy for the variable cost of trade. HMR use common religion, a specification that many find dubious.

An important challenge for the future is combining the HMR mechanism with the translog expenditure system. A potent objection to the CES demand structure in monopolistic competition is that it implies constant markups. The translog allows variable markups. And it is apparently far more tractably manipulated into a gravity representation.

Discrete Choice Structure

The third alternative model of structural gravity is based on modelling individual discrete choice in a setting where the individual trader faces costs or receives benefits not observable to the econometrician. Of all possible bilateral pairs, the trader chooses one because it yields the greatest gain. A population of such traders has observable characteristics such as bilateral distance that condition the probability of each choice, the econometrician observes the resulting masses allocated and uses a probability model to structure statistical inference. An early attempt on these lines was made by Savage and Deutsch (1960) and followed by Leamer and Stern (1970). Several problems with the model limited its appeal. It did not offer a rationale for the linear homogeneity of the mass variables in gravity and its characterization of cross effects did not have a sound rationale.

Discrete choice modelling was greatly advanced by McFadden (1973), who proved that under plausible restrictions in this setting (the random variable, to the econometrician, results in the observed choices following the Type 1 extreme value distribution), the resulting probability model is the multinomial logit. Building on the multinomial logit, it is easy to

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generate a structural gravity model. This reasoning has rationalized recent work on models of migration (e.g., Grogger and Hanson, 2008, and Beine, Docquier and Ozden, 2009). It is straightforward to combine the discrete choice setup with the market clearance conditions to derive the buyers' and sellers' incidence of trade costs exactly as in the preceding models. The development is postponed to the next section, but is noted here because exactly the same reasoning applies to goods traders making discrete choices where to sell or buy their goods. Thus, the discrete choice probability model rationalizes structural gravity equally well. It may be fruitful to explore the applicability of two-sided matching models in the trade context as well as the job market context.

Estimation

As an empirical model, gravity is fundamentally about inferring trade costs in a setting where much of what impedes trade is not observable to the econometrician. What is observable are the trade flows and a set of proxies for various types of trade costs, along with direct measures of some components of trade costs. Most issues with modelling trade costs are discussed in Anderson and van Wincoop (2004). Since that time, there have been several notable advances in modelling and inferring trade costs. Two of the advances deal with the implications of zeroes in the bilateral trade flow data. One view of zeroes is that they stand for flows too small to report, an interpretation that indeed represents reporting practices of government trade ministries. Interpreting zeroes in this way, it is legitimate to drop the zero observations from estimation because there is no economic significance to the zeroes relative to the non-zero observations.

In the presence of heteroskedastic errors, Santos-Silva and Tenreyro (2006) point out that inconsistent estimation arises from the usual econometric gravity practice using logarithmic transforms of (5) augmented with a normal disturbance term and estimated with Ordinary Least Squares (OLS). Since the data has a lot of zeroes, the disturbance term must have a substantial mass at very small values, violating the normal distribution assumption. They propose instead to model the disturbance term as generated from a Poisson distribution, leading to estimation with a Poisson Pseudo-Maximum Likelihood (PPML) technique. Their results show that PPML leads to smaller estimates of trade costs compared to OLS. The heteroskedastic error problem identified by Santos-Silva and Tenreyro is important, but their solution has not convinced all researchers. Martin and Pham (2008) argue based on Monte Carlo simulations that when heteroskedasticity is properly controlled, Tobit estimators outperform PPML when zeroes are common. Heteroskedasticity is likely to be attenuated using size-adjusted trade $X_{ij}/Y_i E_j$ as the dependent variable, as advocated by Anderson and van Wincoop.

An alternative view of zeroes, encountered above, is that economically meaningful selection generates the zeroes. All firms in origin i face fixed costs of entering exporting to any particular destination j , and only the sufficiently productive ones can afford to pay the fixed cost. When a destination j is so expensive to reach that no firm in i can afford the fixed cost, zeroes are generated in the data. In this case, OLS estimation without accounting for selection is biased for two reasons; the standard left censored selection reason and also because, for bilateral pairs with positive flows, there is a volume effect due to selection of firms along with the bilateral trade cost t_{ij} that is the object of investigation in OLS or PPML estimation. HMR find that their technique also results in lower cost estimates than does OLS. (They report that estimation with Poisson error terms as opposed to normal ones does not alter their findings.)

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In principle, an economic model of zeroes is attractive, but many researchers are suspicious of the exclusion restriction used by HMR to identify their volume effect. They assume that common religion affects the fixed cost of export but not the variable cost t_{ij} . Moreover, the tractability of the HMR model depends on a restrictive distributional assumption on the productivity draws distribution of firms, which in turn is a specialization of a particular model of monopolistic competition that is not applicable to all sectors.

Anderson and Yotov (2010) report that estimation with PPML, HMR or OLS leads to essentially identical results for buyers' and sellers' resistance and Constructed Home Bias because it leads to gravity coefficients that are almost perfectly correlated. The homogeneity property of (5)-(7) implies that only relative trade costs can be inferred by gravity, hence the differences in techniques effectively amount to different implicit normalizations. Anderson and Yotov report this near perfect correlation finding based on estimation with the three techniques over 183 digit manufacturing sectors, 76 countries and 13 years of data.

Traditional

Some researchers continue to use a traditional form of the gravity model, presumably in the belief that the structural model featured above is not sufficiently well established. It seems useful to review a generic traditional model along with my objections. A typical traditional gravity model regresses the log of bilateral trade on log trade costs proxied by a vector of bilateral variables that are not at issue here, log GDP for origin and destination, and log population for origin and destination. In addition, a number of authors include remoteness indexes of each countries distance from its partners, a theoretic measures that are inadequate attempts to control for multilateral resistance, report significant differences between gravity estimated with remoteness and with multilateral resistance.)

The first objection to the traditional model is its aggregation, which causes two problems. There is aggregation bias due to sectorally varying trade costs and sectorally varying elasticities of trade with respect costs, for analysis and Anderson and Yotov, for evidence on downward bias). The second aggregation problem is specification bias because GDP is a value added concept with a variable relationship to gross trade flows. Much recent attention to the vertical disintegration of production and its international aspect emphasizes the variable inter-temporal relationship of gross trade to GDP and its variation across countries is also significant. Disaggregation and use of the appropriate sectoral output and expenditure variables fixes both problems.

The second objection is omitted variable bias from the perspective of the structural gravity model — the traditional model leaves out multilateral resistance. Multilateral resistance has only low correlation with remoteness indexes, and the omitted variable will be correlated with the other right hand side variables and thus bias estimation. The traditional model's inclusion of mass variables such as GDP and population presumably picks up a part of the missing explanatory power of multilateral resistance, since Anderson and Yotov's work shows that multilateral resistance is associated with country size. Estimation with country fixed effects controls appropriately for all these issues.

Structural

Anderson and van Wincoop (2003) combine (6)-(7) with the stochastic version of (5) to form a full information estimator of the coefficients of the proxies for trade cost such as distance and international borders. Utilizing the unitary elasticities on the E's and Y's, their

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dependent variable is $X_{ij} / Y_i E_j$, size-adjusted trade. An alternative fixed effects estimator controls for the unobservable multilateral resistances and activity variables

$$X_{ij} = \chi_i m_j t_{ij}^{1-\sigma} \varepsilon_{ij} \quad \dots (13)$$

where ε_{ij} is the random error term, χ_i is the fixed effect for country i as an exporter and m_j is the fixed effect for country j as an importer. (13) is less efficient than a full information estimator but seems preferable to most subsequent investigators. Feenstra argues for the fixed effects estimator because it does not require custom coding, but another and perhaps better reason is that researchers should be suspicious that there may be other country specific unobservables that the fixed effects pick up, but which full information estimation would drive toward spurious results.

A major drawback to fixed effects estimation is its demolition of structure: the econometrician blows up the building to get at the safe inside containing the inferred bilateral trade costs. Fortunately, in the case of structural gravity, it is feasible to reconstruct the building like an archaeologist, using structural principles in the form of (6)-(7). Thus, Anderson and Yotov use fixed effects to estimate (5) in its stochastic form, but then calculate the multilateral resistances by calculating the fitted t_{ij} 's and plugging them into (6)-(7).

This technique is used to 'test' the structural gravity model by comparing the estimates of fixed effects ($\chi_i m_j$) with the structural gravity term ($Y_i E_j \pi_i^{\sigma-1} P_j^{\sigma-1}$). The results are remarkably close in an economic sense (the fitted regression line has an estimated elasticity around 0.96, compared to the theoretical value of 1.0) across 76 countries and 18 manufacturing sectors over 13 years. While this result suggests that the constraints that legitimize full information methods are very close to being valid, fixed effects estimation still seems the better, more cautious practice to follow. Baier and Bergstrand (2009) propose an alternative direct estimator of multilateral resistance based on a Taylor's series approximation of (5). They report reasonably good results, but many researchers will be wary of the approximation error. In contrast, the method of Anderson and Yotov avoids approximation error. As Baier and Bergstrand emphasize, the advantage of their method relative to panel estimation with fixed effects is that it avoids the upper bound on the number of fixed effects imposed by typical econometric packages at this writing. (STATA currently imposes a limit of 11,000 independent variables, while 100 countries over 10 years require approximately 200,000 fixed effects and even yearly estimation requires 20,000.) In principle, the Baier and Bergstrand estimator could be used to construct t_{ij} 's and then combined with data on the Y 's and E 's using (6)-(7) in order to obtain the incidence measures and perform comparative statics with them. The constructed multilateral resistances in Baier and Bergstrand's method can be compared to the point estimates, differences being attributed to random error and approximation error.

Foreign Affiliate Sales: A large share of international trade is sales by foreign affiliates of multinational firms. Standard trade gravity models include this trade along with that of domestically owned firms. If the trade costs are the same for both types of firms, this treatment is entirely appropriate. There is reason to believe, however, that the trade cost structure facing foreign affiliate sales differs from that facing domestic firms. For trade in intermediate inputs, information and other transactions costs are reduced for intra-firm trade, but even for horizontal trade there are likely to be transactions cost advantages when a foreign affiliate sells into its home country. This reasoning suggests splitting the home and foreign firms into separate 'sectors' for more accurate and informative inference about trade costs.

This approach to gravity with multinationals follows the conditional general equilibrium strategy, treating total sales as exogenous. It avoids taking a stand on determinants of the location of production. A significant literature that is at least loosely related to gravity attempts to explain this location decision along with the volume of foreign affiliate sales. It is treated below in the discussion of Foreign Direct Investment.

Gravity and Factor Flows: Gravity has long been applied to empirically model factor movements. As with trade flows, the model always fits well. But, in contrast to the recent development of an economic structural gravity model of trade, there has been little progress in building a theoretical foundation. This section sets out a structural model of migration, reviews promising steps toward a structural model of Foreign Direct Investment (FDI) and closes by pointing to the unsolved puzzle of modelling international portfolio capital movements.

Migration: The decision to migrate is a discrete choice from a menu of locations. Each worker that migrates faces a low cost common to all workers who migrate in a particular bilateral link, but each worker also has an idiosyncratic component of cost or utility from the move. We may think of an idiosyncratic cost component as plausibly associated with a fixed cost, but in the migration decision the distinction between fixed and variable cost plays no important role because the decision to migrate has no volume decision accompanying it. This stands in contrast to the export selection model of Helpman, Melitz and Rubinstein (2008) where the decision to export and the decision how much to export are distinct. Let w^i denote the wage at location i . The worker h who migrates from origin j to destination i faces a cost of migration modelled with iceberg cost factor $\delta^{ji} > 1$, receiving net wage (w^i/δ^{ji}) . Worker h 's idiosyncratic utility from migration is represented by ε^{jih} , private information to him. He chooses to migrate if $(w^i/\delta^{ji}) \varepsilon^{jih} \geq w^j$ for at least some i . Among alternative destinations, he chooses the one with the largest surplus. Suppose that the worker has logarithmic utility. Then his observable component of utility of migration from j to i is $u^{ji} - \ln w^i - \ln w^{ji} - \ln w^j$. In this sort of setting, McFadden (1973) showed that if $\ln \varepsilon$ had the Type 1 extreme value distribution, the probability that a randomly drawn individual would pick any particular migration destination is given by the multinomial logit form. Building on this insight, migration models subsequently used the multinomial logit to model bilateral migration flows. For two recent examples, see Beine, Docquier and Ozden (2009) and Grogger and Hanson (2008). This section develops a novel gravity model representation of the migration model by making use of the market clearing conditions to derive the appropriate multilateral resistance variables. At the aggregate level, the probability is equal to the proportion of migrants from j (assumed to be identical except for their values of ε , that pick destination i). Let N^j denote the population of natives of j . The predicted migration flow from j to i that results from the setup

$$M^{ji} = G(u^{ji}) n^j \quad \dots (14)$$

$$\text{where, } G(u^{ji}) = \frac{\exp(u^{ji})}{\sum_k \exp(u^{jk})}$$

With logarithmic utility, the migration equation is:

$$M^{ji} = \frac{W^i/\delta^{ji}}{\sum_k W^k/\delta^{jk}} N^j \quad \dots (15)$$

Eq. (15) is a structure analogous to the CES demand (in the Armington model) or Ricardian supply (in the Eaton-Kortum model) shares that underpin the trade gravity equation. The connection of the share equation (15) to the structural gravity form of the model is completed

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by using the labour market balance equations to solve for and substitute out the equilibrium w 's.

Define $W^j = \sum_k W^k / \delta^{jk}$ and define the labour force supplied to i from all origins

$$L^i = \sum M^{ji} \quad \text{..... (16)}$$

Also, $N = \sum_j N^j = \sum_i L^i$, the world labour supply N . The labour market clearance equation is:

$$L^i - W^i \sum_j ((1/\delta^{ji})/W^j) N^j$$

$$\text{Then } W^i = \frac{L^i}{\Omega^i N} \quad \text{..... (17)}$$

$$\text{where } \Omega^i = \sum_j \frac{1 - \delta^{ji}}{W^j} \frac{N^j}{N} \quad \text{..... (18)}$$

Using (17) to substitute for the wage in W^j ,

$$W^j = \sum_k \frac{1/\delta^{jk}}{\Omega^k} \frac{L^k}{N} \quad \text{..... (19)}$$

Substituting for the wage in (15) using (17) yields the structural gravity equation of migration:

$$M^{ji} = \frac{L^i N^j}{N} \frac{1/\delta^{ji}}{\Omega^i W^j} \quad \text{..... (20)}$$

The first ratio represents the migration pattern of a frictionless world. The implication is that in a frictionless world, populations originating in j would be found in equal proportions to their share of world population in all destinations: $M^{ji}/L^i = N^j/N$. The second term represents the effect of migration frictions. The bilateral migration friction δ^{ji} reduces migration. It is divided by the the product of weighted averages of the inverse of migration frictions, one for inward migration to i from all origins and one for outward migration from j to all destinations. The system (18) – (19) can be solved for the Ω 's and W 's (subject to a normalization). Their interpretation and their connection to multilateral resistance in the more familiar trade gravity model is easier to see in the case where utility is generalized to the log of a Constant Relative Risk Aversion function.

Let the coefficient of relative risk aversion be θ . In this case, (20) becomes:

$$M^{ji} = \frac{L^i N^j}{N} \frac{(\delta^{ji})^{1-\theta}}{\Omega^i W^j}$$

where,

$$\Omega^i = \left[\sum_j \frac{(\delta^{ji})^{1-\theta}}{W^j} \frac{N^j}{N} \right]^{1/1-\theta}$$

and

$$W^j = \left[\sum_i \frac{(\delta^{ji})^{1-\theta}}{\Omega^i} \frac{L^i}{N} \right]^{1/1-\theta}$$

Here, Ω^i and W^j are CES price indexes of migration frictions, one for inward (Ω^i) and one for outward (W^j) migration frictions. These equations are exactly analogous to Anderson and van Wincoop's gravity, inward (Ω_i) and outward (W_j) multilateral resistance equations for trade, but applied to migration. As with the trade gravity model, outward multilateral resistance gives the sellers' incidence of the migration costs on average while the inward multilateral resistance gives the 'buyers' incidence of migration costs. (18)-(20) results from the special case $\theta = 2$.

Ω and W are general equilibrium concepts as is clear because their solution in the simultaneous systems above involves every bilateral migration cost in the world. They are conditional general equilibrium concepts because the L 's are endogenous in a full general equilibrium. It is possible in a Ricardian production setting to combine the migration system with the trade gravity model to derive equilibrium labour supplies that are functions of the incidence of both migration frictions and trade frictions.

As with trade gravity models, Ω 's and W 's can be computed once the δ 's are econometrically constructed and the labour supplies L^i and population stocks N^j are observed. A normalization is needed.

A similar model has been applied to services trade by Head, Mayer and Ries (2009). Instead of actually changing locations, the foreign worker does the job in his home location. The cost of migration becomes the cost of monitoring the distant worker. Worker productivities in each location have the Frechet distribution, as in the Eaton-Kortum model. The firm selects workers so as to minimize the log of the delivered unit labour cost. Then the distribution of log productivities takes the Gumbel form. The fraction of service jobs in origin i going to workers in location j has the multinomial logit form. The total numbers of workers and of jobs in each location enter the model in the same way as in the migration model. I suspect that the choice between off-shoring the service job and migrating the worker can be fruitfully addressed with some combination of the two models.

The preceding treatment applies to a stationary equilibrium where the L 's are the result of M 's fully adjusting labour supplied at each location to its equilibrium value given the initial stocks of labour (N^j) and the set of migration frictions, the δ 's. In adapting the model to fit actual data, the N 's, L 's and M 's are observed at points in time, and with panel data the observations are linked over time.

If the sequence of observations is regarded as reaching the static equilibrium each period, the observed migration is just that amount needed to reach the equilibrium in each period. This model would be consistent with naive expectations about future wages, or with a pure guest worker model in which migration is determined by contemporaneous variables only.

So in principle, under this interpretation, the preceding model could be applied at each date, all variables now having a time subscript. The alternative is a dynamic model in which the migrants form expectations about the sequence of future wages based on underlying expectations about the future evolution of the distribution of trade frictions, the populations, and, as we will see following the development of the integrated trade and migration model, variables that predict the demand for labour at all locations. This sophistication requires a big increase in complexity, with dubious applicability of rational expectations to unskilled workers. The other issue raised by thinking of dynamics is the issue of partial adjustment-migration in any one year may not suffice to reach the static equilibrium of the preceding

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section. In this case, the standard ad hoc approach of partial adjustment due to quadratic adjustment costs might be applied without too large an increase in complexity.

Foreign Direct Investment: Foreign direct investment has been successfully explained by gravity structures without a theoretical foundation. More recent work has made progress on foundations. Satisfactory foundations are more difficult to find for at least two reasons. First, the location of production question must be answered in an upper level general equilibrium model, which requires taking a stand on one of many possible production, preference and market structures restricted so as to produce tractable results. Second, the determinants of location depend on whether the good in question is vertically or horizontally linked to other sources of firm profits.

A key element in explaining the location of horizontally linked production is the proximity concentration trade-off: a firm with fixed cost reduces per unit production cost by concentrating production at one location but can save distribution costs by allocating production in proximity to markets. Even under strong restrictions, the models obtained so far are non-linear and require approximation to be taken to data. Helpman, Melitz and Yeaple (2004) model interaction between horizontally linked exports and foreign affiliate sales, where the firm chooses between exporting from home or investing abroad and selling from a foreign plant. They are able to draw inferences from aggregate data by modelling heterogeneous productivity of firms with a Pareto distribution. Fixed costs of export and of investing abroad serve to select firms into non-traders, exporters and multinationals with ratios that vary market by market due to trade costs modeled as transport costs and tariffs only, omitting the usual gravity variables. Their empirical application with US data obtains fairly good results in explaining the ratio of exports to foreign affiliate sales with a linear approximation to their underlying non-linear model. The model fits much less well than standard export gravity equations, not surprising because the dependent variable is different and the question addressed is more difficult to answer. Kleinert and Toubal (2010) extend Helpman, Melitz and Yeaple to allow for fixed setup costs that rise with distance, a wrinkle that can explain why foreign affiliate sales can fall rather than rise with distance as the earlier proximity-concentration trade-off suggested. They also derive a gravity-type relationship from two other structures, a vertical integration model and a two country factor proportions model of fragmentation.

Bergstrand and Egger (2007) offer a gravity model of FDI derived from the knowledge based capital theory of horizontal multi-national enterprises. Their objective is a full general equilibrium model that can explain trade, foreign affiliate sales and foreign direct investment. They simulate a theoretical model that generates non-linear relationships between exports, affiliate sales and their exogenous determinants. Then they fit an approximate empirical relationship to the generated data and take the same relationship to actual data, with some success. A limitation of their model is that, though the factor proportions model with three factors is used to explain simultaneous exports and affiliate sales, the countries in their simulation setup have identical endowment proportions and differ only in size.

Keller and Yeaple (2009) develop a gravity model of vertically integrated intra-firm trade featuring trade costs with two elements, a standard iceberg trade cost and a communication cost that rises with the complexity of the firm's technology. Input complexity raises technology transfer costs while the costs of embodied technology transfer are independent of complexity and increasing in trade costs. An increase in trade costs reduces foreign affiliate sales and this effect is strongest in the most complex sectors. In contrast, an increase in trade costs reduces the imports of foreign affiliates and this effect is weakest in

the most complex sectors. Like the standard trade gravity model, Keller and Yeaple's model of foreign affiliate sales permits inference about trade costs from observable trade flows.

Keller and Yeaple report fairly good results estimating the model using confidential data on US multinational firm activity from the Bureau of Economic Analysis. The role played by communication cost interacting with technological complexity, thus, appears likely to be helpful in explaining the rising share (in total trade) of intra-firm trade and also the rising share of trade in intermediates.

An alternative strategy along the lines of the conditional general equilibrium approach outlined above for migration appears useful. The migration decision model could apply to FDI since the location decision for a plant is similar to the location decision of a migrant. (Unlike migration but like trade, FDI involves a volume decision along with a participation decision.) The rate of return on investment could be taken as exogenous in a conditional general equilibrium approach just as wages are taken as exogenous in the migration gravity model, while market clearing conditions apply just as in the migration model. Idiosyncratic cost factors would apply to the various investment projects, just as they do to the individual migrants. The Keller-Yeaple model of vertically integrated intra-firm trade offers a structure for identifying one type of cost. A weakness in the extension by analogy is in risk diversification. Migrants cannot diversify their risks, but firms can, though with limited possibilities that may be very limited for FDI. The potential risk diversification would modify the utility derived from each location choice. The discrete choice approach faces truly formidable modelling challenges in endogenizing the investment rates of return, unlike the wage equation suggested by the migration model.

A promising start on these lines is by Head and Ries (2008). Potential acquisitions go to the highest bidder, who bids based on his anticipated return net of monitoring costs that rise with distance and other standard gravity variables. The probability of the winning bid going to source country i takes the multinomial logit form. The mass variables are the stocks of projects in each host country and each source country's share of world bidders.

Portfolio Investment: Martin and Rey (2004) offer the first gravity type model of international portfolio investment. The coefficient of relative risk aversion plays the role, in equilibrium, of the elasticity of substitution in the CES demand specification. While appealing as a rationale for the gravity application of Portes and Rey (2005), the Martin and Rey model does not provide a fully satisfactory foundation for gravity models of investment flows because: (i) trade is assumed to be frictionless, (ii) investment costs are uniform, and (iii) most important, the analysis is restricted to two countries. The third party effects that play a big role in the gravity model of trade (and of migration) cannot be treated.

Integrated Superstructure: The gravity model nests inside a general equilibrium superstructure. As pointed out in Anderson and van Wincoop (2004), modularity implies that the problem of resource and expenditure allocation across sectors in the general equilibrium superstructure can be treated separably from the gravity module problem of distribution within sectors to destinations or from origins. Consistency between the two levels of the problem requires fixed point calculations in general, but the economy of thought and computation due to separability is extremely useful, and in particular makes it possible to integrate gravity with a wide class of general equilibrium production models. So far, only very simple production models have been used for full general equilibrium comparative statics, but I anticipate that this situation will change.

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The simplest production structure is an endowments economy. Anderson and van Wincoop (2003) use the endowments model to calculate the effect of eradicating the US-Canada border on their estimated gravity model of trade between US states, Canadian provinces and the aggregated rest of the world.

Another attractive candidate is the Ricardian production model. Eaton and Kortum (2002) nest gravity inside a Ricardian model of production, a choice followed by a host of subsequent researchers such as Arkolakis (2008). An important feature of these models is the action on the extensive margin, as industries arise or disappear. In the Eaton-Kortum model of 2002, the extensive margin is the only margin. Arkolakis and others have variants in which both extensive and intensive margins are active. This is an important feature because disaggregated trade data and especially firm level data indicate that both margins are active.

Between the two extremes of zero and infinite elasticity of transformation of the endowments and Ricardian models lie a host of more complex production structures in which action occurs on the intensive margin of production when relative prices change, leading to another channel of interaction between the gravity modules in each sector (and resulting buyers' and sellers' incidences) and the pattern of production. Consistency between the modules is achieved by using (9) to normalize the π 's in each sector. I think the future will see work with these more complex general equilibrium features.

Migration of labour and capital in the form of FDI has been given a complete gravity representation in this essay. In the integrated superstructure, it can be treated simultaneously with the trade modules. In this setting, multilateral resistance in trade has significant effects on migration and *vice versa*. I anticipate that development of this link will be useful.

A number of authors have constructed integrated models that motivate econometric work aimed at discriminating between one or another specification of the upper level production and market structure. A summary of work on these lines is in Feenstra (2004), Chapter 5, where the main focus is on the link between gravity and increasing returns to scale. Research has continued on these lines, but I will not review it here.

So, the gravity model is a poor vehicle for inferences about returns to scale, market structure and the global general equilibrium links between economies. Under such circumstances, gravity is about the distribution of given amounts of goods in each origin drawn by given amounts of expenditure in each destination, enabling inference about trade costs from the deviation of observed distribution from the frictionless equilibrium. The determinants of total shipments and total expenditures are irrelevant to this inference because country fixed effects are a consistent control that does not require taking a stand on any particular production or market structure model. Conversely, the cross-section variation of bilateral trade does not seem likely to have much useful information about the determination of national total shipments or expenditure. Interdependence is so deeply wound between these variables in the full general equilibrium model that inference about structure seems implausible. In contrast, simulation models look reasonably promising as a source of insight.

This idiosyncratic review of work on the gravity model suggests that the story is not over, so a conclusion can only point to potential future chapters. Distribution broadly defined consumes a very large share of the world's resources and gravity has proven to be the most generally useful empirical model for understanding the distribution of goods and factors of production. It appears to work well at almost any scale. The progress in structural modelling of gravity has yielded three distinct rationales for the same observationally equivalent model of the distribution of economic flows between origins and destinations, one based on the

demand side (the CES/Armington model), one based on the supply side (the Eaton-Kortum model), and one based on a discrete choice model of the individual actor transferring the goods or factors. Further work may suggest ways to discriminate between these. The structural modelling of gravity imposes trade separability, permitting gravity modules to be nested inside a wide range of general equilibrium superstructures. Future work with simulation models may suggest which of many candidate general equilibrium production models do better.

The problem of zeroes in the trade and factor flows data has been addressed with some success, particularly by Helpman, Melitz and Rubinstein. But I expect future work to do better. The CES framework (with elasticity of substitution greater than one) is unsuitable for describing small amounts of trade. The translog cost function, in particular, seems likely to yield better descriptions and better understanding of why so many potential flows are equal to zero. This is so even if, as in HMR, fixed export costs play an important role in selecting firms to export. Incidence measures produced by Anderson and Yotov have been featured in this review. If the profession agrees that they are as interesting and useful as they appear to me, more work is needed to see how believable the measures are. As it stands, they are completely reliant on CES structure. How well does the CES do in representing the world economy? This is an especially important question in light of the zeroes question in the preceding paragraph.

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4.4 GROWTH POLES

Growth-pole Strategies in Regional Economic Planning: A Retrospective View, Origins and Advocacy

One of the more intriguing aspects of the analysis and practice of regional economic planning over the past several decades has been the changing attitude towards the growth-pole strategy. This strategy or family of strategies has been proposed in a variety of settings, and is therefore not easily generalized. Certain common features can be identified, however. The growth-pole strategy typically involves the focusing of investment at a limited number of locations (usually as part of a deliberate effort to modify regional spatial structure), in an attempt to encourage economic activity and thereby raise levels of welfare within a region. By the mid-1960s, the growth-pole strategy had emerged as the object of considerable fascination and enthusiasm, and was viewed as an idea in good currency, to use the borrowed phrase of Lasue An. Indeed, a newcomer to the field at that time could have been excused for thinking that no matter what the nature of the regional problem, it would be most effectively overcome by the adoption of a growth-pole strategy. Doubters subsequently emerged, including Gilbert (1974) and Moseley (1973), but they were few in number and their warnings went largely unheeded; such was the spirit of the times. Large areas within the field of regional terms of the growth-pole strategy. Commenting later on this trend, Kuklinski (1978, tellingly observed: Sometimes the judgement is expressed that growth-pole theory is the closest approximation to the general theory of regional development.

The period from the mid-1960s to the mid-1970s saw a rapid expansion of academic interest in growth-pole strategies, with numerous conference sessions, collected volumes and journal articles devoted to the subject. Coinciding with this, and probably not unrelated to it, were the many attempts to apply the strategy in a variety of settings within developing as well as developed economies, the nations of Latin America being among the early adopters. In the light of subsequent experience, however, the strategy can only be judged to have been

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unsuccessful, at least in the sense that it failed to achieve the primary objectives of policy within the time-interval envisaged. There were, it is true, cases where it was broadly successful, either by design or good fortune, and other cases where certain facets of the strategy achieved a measure of success. Nevertheless, the instances where the strategy was implemented in a consistent manner and carried through to fruition are few in number. In fact, the recent history of regional economic planning in many parts of the world is littered with examples of growth-pole strategies having failed or having been prematurely abandoned. It is hardly surprising therefore that present-day attitudes towards growth-pole strategies stand in marked contrast to those of the 1960s. Despite spirited and cogently argued defences of the growth-pole strategy during the intervening years (Boisier, 1980; Hansen, 1975; Richardson, 1978), it has fallen from favour. Governments have largely turned their backs on it (Breathnach, 1982; Conroy, 1973), and among planners it tends to be regarded as *passé* or as some relic of earlier planning practice. Frequently, it is rejected out of hand, and some even take the view that the strategy represents a fundamentally inappropriate approach to regional economic problems. Gore (1984) and Lipton (1977), for instance, come very close to this position. Among others, the notion of a growth-pole strategy has aroused a suspicion, if not hostility, on ideological grounds (Coraggio, 1973). Such a volte face within the field of regional economic planning over an interval of not much more than three decades is disquieting. It suggests at the very least a superspeciality of approach and more seriously perhaps an inability or an unwillingness to subject new concepts to close scrutiny.

Enough time has probably elapsed for the chequered career of the growth-pole strategy to be placed into perspective. If it were simply a case of a particular planning strategy having shown itself to be ineffective, then the episode could simply be written up in the annals of planning history in the usual manner. Useful as such an account might be, the examination of growth-pole strategy should extend beyond the purely historical, if only because the reasons surrounding its frequent failure go to the very heart of regional economic planning, and have powerful implications for virtually every form of policy intervention at the regional scale. In other words, the kinds of questions that needed to be asked of growth-pole strategy (but, as we shall see, were not) are the very questions that should be asked of any other strategy or emphasis in regional economic planning. The analysis of growth-pole strategy thus has a relevance and generality which extend far beyond the strategy itself. As will be apparent, the arguments to follow represent neither a dismissal of growth-pole strategy nor an attempt to rehabilitate it. Rather, the concern is with drawing attention to its complex and highly conditional nature. What will also become evident is the absence of an adequate framework or general theory of regional economic policy, within which the growth-pole strategy could have been evaluated, either conceptually or operationally. In fact, the absence of such a framework goes a long way to explaining not only the initial enthusiasm towards the growth-pole strategy, but also the more recent rejection of it. There were also a number of confusions that have bedevilled the conceptualization of growth-pole strategy from the very beginning and attention now turns to certain of these.

Some Underlying Confusions

Much of the early writing on growth-pole strategies failed to make a clear distinction between the growth pole as a feature of a dynamic space economy and the growth pole as a key element in a strategy designed to improve the performance of a regional economic system, i.e., a distinction between the natural or spontaneous growth pole and the 'planned' or 'induced' growth pole. The concept of the natural growth pole derives directly from the work of Perroux (1955), who viewed growth within an economy as stemming from the

effects of disequilibrium and domination, and necessarily occurring unevenly. To quote a well-known passage from Perroux (1955) in this connection — Growth does not appear everywhere at the same time; it appears at points or poles of growth with varying intensity; it spreads along various channels and with differing overall effects on the whole economy. To a large extent, Perroux couched his argument in terms of abstract economic space, a concept that he had developed earlier (Perroux, 1950). Within such a space, polarization was measured with respect to the intensity of inter-industry transactions. Nevertheless, Perroux fully recognized the possibility that a growth pole in economic space might also exist as a territorial entity and considered the implications of this. Thus, he drew attention to the reinforcing influences of spatial concentration, the effects on inter-regional disparities and the impact of the growth pole on its environment; such an emphasis was also present in his earlier work on the Ruhr district of Germany as well as in his later contributions.

The concept of the growth pole in geographical space was subsequently developed by Hansen (1967) and Hermansen (1972), following the lead of various Francophone economists, most notably Paelinck (1965, 1968), Aydalot (1965) and Boudeville (1966). But this was not always undertaken satisfactorily. For example, one definition of a growth pole in geographical space, in many respects typical of the period, involved a set of expanding industries located in an urban area and inducing further development of economic activity throughout its zone of influence.

Such a definition immediately raises the following questions: If an urban centre with expanding industries does not induce favourable effects throughout its zone of influence (a common occurrence), does this imply that it cannot be regarded as a growth pole? And can the growth poles of London, New York and Paris in the 19th century, or Atlanta, Lyon and Munich in the 20th century, be satisfactorily defined in these terms?

Definitions of this kind reflected a tendency at the time to treat the growth pole in geographical space as an urban centre which possessed the attributes of the growth pole in abstract economic space. However, this represents an unjustified and analytically unhelpful restriction, which robs the concept of much of its usefulness in regional economic analysis. In fact, a case can be made for viewing the growth pole in geographical space as any urban centre (above some minimum threshold) which displays specified growth characteristics (in absolute and relative terms), with no presumption about the bases of growth or about the effects on its zone of influence (Parr, 1973). Contrary to the opinion of a number of writers, there is no unambiguous correspondence between abstract economic space and geographical space. Reality is such that a given structure (a given level of polarization) in economic space can translate into a variety of structures in geographical space, and *vice versa*. The growth pole in geographical space is an entity in its own right, which may have differing manifestations in economic space and needs to be analyzed accordingly.

By the early 1960s, this notion of the growth pole in geographical space began to assume a normative aspect. Attention was given to the possibility of pursuing a growth-pole strategy, the cornerstone of which would be the activation of planned or induced growth poles. Two rather different strands of thinking lay behind this. First, it had been recognized for some time that development in a regional or national economy was associated in a causal sense with a tendency towards concentration and polarization, and the historical evidence for this was abundant. It, therefore, followed that the deliberate focusing of investment at a limited number of centres would satisfy a necessary condition for development.

Such arguments recognized the important fact that development was not independent of the nature of the spatial structure of the economy and that in many regional economies an

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increased level of concentration might well represent an indispensable precondition for economic progress (Friedmann, 1956). This was something of a departure from conventional approaches in regional economic planning, where much of the previous effort had been directed towards encouraging decentralization and deconcentration, often in the context of metropolitan decongestion or river-basin development. A second strand of thinking behind the planned growth pole drew heavily on the work of Perroux and on the subsequent conversion of this into geographical space along the lines discussed above. In essence, it involved the planned location within a region of a firm belonging to a propulsive industry, with the expectation that this would stimulate the development of linked industries at the planned pole or cause growth to be diffused throughout its zone of influence. In the absence of other conditions there can, of course, be no reasonable expectation for either occurrence.

There, thus, emerged two sources of confusion: the assumption that the growth pole in geographical space was simply a particular variant of the growth pole in economic space; and, following on from this, the assumption that the natural growth pole in geographical space could be replicated in the form of a planned growth pole, by the implanting of propulsive industries and the provision of infrastructure at particular urban centres. These confusions subsequently led to unrealistic perceptions of the growth-pole strategy and what could be reasonably expected of it. Such confusions even gave rise to the presumption that the mere activation of a planned pole would cause it to assume certain, if not all, of the characteristics of a natural growth pole in geographical space for example, its favourable environment to growth-minded entrepreneurs, its capacity for innovation, its ability to attract capital from other regions, etc. In other words, the phenomena associated with natural growth poles were offered as arguments in favour of the creation of planned growth poles. The fallacy of the argument hardly requires demonstration, but it is worth mentioning the question of scale. The natural growth pole has to assume a substantial magnitude (say, at least 250000 population) before the above-mentioned attributes become apparent, whereas the projected planned growth poles frequently involved populations considerably below this level.

If only to avoid confusions of this kind, it is desirable to maintain the distinction between the natural and the planned growth pole. In many respects, it was regrettable that the term growth pole should have been used both to describe spontaneous development within a regional space economy and to characterize a strategy designed to stimulate development within a region. This was not clearly recognized in the early years, so that the term came to assume two quite different meanings. The problem has been compounded by the use of other terms: growth point, growth centre, growth area, development pole, development centre, etc. Certain authors, notably Darwent (1969) and Higgins (1971), suggested particular conventions by which these terms might be distinguished.

Unfortunately, their suggestions appear to have gained little general acceptance. While it is important to differentiate between the natural growth pole and the planned growth pole, it must be acknowledged that occasions may arise when the distinction is blurred. For instance, in pursuing a growth-pole strategy, it may be desirable to select for activation as planned poles those centres which have displayed certain of the characteristics of natural growth poles, especially if these have a potential for future growth. Relatedly, if a growth-pole strategy is successful, the planned growth pole may eventually resemble the natural growth pole with respect to rapidly growing industries, the development of interindustry linkages, the attraction of capital and labour, the spontaneous nature of growth, the planned pole's position of economic and social dominance within its region, etc.

The Differing Settings for Growth-pole Strategies

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In order to indicate the impact of growth-pole strategy on the field of regional economic planning and to gain some insight into its internal logic, it may be helpful to review the diversity of regional-problem settings in which the strategy has been advocated. As already mentioned, growth-pole strategies were proposed for regional problems within nations of the developed as well as the developing world. The strategies were often purely regional in scope, involving concentration (though occasionally deconcentration) of the regional spatial structure. Sometimes, however, such concentration at the regional scale was seen as the means of achieving deconcentration at the national scale, so that a particular regional strategy also contained an inter-regional component. Growth-pole strategies usually represented examples of developmental planning, but on more rare occasions conformed to a trend-planning or adaptive-planning mode, to use the dichotomy discussed by Friedmann (1964). To all this may be added the variety that existed in the implementation of growth-pole strategies, particularly with respect to the means for activating the planned poles, the policy instruments employed, the sequencing of investment, the time-horizon envisaged for the strategy, etc. While certain of the regional problem settings were characterized in terms of modifications to the regional or inter-regional space economy, the underlying objective invariably concerned the securing of an improvement in the level of regional welfare or regional economic performance. In outlining each of the various settings, there is no implication that the growth-pole strategy was the optimal strategy or, indeed, the only strategy available. When the growth-pole strategy was being proposed, however, little consideration was given to alternative strategies, and it was assumed from the outset that the growth-pole strategy represented the most effective approach, a reflection of the enthusiasm which the strategy engendered.

Reviving a Depressed Area

Within the 20th century, the depressed-area problem has emerged as a serious issue in the economies of economically advanced nations. This problem concerned regions which were at one time in the vanguard of economic progress, but which were subsequently affected adversely by exogenous shocks and failed to adjust adequately to these. The depressed area was commonly characterized by relatively high unemployment, low per capita incomes, below-average levels of human capital development, marked social deprivation, an inadequate level of public service and infrastructure provision, etc. The economies of such areas either possessed an earlier manufacturing specialization with substantial urbanization or were based on resource exploitation and existed in a less urbanized or rural setting. In both cases, the depressed-area condition emerged as a result of the collapse or significant run-down of the export base and the subsequent negative multiplier effects, a problem which was frequently exacerbated by selective out migration of labour, the flight of capital and the emergence of a weak fiscal base. The latter rendered difficult the maintenance of public services at an acceptable level and reduced the scope for adjustment or the restoration of anything resembling an equilibrium. Without some form of state intervention (direct or indirect), the various weaknesses would tend to reinforce one another in a downward direction, often to the considerable distress of the remaining population.

For a variety of reasons (not to be considered here) the depressed-area problem is one to which national governments in North America and western Europe have felt obliged to respond. One approach was concerned with fiscal transfers to the problem regions. A more visible policy response involved either 'moving workers to the work', through the encouragement of inter-regional movement of labour from the depressed area, or 'moving

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work to the workers', by which employment opportunities were enhanced through the movement of capital into the depressed area by means of various incentives, including improved infrastructure provision, the payment of subsidies to private and public corporations, and the direct implantation of particular industries. The former emphasis tended to result in a qualitative deterioration of the remaining supply of labour, while the latter emphasis often led to a dispersal of investment, so that its overall impact was dissipated. It has been alleged that the growth-pole strategy overcomes both types of difficulty.

Such an emphasis appears to have originated in two influential reports of the Scottish Council (1952, 1961) which advocated its adoption in central Scotland (a region of declining coal mining and heavy industry).

The general approach was subsequently elaborated upon by Hoover (1969, 1971) and Cameron (1970). The argument ran broadly as follows: if a given level of public investment on infrastructure and inducements to the private sector could be focused within the region at a limited number of locationally favoured centres, the impact on the economy in terms of inward investment (leading to increased employment opportunities and higher per capita incomes) would be greater than under a strategy which sought to assist the least-favoured parts of the region or one which allocated expenditures on a purely proportionate basis in terms of population or employment. The essence of the growth-pole strategy in this setting has been summarized in a study of an industrial depressed region of north-west England: The problem should be viewed, not as one of moving work to the workers or *vice versa*, but as one of moving the work and the workers if necessary, to places within the region where it will be most efficiently performed. The strategy thus sought to create a more competitive spatial structure for the region. In terms of factor movement, such an approach combined the inter-regional movement of capital with the intra-regional movement of labour, the implicit assumption here being that people would migrate more readily to a growth centre in their own region than they would to places outside the region.

Growth-pole strategies came to be implemented with varying duration and with differing success in the depressed areas of the UK (European Free Trade Association, 1968; Moseley, 1974; Parr, 1979) and eastern Canada (Higgins, 1972; and Wilson, 1964), as well as the Appalachian Region of the US (Appalachian Regional Commission, 1970; Estall, 1982; Hansen, 1972; Newman, 1972; Widner, 1990), to name but a few instances.

When successfully activated, the planned growth poles were to constitute the primary foci in a restructured pattern of regional labour supply. If the region was densely populated, commuting to the poles from urban or rural locations would represent a likely adjustment. This might still be possible with moderate densities, as long as deliberate attempts at highway improvement were undertaken, or if car ownership or car-pooling was sufficiently well developed. Eventually, commuting might give way to intra-regional migration of labour, something which would be necessary from the outset, if the region had a low population density. In either case, a key feature of the growth-pole strategy would be the transformation of the spatial structure of the regional economy, towards one which was more in keeping with the requirements of potential incoming economic activity that would replace the declining traditional export base. To the extent that such a transformation of the spatial structure was indispensable, and given the fact that radical transport improvements were often necessary to secure this, the barbed comments about the Appalachian Regional Commission's early decision to emphasise highway investment (to the effect that 'people could leave the region more easily') obviously betrayed a misunderstanding of both the underlying problem and the basis of the strategy. A more pertinent criticism of the Commission's thinking involved its

decision not to extend the strategy to rapidly growing metropolitan areas located near but outside the boundaries of the Appalachian Region (Hansen, 1966).

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Encouraging Regional Deconcentration

Whereas the previous setting related to economic weakness or difficulty, the second setting was usually associated with economic success. The scale involved the large metropolitan area and the considerably wider region over which it had an economic and social dominance, the whole entity being variously referred to as a city region, a metropolitan community, a polarized region or a metropolis-based region. In this second setting, the growth-pole strategy was designed to reduce the level of regional concentration, i.e., the extent to which the metropolitan area dominated the entire region in terms of employment and population. In certain situations, deconcentration was already underway (as a result of improved transport and changing locational preferences on the part of households and firms), in which case the strategy attempted to impose an order on the process. It was taken for granted that the metropolitan area was suffering from substantial negative externalities, and that future regional economic growth would be better served by an alternative spatial structure. In other words, without intervention the spatial structure would become transformed in an unsatisfactory manner or at an inadequate rate, so that the efficiency of the regional economy would be impaired, with the consequent loss of inter-regional or international competitiveness.

In this setting, the growth-pole strategy addressed itself to securing an appropriate spatial structure, especially with respect to the activation of planned growth poles in the non-metropolitan part of the region. The term appropriate is important in this connection, since not simply any form of regional deconcentration would be consistent with the facilitating of regional growth. Several considerations were important here. For one thing, the planned poles had to be of a minimum size, in order to secure adequate infrastructure availability, and thus a satisfactory level of agglomeration economies which could sustain economic activity. The issue of frequency was also important, as was the location of the poles, which needed to be close enough to the metropolitan area to have access to specialized services, but sufficiently distant from it to gain the advantage of lower input costs, particularly with respect to land and labour. A further consideration was the fact that not all locations within the non-metropolitan part of the region would be suitable. For example, certain urban centres might oppose their designation as planned poles, while the development of other centres might be rejected on grounds of damage to the environment. The general effect of the strategy was to modify regional spatial structure in the direction of focused or centralized deconcentration. This approach to regional deconcentration via the growth-pole strategy was followed in the metropolitan regions of several developing nations (Townroe, 1979; Townroe and Keen, 1984), although it tended to be more common in developed nations. In Australia, the most prominent examples were the new cities of Albury-Wodonga and Bathurst-Orange which were developed, largely with financial support from the commonwealth (federal) government, as a means of reducing the metropolitan dominance of Melbourne and Sydney within their respective regions, roughly speaking, the States of Victoria and New South Wales (Searle, 1988; Vipond, 1982). This emphasis was in response to government-commissioned studies which were, in turn influenced by the possibilities for deconcentration within the eastern states discussed earlier by Neutze (1965), who argued that the continuing concentration, which resulted from the lack of non-metropolitan alternatives, was not in the interests of economic efficiency. In the UK, the New Town policy of the post-war era represented an interesting case.

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Up to the 1960s, the New Towns and similar satellites around London and Glasgow (and later Birmingham and Liverpool) were part of a programme designed to reduce inner city densities and at the same time to limit metropolitan growth, the latter objective being pursued by a fairly strict green-belt policy. Instead of peripheral expansion of the metropolitan area, particularly along transport routes, urban expansion was to take place in the New Towns. These urban centres, in essence nothing other than planned growth poles, were located away from the metropolitan area, anything up to 50 km from its core (beyond but sometimes within the green belt), and were well provided for in terms of infrastructure and housing. As anticipated, the effect of restrictions on metropolitan growth and the locational advantages of the New Towns was to encourage the process of regional deconcentration. At the same time, the build-up of the New Towns dovetailed neatly with other, more general, trends towards deconcentration which were independent of the restrictions on metropolitan growth. Indeed, the economic success of the New Town policy was due in no small measure to the fact that it was very much consistent with these latter trends, both temporally and spatially.

The general recognition that regional economic performance and the trend towards regional deconcentration were related, coupled with an acceptance of the need for strong land-use control, led to proposals for a second generation of New Towns around London (Great Britain, 1964 and 1970). The programme was also extended to other regions of the UK, including north-west England (Great Britain, 1965). Against a background of mild economic growth, the new urban centres were designed to avoid excessive metropolitan suburbanization and to facilitate the process of regional deconcentration.

While less elaborate in scale, the plans for satellites around Paris (Merlin, 1969) and Madrid (Richardson, 1975) also represented attempts at securing regional deconcentration, although the aspect of metropolitan decentralization was emphasized.

Modifying the National Urban System

A third setting of the growth-pole strategy, which encompassed a wide range of scales and local conditions, involved the attempt to modify the urban system in order to regulate the interrelated processes of urbanization and migration. Implicit in the pursuit of a growth-pole strategy in this setting was the assumption that the long-run performance of the national economy is strongly influenced by the nature and form of its urban system.

In the UK and the Netherlands during the early 1960s, for example, the question arose as to how the large projected increases in population could be accommodated within already highly urbanized nations. It was thought undesirable on economic grounds for this to be attempted within existing metropolitan areas and their wider regions and that the population increase should be steered towards planned growth poles, involving wholly new metropolitan areas which would act as effective counter-magnets to existing metropolitan areas. The need for such a strategy became less pressing, however, when it transpired that the projected population increases would not materialize. In France during the same period, there existed the long-held view that the position of Paris in the urban system caused it to exert a disproportionate dominance in the economic and social life of the nation, and that this state of affairs was undesirable. The official response to this concern was the creation of a number of *Atropoles d'équilibre*.

These represented existing regional metropolitan centres located between 300 and 1000 km from Paris, the competitive position of which was to be improved by substantial investments in infrastructure equipment, the scientific base and cultural facilities.

This third setting of growth-pole strategies tended to be associated more with developing nations, where the urban system was deemed to have an excessive level of primacy or (more accurately) inter-urban concentration, i.e., a very high proportion of the urban population located in one or sometimes two or three large metropolitan areas and the remainder located in small urban centres, with few centres of intermediate size (Richardson, 1981). Such a size distribution may have resulted from recent patterns of modernization and economic development, although it was frequently viewed as a legacy from some colonial past. Various arguments were proposed to suggest that such a structure acted as a brake on national economic development. For example, it was held that high levels of inter-urban concentration nationally and the associated transport network represented an inefficient means for exploiting the potential export bases of peripheral regions (particularly with regard to the shipping of produce to national or international markets) and for the distribution of consumer products and intermediate goods imported into such regions (Johnson, 1970). Also, to the extent that the availability of services tended to be associated with centres above some minimum size, the fact that there were few centres of intermediate size meant that the access of households and firms to services was spatially inequitable. In addition, it was hypothesized that the consequences of a highly concentrated size distribution and the monopoly-like possession of the nation's commercial and institutional infrastructure by the primate metropolis denied to large parts of the national territory the opportunity for indigenous development and reinforced their dependency relationship with the primate metropolis. This pronounced level of primacy or interurban concentration within an urban system tended to be perpetuated by the prevailing patterns of migration. Given the typically high rates of out-migration from rural areas and given the paucity of urban locations, the few large metropolitan centres became the primary destinations of these flows. This resulted in further growth which was inevitably accompanied by the difficulty of providing even rudimentary services, and also in the exacerbation of existing social problems. There existed of course, a rationality behind such migration patterns, as Todaro (1969) has shown and it is very difficult to demonstrate the overall economic disadvantage of city, something that became apparent in the debate between Gilbert (1976, 1977) and Richardson (1976) on the advantages of large cities. Nevertheless, conditions in the primate metropolitan centres of a number of nations were sufficiently adverse that active consideration was given to the possibility of modifying the urban system in order to avoid these problems. The difficulties of formulating such a policy have been discussed in some detail by Richardson (1987).

The advocacy of the growth-pole strategy in this third setting has been seen as a mechanism for reconciling two fundamentally opposing outlooks: that of the 'modernizers' who regarded primacy as a transitional phenomenon which would ultimately precipitate a series of self-limiting mechanisms; and that of the 'traditionalists' who argued that the experience of the West was not applicable in the developing world and that existing economic forces could not be relied upon to break the iron grip of the primate cities. In this connection, Berry 1971, has argued that advocates of the growth-pole strategy co-opt the traditionalists by pointing to the advantages of being latecomers in the development process. Mistakes made in the western nations can be avoided and limited resources diverted to more productive uses. For example (feeding on the traditionalists' fears), they say that decentralized [i.e., less concentrated] patterns of urbanization, with emphasis on medium sized cities, probably will cost less in infrastructural investment while avoiding the social perils. To the modernizers, the planners sing another tune, however. Strategies of 'downward decentralization' are argued in this arena less to contribute to equity goals in a restructured society than to further efficiency goals by creating a system of alternative growth centers.

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These, it is said, bring new or underutilized resources into the development process. Further, allocation of public investments to stimulate this process will bypass current constraints by creating alternative magnets for migrants, reducing pressures on the large-city labour market. The advocacy of growth-pole strategy thus emerged as a rather transparent means of consensus building. Indeed, a common objection to growth-pole strategy is that it lends itself to manipulation of this type. The usual response to what was deemed to be an inefficient or ill-formed national urban system and the allegedly undesirable migration streams associated with this, involved the encouragement of a system of strategically located planned growth poles. Rodwin, for example, argued that the establishment of a regional pole would enable it to compete more effectively with the existing metropolises and that the development of such regional centres would likewise enable the capital cities to cope more effectively and economically with the population avalanche that now threatens them.

The central feature of the growth strategy in this setting involved the build-up of planned growth poles at urban centres of intermediate size. One such approach was followed by Colombia during the 1970s. By acting as intervening opportunities, the planned growth poles intercept or partially intercept the migration flows from rural areas and small towns to large metropolitan areas. The planned poles at intermediate-sized centres were also seen as contributing to the process of regional development in terms of improved service provision, more efficient regional transport, the promotion of linkages to agriculture and the general diffusion of innovation to the rural sector.

It may be argued that once people migrate to intermediate centres (i.e., the planned growth poles) and become more familiar with the challenges and opportunities of urban life, the attraction of the primate metropolis becomes even stronger, so that the subsequent migration there ultimately renders the strategy ineffectual or counterproductive. At least three points should be borne in mind here. First, even if people eventually migrate to the primate metropolis, they will take with them skills, savings and a familiarity with urban culture which will all help to ease their assimilation into a complex metropolitan existence. Secondly, while such second-stage migration to the primate metropolis may be inevitable, the strategy will have delayed the movement there, thus partially relieving pressures on such a centre. Thirdly, this second-stage migration from the planned growth poles may provide opportunities for further migration to these from the still-overpopulated rural areas. In this way, the strategy assumes a continuity with respect to migration flows and contributes to the alleviation of rural poverty.

Attaining Inter-regional Balance

In contrast to the third setting for growth-pole strategies, which sought to promote regional development by modifying the national urban system, the concern in this fourth setting was with the unsatisfactory inter-regional structure of the national economy, usually with respect to welfare levels but sometimes in relation to the undeveloped nature of certain regions. In certain cases, of course, the two problem settings virtually coincided, one being a characteristic feature of the other. On the other hand, it is not difficult to identify cases where the urban system was not deficient in the ways described above, and where the primary concern was with inter-regional balance. There is at least some justification, therefore, for treating these two types of problem setting separately.

The phenomenon of inter-regional welfare disparities is usually most pronounced during the early and intermediate phases of economic development. Initial development within a nation tends to be localized within one or a few regions as a result of such advantages as

resource endowment, access to markets, proximity to centres of political and administrative power, etc. Furthermore, the forces of cumulative causation tend to encourage the process of divergence in inter-regional welfare levels. There may also be certain rigidities which tend to confine development and income growth to one or a few favoured regions. To quote from Hirschman Investors spend a long time mopping up all the opportunities around some [natural] 'growth pole' and neglect those that may have arisen or could be made to arise elsewhere. What appears to happen is that the external economies due to the poles, though real, are consistently overestimated by the economic operators [original emphasis].

To this may be added the frequent lack of information and uncertainty about underdeveloped regions, which cause entrepreneurs to perceive the possibility of investment outside the established major core as a risk-laden venture. In the words of Alonso, a hard-pencil advantage of a few percentage points in one or another cost, which might be decisive in a developed country, is likely to be washed out in the interest of the flexibility and adaptability of a central location in a developing country.

The overall effect of these various forces is to produce a growing divergence in inter-regional welfare levels. It has been argued that as serious as this problem of inter-regional-welfare differentials may be, it is essentially a transitory one. Hirschman (1958) recognized the existence of unfavourable effects on the periphery of growth at the core, but argued that these would eventually be overcome by favourable effects, i.e., a set of mechanisms by which growth at the core is transmitted to the periphery.

In a related manner, Friedmann outlined a series of 'countervailing trends' that could be expected to dampen the core-periphery contrast. Furthermore, following Williamson (1965), a body of literature has accumulated which demonstrates (by no means conclusively) that with continued national economic growth, the level of inter-regional income inequality initially increases, then reaches a maximum level and subsequently decreases, in the manner of an inverted U-shaped function. Moreover, it is generally assumed that there is a necessary short-run trade-off between national economic efficiency and inter-regional welfare equity, by which the latter can only be achieved at the cost of the former.

From all this has come the frequent assertion that convergence in inter-regional welfare levels is best achieved through the pursuit of national efficiency objectives. Whatever the merits of these arguments and powerful counter-arguments such as those of Myrdal (1957) have been advanced central or federal governments often felt the need to respond in the short run rather than wait (or hope) for solutions which, even if more effective, would only materialize over the longer run. Governments frequently found themselves under considerable pressure to reduce differences in levels of inter-regional welfare. And these pressures became all the stronger if inter-regional welfare differences coincided with ethnic, tribal, linguistic or religious differences. Governments engaged in the difficult task of nation building or maintaining national unity were unlikely to be persuaded by arguments about the possibility of long-run convergence. A very strong pressure existed for them to be seen to be doing something for the less favoured regions.

Now while a government may be prepared to pursue a policy of inter-regional equity (perhaps at the expense of national efficiency), it may not necessarily go about this in an effective manner. In contrast to widespread impressions, the most pervasive tendency of governments of underdeveloped countries in making their investment decisions is not so much the obsession with one showpiece as the dispersal of funds among a large number of small projects scattered widely over the national territory.

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In the relatively backward region of Brazil's north-east, for example, assistance by the federal government through SUDENE was made available on a region-wide basis rather than at selected focal points (Robock, 1956; Berry, 1973). The great danger here was that in seeking to uplift a problem region, the potential impact of a given level of assistance would not be at a maximum, if various projects were dispersed among a number of different locations within a region. Under certain conditions, confining investment to a limited number of planned growth poles within a lagging region or an underdeveloped frontier region may help to improve the efficiency and welfare-raising potential of this investment. Growth-pole strategies thus prevent the spreading of investment like butter on a piece of bread. Among the many examples of growth-pole strategies in this fourth setting were the development of a metallurgical complex at Ciudad Guayana in Venezuela (Friedmann, 1966), the establishment of National Growth Centres at Limerick and Cork in the Republic of Ireland (Breathnach, 1982; Moseley, 1974), the development of industrial growth poles in selected backward regions of India (Mathur, 1978; Misra, 1972) and the programmes pursued in Indonesia, Malaysia, the Philippines and Thailand. This approach to inter-regional balance, based on the planned concentration of economic activity, has been questioned. In a valuable review of growth-pole strategies in Latin America, Conroy argued:

If spatially polarized development reflects market processes or the internalization of agglomeration economies, it is polarized development which has created the current pattern of regional disparities. Is it likely that further polarization of development will reduce the regional problems apparently created by historical processes of polarization? Such a query was perfectly reasonable in the context of certain nations of Latin America (and elsewhere), where the centres designated as planned poles included natural poles. In other contexts, however, it would not be valid. Planned polarization was usually regarded as a counter to the legacy of natural or unplanned polarization: the forces of planned polarization in the peripheral region(s) were seen to be confronting the forces of natural polarization in the core region. It was a case of setting a thief to catch a thief or phrased in the less dramatic language of Richardson and Richardson, a case where diamond cuts diamond.

Additional Settings for the Growth-pole Strategy

While most of the situations where growth-pole strategies were advocated occurred within one of the settings already discussed, there were certain additional settings that are worth mentioning briefly. These tended to be of a narrower or more functionally specific character. One such setting involved the case where regional development was based on the expansion of recreational or tourist activity. In this setting, the growth-pole strategy was proposed as a device for managing and controlling a recreational resource. It combined the need to maintain the environmental quality of an area (by limiting the extent of physical development) with the need to provide a wide range of specialist services and amenities to discriminating tourists. Both requirements had to be satisfied in order to encourage tourism (and, at a later time, conference activity and retirement-based development), thus building up export income and the various rounds of secondary income based on this. It was further argued that the absence of such a nodal emphasis in the location of recreational resources would lead to a sprawl of numerous small and poorly planned facilities which collectively would not be able to supply the range of services required (because no single facility would be able to gain sufficient economies of scale), and would also cause the visual and physical deterioration of the recreational resource.

The improvement and rationalization of service provision within a region represented another setting where the principles underlying growth-pole strategies have been advocated.

Here, the strategy was seen as a means of improving the quality of life, although it was sometimes viewed as a vehicle for improving regional economic efficiency and promoting regional integration (Laatto, 1969). The problem typically concerned an existing system of service provision, which may have been perfectly appropriate during some previous period, but which had become inefficient as a result of various trends. These included changing patterns of demand due to different income and demographic characteristics, changes in marketing or supply technologies resulting from shifts in long-run average cost functions, and changes in mobility levels brought about by greater car ownership, improved highway travel and (more rarely) upgraded public transport. In this setting, the growth-pole strategy was concerned with the building up of a limited number of centres from which a particular service or range of services would be supplied.

In certain cases, a hierarchy of centres was designated for the supply of different sets of services. This would usually differ from the pre-existing hierarchy in terms of one or more of the following: the set of services supplied at a particular hierarchical level; the number of centres within a given level; the number of hierarchical levels. Such decisions were frequently taken with respect to publicly-supplied services, the spatial structure of which subsequently influenced the structure of privately supplied services. Examples of this approach were numerous, and included the 'key village' concept in the UK and the reorganization of service provision in Sweden (Bylund, 1972) and India (Shah, 1974).

Somewhat related to the question of improved service provision was the final setting for the growth-pole strategy: the promotion of rural development. In the rural areas of developed nations, the emphasis was usually on alternatives to agricultural or resource based employment, involving small-scale industrial development. This was encouraged by the availability of financial inducements and the provision of improved infrastructure and small industrial parks. A prominent feature of such rural development programmes was the restriction on the number of centres at which development was encouraged. The cases of Germany (Krumme, 1972) and the UK, particularly Scotland and Wales (Thomas, 1992; and Welsh Development Agency, 1990), were typical. Not surprisingly, the situation tended to be markedly different in the rural areas of developing nations. There the standard of service provision was substantially below national norms and rural economic activity (mostly agriculture) tended to be inefficient and subject to severe pressures of population growth. Planned growth poles in this setting related to the improvement of service provision (often at a basic level), as well as to efforts to raise the level of rural incomes, partly through improvements in transport, storage and agricultural credit, and partly through the encouragement of agricultural supplying and agricultural-processing activities. Such emphases were central to what later became known as integrated rural development and the approach has been followed with varying degrees of success in India (Johnson, 1970), Indonesia (Leinbach and Cromley, 1989; Leinbach, 1992), Kenya (Richardson, 1978) and a number of other nations (Harrison, 1967). In both developed and developing nations, however, considerations relating to economies of scale, transport costs and agglomeration economies in the relevant activities usually caused programmes promoting rural development to assume the characteristics of a growth-pole strategy.

Alternative Settings: A Further Comment

The purpose of this somewhat lengthy section has not been to develop a typology of settings for the growth-pole strategy, but rather to indicate the diverse range of regional problems, for which the strategy was looked to as a framework for solution. In this connection, several points are worth stressing. For one thing, the list of problem settings is

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not exhaustive, in the obvious sense that additional settings can be identified, although these are likely to be of a rather specific nature. Also, the problems of a particular region may contain elements of more than one setting, and mention has already been made of the possible overlap between modifying the national urban system and attaining inter-regional balance. Another overlap could involve the reviving of a depressed area and the encouragement of regional deconcentration from a dominant metropolitan area, as in the case of Central Scotland in the 1960s (Great Britain, 1963). Furthermore, it is entirely possible for growth-pole strategies to be adopted simultaneously in regions with quite different problem settings. An obvious danger lurks here, to the extent that pursuing the strategy in one region may not be consistent with the adoption of the strategy in another region with a different problem setting. It is likely, however, that such a conflict would arise if alternative strategies were applied, conflicts of this kind being part of the more general problem of national or multiregional co-ordination.

The Nature of the Growth-pole Strategy and its Rationale

In spite of the wide diversity of problem settings in which the growth-pole strategy has been proposed, it is possible to identify the following set of characteristic features of the strategy, this being common to all settings.

First, the strategy involves encouraging the growth of employment and population within a region at particular locations or planned poles over some specified period. This does not necessarily imply that growth will be absent from other parts of the region, but the planned poles are usually seen as the primary focus for regional investment, whether public or private and whether based on a key industry, an industrial complex or some alternative economic-activity set.

Secondly, the strategy imposes a definite limitation on the number of locations or centres which are designated as planned poles and this will vary from setting to setting. For example, a policy aimed at stimulating rural development within a region might require relatively many planned poles, while a policy designed to attain inter-regional balance would involve relatively few. The limitation on pole frequency is also likely to be related to the type of economic activity to be located within the region.

Thirdly, the strategy necessarily requires spatial discrimination or selectivity among locations. This discrimination is usually concerned with the identification of centres which have the potential for sustaining a given range of economic activity and is based on such factors as inter-regional or intra-regional locational advantage, hierarchical level within the urban system or (less satisfactorily perhaps) past growth record.

Fourthly, the strategy inevitably involves a modification of the spatial structure of employment and population within a region. Indeed, an important foundation of the growth-pole strategy is the proposition that the existing spatial structure represents an impediment to regional economic expansion, and that policy objectives can only be realized if *inter alia* the spatial structure is modified, usually in the direction of concentration. Such a modification of the spatial structure is primarily with respect to employment and, except for certain special circumstances (where reliance is placed on commuting), this will inevitably result in a modification of the spatial-structure of population.

It is possible, however, that the attempt at spatial-structure modification may be directed in the first instance to population, in the expectation that a more concentrated spatial structure of employment will evolve. All four of these characteristics are present to some degree in the various settings for the growth-pole strategy considered.

Each of the characteristics is not, of course, unique to the growth-pole strategy but, taken together, these represent the *sine qua non* of the strategy, by which it stands apart from others. Moreover, the presence of all four elements within a given regional development programme virtually implies the existence of a growth-pole strategy, even though it may not be referred to in such terms. To insist that the strategy contains any additional features, however, would be to elaborate on the detail of one particular setting or to claim too much for the strategy. Cameron, for instance, has argued that the designation of planned poles assists in the establishment of priorities for public investment in quantitative and spatial terms, while in a similar vein Richardson and Richardson have suggested that the strategy offers an opportunity for integrating industrial policy, physical planning, and inter-regional and intra-regional economic planning. Both statements are undeniably valid, but it is difficult to imagine why such arguments would not also apply to other strategies, as long as these were sufficiently well articulated. The prominence of spatial considerations is not unique to growth-pole strategy and does not therefore confer on this strategy any particular advantage with respect to the general co-ordination of public investment or regional policy.

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The Concentration of Infrastructure

The rationale for growth-pole strategy in regional economic planning rests on a series of related arguments, and it is important for the various elements to be clearly identified. One such element concerns the availability of infrastructure, a consideration of obvious significance where infrastructure is known to be a necessary ingredient for economic development. Here infrastructure is defined in the broadest sense to include both economic overhead capital and social overhead capital. Individual types of infrastructure are subject, in varying degrees, to substantial economies of scale and sometimes have the characteristic of an indivisibility. In public expenditure terms, therefore, there may be a justification for a given outlay on a particular infrastructure type to be confined to a limited number of large-scale facilities. For transport infrastructure, the comparable emphasis would involve the development of new or upgraded routes in order to focus on planned growth poles, as opposed to a general upgrading of the existing network.

Of considerably greater importance, however, is the desirability of concentrating different types of infrastructure. The argument for concentration is based on the expectation that the availability of a relatively broad range of infrastructure services at selected locations will create significant externalities. These will have the effect of rendering the region more attractive to firms in terms of location, thereby stimulating inward investment and possibly encouraging indigenous development. Infrastructure expenditure at a limited number of planned poles is thus held to elicit the most favourable private investment response and long-run improvement in the economic performance of a region. Determining the particular spatial configuration of poles that would be necessary for such a response remains a difficult technical issue. The emphasis on infrastructure concentration, as one element of the rationale for the strategy, is only justified where the region is deficient in these terms and where it possesses or can be expected to possess other locational advantages such as access to raw materials, energy supplies, low-cost labour or a growing internal market. Otherwise, the mere concentration of infrastructure at particular locations within a region could well come to resemble the practice of a cargo cult.

The Concentration of Economic Activity

A second element in the rationale for the strategy concerns the concentration of directly productive investment, and is related to the exploitation of agglomeration economies. These

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represent economies to the firm (both internal and external) which are contingent on the spatial concentration of economic activity. Concentration is of obvious importance, if the activity in question is characterized by pronounced internal economies of scale in production, as in the case of an iron and steel works, an oil refinery, an automobile plant, etc. In such cases, a splitting of capacity among several locations within the region would be likely to raise unit costs and reduce the level of regional competitiveness. The concentration of economic activity might also be desirable, again on grounds of regional competitiveness, where the industry was not characterized by substantial internal economies of scale (though such a situation might well be seen by decision-makers as an opportunity for dispersing firms, in order to assist various parts of a region). Here, the case for concentration would rest on firms within a given industry benefiting from external economies (pecuniary and/or technological) which represented agglomeration economies of the localization type for example, cost reductions based on the build-up of skilled labour, the availability of specialized services and on joint action with respect to input acquisition, marketing, research and development activity, etc. A case for concentration would also exist if the economic activity in question involved unrelated firms belonging to different industries. The relevant external economies here would represent agglomeration economies of the urbanization type for example, cost reductions stemming from the shared availability of public services as well as a wide range of specialized business and technical services not specific to any one industry. Evidently, this question needs to be considered in conjunction with the concentration of infrastructure, as discussed above.

The concentration of economic activity becomes more complicated when a propulsive industry is established at a planned pole in the expectation that this will make the region locationally attractive to firms which are related to this industry in terms of backward and forward linkages. This approach, which harks back to the work of Perroux and implies certain assumptions about the correspondence between polarization in geographical and economic space, frequently evades the issue as to whether the linked activities are to be located at the pole or elsewhere within the region. Here, the case for concentration depends on external economies involving agglomeration economies of a further type: activity-complex economies for instance, cost reductions in transport, energy and co-ordination which arise from the joint location of different activities that are linked in input output terms. The tempting decision to locate a chemical plant (the propulsive industry) at one location, an oil refinery (the backward-linkage industry) at a second and a plastics plant (the forward linkage industry) at a third, in order to extend development over a wider area, could well result in significant cost savings being foregone, again impairing the inter-regional or international competitiveness of the activities concerned.

This second element of the rationale for growth-pole strategy, which is concerned with the potential efficiency gains from concentration, also needs to be viewed in temporal terms. The argument here is that, as concentration proceeds, there will be a cumulative build-up of the various types of agglomeration economy, which will contribute to successive improvements in the locational competitiveness of the region, leading to further rounds of investment, both external and internal. In this sense, the strategy has to be sustained over a relatively long time-period.

There remains an important question as to how the process of concentration might be realized. In the case of state corporations or in situations where the state has effective control over locational decisions, the desired level of concentration can be achieved by official direction. Where such conditions do not hold, however, the matter is less straightforward.

On the surface at least, it would seem that, if the various types of agglomeration economies at the planned poles were significant, then private corporations would have an obvious incentive to concentrate there, unless there were compelling locational reasons for doing otherwise. Yet the problem of unrelated investment decisions (taken over slightly different periods, under different market conditions and with incomplete information) may well result in an undesirably low level of concentration, with the attendant disadvantages. In these circumstances, there seems to be a case for securing the appropriate level of concentration by making any financial assistance to private corporations conditional upon their location at the planned pole(s), although it has been claimed that this restriction is undesirable.

NOTES**The Planned Poles and the Region**

There exists a third element in the rationale for the strategy, and this concerns those parts of the region which have not been designated as planned growth poles. Here, however, the rationale for the strategy appears to follow two diverging paths. One view holds that growth at the planned poles will be transmitted by a variety of mechanisms to the remainder of the region, the unstated assumptions being that growth in the rest of the region is not only greater than would occur under some alternative strategy, but is also greater than any possible disadvantages caused by growth at the planned poles. An alternative view states that the spatial structure of the region undergoes a radical long run reshaping, by which growth at the planned poles is accompanied (and partially facilitated) by a major redistribution of population and employment towards such centres. This view of the strategy inevitably involves the running down, if not the virtual abandonment, of certain parts of the region, an approach which is justified in terms of a more efficient utilization of the region's existing factor endowment. The presence of a labour force in sufficiently large pools consolidates the advantage of low-cost labour and permits improvements in the provision of consumer and business services.

All this helps to render the region more attractive to inward investment and under the most favourable of conditions may assist the process of indigenous development.

In this way, the focusing of population and employment on planned poles becomes the means by which a more competitive spatial structure can be attained, leading to an improved regional economic performance.

We thus have two contrasting views of the role of planned poles in relation to the rest of the region, a further reflection of the fact that the strategy has been proposed in a diversity of settings. It was sometimes the case, however, that the growth-pole strategy was designed with both emphases in mind, i.e., the expectation of some favourable impact of the planned poles throughout the region, as well as the encouragement of a more concentrated spatial structure focusing on the planned poles. Such a mixing of emphases may have been appropriate in certain situations, but there were other occasions when it reflected an uncertainty on the part of planners or an unwillingness to come to terms with the underlying demands of the strategy.

The Rationale in Context

These three categories of argument, which collectively form the rationale for the growth-pole strategy, are insufficient for the policy-maker, however. To establish a rationale for a strategy is neither to provide a justification for its adoption, nor to demonstrate its superiority over other strategies. The arguments are conditional, in as much that these are based on assertions and suppositions which in any proposed application of the strategy would

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need to be demonstrated. And even if such arguments can be shown to be valid and consistent in a particular proposed application, there remain important questions which go beyond the scope of the rationale. These involve such issues as the budgetary requirements of the strategy, the economic and administrative instruments by which it can be implemented, the desirability of the anticipated outcomes in terms of intra-regional equity and balance, the existence of secondary objectives of policy, the acceptability of the strategy, etc. More than anything else, it was the failure of the zealots (whether theorists or practitioners) to place the rationale within the context of these other issues that led initially to the widespread acceptance of the strategy.

4.5 SUMMARY

1. Central Place Theory (CPT) is an attempt to explain the spatial arrangement, size and number of settlements.
2. Christaller pointed out that the marketing principle is an awkward arrangement in terms of connecting different levels of the hierarchy.
3. Christaller's other suggested organizing principle was based upon the realization that from a political or administrative viewpoint centers it was unrealistic for centers to be 'shared'.
4. Rank size distribution, or the rank size rule (or law), describes the remarkable regularity in many phenomena, including the distribution of city sizes, the sizes of businesses, the sizes of particles (such as sand), the lengths of rivers, the frequencies of word usage and wealth among individuals.
5. The gravity model in economics was until relatively recently an intellectual orphan, unconnected to the rich family of economic theory. This review is a tale of the orphan's reunion with its heritage and the benefits that continue to flow from connections to more distant relatives.

4.6 SELF ASSESSMENT QUESTIONS

I. Fill in the Blanks

1. From a modelling standpoint, _____ is distinguished by its _____ and _____ representation of economic interaction in a many country world.
2. The _____ model drew on _____ with _____ of gravitation.

II. True and False

1. Gravity has long been one of the most successful empirical models in economics.
2. From a modelling standpoint, gravity is distinguished by its parsimonious and tractable representation of economic interaction in a many country world.

III. Multiple Choice Questions

1. A frictionless world implies that _____.
 - (a) Each good has the same price everywhere
 - (b) Each good has different prices

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- (c) Both (a) and (b)
- (d) Sometimes prices remain same and sometimes differ
- 2. Strategy of the structural gravity model research programme generates implications like _____.
 - (a) Big producers have big market shares everywhere
 - (b) Small sellers are more open in the sense of trading more with the rest of the world
 - (c) The world is more open the more similar in size are countries and the more specialized are countries
 - (d) All of the above

Short Answer Questions

1. Explain in brief the term Traditional Gravity.
2. Define the term 'Frictionless Gravity'.

Long Answer Questions

1. Explain in detail Gravity Model.
2. Critically analyze Growth Poles.

4.7 KEY TERMS

- Gravity Model
- Hierarchy
- Rank Size Distribution
- Threshold

4.8 KEY TO CHECK YOUR ANSWER

- I. 1. gravity, parsimonious, tractable, 2. traditional gravity, analogy, Newton's Law.
- II. 1. True, 2. True.
- III. 1. (a), 2. (d).

UNIT IV: FEDERALISM AND ECONOMIC GROWTH

5

Chapter

INFLUENCE OF FEDERALISM IN INDIAN ECONOMY

Objectives

This Chapter is focused on the following objectives:

- Federalism and Economic Growth: Theory of federalism, division of sources of revenue between the Central and State governments with special reference to Indian adjusting mechanism, problems of resources mobilization at the regional level
- Federalism
- Theory of federalism
- Division of sources of revenue between the Central and State governments with special reference to Indian adjusting mechanism
- Problems of resources mobilization at the regional level

Structure:

- 5.1 Federalism
- 5.2 Economic Growth
- 5.3 Theory of Federalism
- 5.4 Division of Sources of Revenue between the Central and State Governments with Special Reference to Indian Adjusting Mechanism
- 5.5 Problems of Resources Mobilization at the Regional Level
- 5.6 Summary
- 5.7 Self Assessment Questions
- 5.8 Key Terms
- 5.9 Key to Check your Answer

5.1 FEDERALISM

Federalism is a political concept in which a group of members are bound together by covenant (Latin: foedus, covenant) with a governing representative head. The term “federalism” is also used to describe a system of government in which sovereignty is constitutionally divided between a central governing authority and constituent political units (such as states or provinces). Federalism is a system based upon democratic rules and institutions in which the power to govern is shared between national and provincial/state governments, creating what is often called a federation. The term federalist describes several political beliefs around the world. Also, it may refer to the concept of parties; its members or supporters called themselves Federalists.

European vs. American Federalism

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In Europe, “Federalist” is sometimes used to describe those who favour a common federal government, with distributed power at regional, national and supranational levels. Most European federalists want this development to continue within the European Union. European federalism originated in post-war Europe; one of the more important initiatives was Winston Churchill’s speech in Zurich in 1946.

In the United States, federalism originally referred to belief in a stronger central government. When the US Constitution was being drafted, the Federalist Party supported a stronger central government, while “Anti-federalists” wanted a weaker central government. This is very different from the modern usage of “federalism” in Europe and the United States. The distinction stems from the fact that “federalism” is situated in the middle of the political spectrum between a confederacy and a unitary state. The US Constitution was written as a reaction to the Articles of Confederation, under which the United States was a loose confederation with a weak central government. Further, during the American Civil War, members of the Confederate States of America, which seceded in favor of a weaker central government, referred to pro-Union soldiers of the United States government as “Federals.” Thus, in the United States, “federalism” argued for a stronger central government, relative to a confederacy.

In contrast, Europe has a greater history of unitary states than North America, thus, European “federalism” argues for a weaker central government, relative to a unitary state. The modern American usage of the word is much closer to the European sense. As the power of the Federal government has increased, some people have perceived a much more unitary state than they believe the Founding Fathers intended. Most people politically advocating “federalism” in the United States argue in favour of limiting the powers of the federal government, especially the judiciary.

In Canada, federalism typically implies opposition to sovereigntist movements (most commonly Quebec separatism).

The governments of Argentina, Australia, Brazil, India, and Mexico, among others, are also organized along federalist principles.

Federalism may encompass as few as two or three internal divisions, as is the case in Belgium or Bosnia and Herzegovina. In general, two extremes of federalism can be distinguished: at one extreme, the strong federal state is almost completely unitary, with few powers reserved for local governments; while at the other extreme, the national government may be a federal state in name only, being a confederation in actuality.

In 1999, the Government of Canada established the Forum of Federations as an international network for exchange of best practices among federal and federalizing countries. Headquartered in Ottawa, the Forum of Federations partner governments include Australia, Brazil, Canada, Ethiopia, Germany, India, Mexico, Nigeria and Switzerland.

Some Christian denominations are organized on federalist principles; in these churches this is known as ecclesiastic or theological federalism.

Indian Federalism: The Government of India (referred to as the Union Government) was established by the Constitution of India and is the governing authority of a federal union of 29 states and 7 union territories. Though, Andhra Pradesh was divided into two states, Telangana and a residual Andhra Pradesh on 2 June 2014. Hyderabad, located entirely within the borders of Telangana, is to serve as joint capital for both states for a period of time not exceeding ten years.

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In August 2014, the Government of Andhra Pradesh announced that Vijayawada will serve as the *de facto* administrative capital for Andhra Pradesh.

The government of India is based on a tiered system, in which the Constitution of India delineates the subjects on which each tier of government has executive powers. The Constitution originally provided for a two-tier system of government, the Union Government (also known as the Central Government), representing the Union of India, and the State Governments. Later, a third tier was added in the form of Panchayats and Municipalities. In the current arrangement, The Seventh Schedule of the Indian Constitution delimits the subjects of each level of governmental jurisdiction, dividing them into three lists:

1. Union List includes subjects of national importance such as defence of the country, foreign affairs, banking, communications and currency. The Union Government alone can make laws relating to the subjects mentioned in the Union List.

2. State List contains subjects of State and local importance such as police, trade, commerce, agriculture and irrigation. The State Governments alone can make laws relating to the subjects mentioned in the State List.

3. Concurrent List includes subjects of common interest to both the Union Government as well as the State Governments, such as education, forest, trade unions, marriage, adoption and succession. Both the Union as well as the State Governments can make laws on the subjects mentioned in this list. If their laws conflict with each other, the law made by the Union Government will prevail.

Asymmetric Federalism: A distinguishing aspect of Indian federalism is that unlike many other forms of federalism, it is asymmetric. Article 370 makes special provisions for the state of Jammu and Kashmir as per its Instrument of Accession. Article 371 makes special provisions for the states of Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Mizoram, Manipur, Nagaland and Sikkim as per their accession or state-hood deals. Also one more aspect of Indian federalism is system of President's Rule in which the central government (through its appointed Governor) takes control of state's administration for certain months when no party can form a government in the state or there is violent disturbance in the state.

Coalition Politics: Although the Constitution does not say so, India is now a multilingual federation. India has a multi-party system, with political allegiances frequently based on linguistic, regional and caste identities, necessitating coalition politics, especially at the Union Level.

Federalism as the Anarchist and Libertarian Socialist Mode of Political Organization: Anarchists are against the State but are not against political organization or "governance" — so long as it is self-governance utilizing direct democracy. The mode of political organization preferred by anarchists, in general, is federalism or confederalism. However, the anarchist definition of federalism tends to differ from the definition of federalism assumed by pro-state political scientists. The following is a brief description of federalism from Section I.5 of *An Anarchist*.

The social and political structure of anarchy is similar to that of the economic structure, i.e., it is based on a voluntary federation of decentralized, directly democratic policy-making bodies. These are the neighbourhood and community assemblies and their confederations. In these grassroots political units, the concept of "self-management" becomes that of "self-government", a form of municipal organization in which people take back control of their living places from the bureaucratic state and the capitalist class whose interests it serves.

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The key to that change, from the anarchist standpoint, is the creation of a network of participatory communities based on self-government through direct, face-to-face democracy in grassroots neighbourhood and community assemblies [meetings for discussion, debate, and decision-making].

Since not all issues are local, the neighbourhood and community assemblies will also elect mandated and recallable delegates to the larger-scale units of self-government in order to address issues affecting larger areas, such as urban districts, the city or town as a whole, the county, the bio-region, and ultimately the entire planet. Thus, the assemblies will confederate at several levels in order to develop and co-ordinate common policies to deal with common problems.

This need for co-operation does not imply a centralized body. To exercise your autonomy by joining self-managing organizations and, therefore, agreeing to abide by the decisions you help make is not a denial of that autonomy (unlike joining a hierarchical structure, where you forsake autonomy within the organization). In a centralized system, we must stress, power rests at the top and the role of those below is simply to obey (it matters not if those with the power are elected or not, the principle is the same). In a federal system, power is not delegated into the hands of a few (obviously a “federal” government or state is a centralized system). Decisions in a federal system are made at the base of the organization and flow upwards so ensuring that power remains decentralized in the hands of all. Working together to solve common problems and organize common efforts to reach common goals is not centralization and those who confuse the two make a serious error – they fail to understand the different relations of authority each generates and confuse obedience with co-operation.

Christian Church: Federalism also finds expression in ecclesiology (the doctrine of the church). For example, Presbyterian church governance resembles parliamentary republicanism (a form of political federalism) to a large extent. In Presbyterian denominations, the local church is ruled by elected elders, some of which are ministerial. Each church then sends representatives or commissioners to presbyteries and further to a general assembly. Each greater level of assembly has ruling authority over its constituent members. In this governmental structure, each component has some level of sovereignty over itself. As in political federalism, in presbyterian ecclesiology there is shared sovereignty.

Other ecclesiologies also have significant representational and federalistic components, including the more anarchic congregational ecclesiology, and even in more hierarchic alepiscopal ecclesiology.

Some Christians argue that the earliest source of political federalism (or federalism in human institutions; in contrast to theological federalism) is the ecclesiastical federalism found in the Bible. They point to the structure of the early Christian Church as described (and to many, prescribed) in the New Testament. This is particularly demonstrated in the Council of Jerusalem, described in Acts Chapter 15, where the Apostles and elders gathered together to govern the Church; the Apostles being representatives of the universal Church, and elders being such for the local church. To this day, elements of federalism can be found in almost every Christian denomination, some more than others.

Constitutional Structure

Division of Powers: In a federation, the division of power between federal and regional governments is usually outlined in the constitution. It is in this way that the right to self-government of the component states is usually constitutionally entrenched. Component states

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often also possess their own constitutions which they may amend as they see fit, although in the event of conflict the federal constitution usually takes precedence.

In almost all federations, the central government enjoys the powers of foreign policy and national defense. Were this not the case a federation would not be a single sovereign state, per the UN definition. Notably, the states of Germany retain the right to act on their own behalf at an international level, a condition originally granted in exchange for the Kingdom of Bavaria's agreement to join the German Empire in 1871. Beyond this the precise division of power varies from one nation to another. The constitutions of Germany and the United States provide that all powers not specifically granted to the federal government are retained by the states. The Constitution of some countries like Canada and India, on the other hand, state that powers not explicitly granted to the provincial governments are retained by the federal government. Much like the US system, the Australian Constitution allocates to the Federal government (the Commonwealth of Australia) the power to make laws about certain specified matters which were considered too difficult for the States to manage, so that the States retain all other areas of responsibility. Under the division of powers of the European Union in the Lisbon Treaty, powers which are not either exclusively of European competence or shared between EU and state are retained by the constituent states.

Where every component state of a federation possesses the same powers, we are said to find 'symmetric federalism'. Asymmetric federalism exists where states are granted different powers, or some possess greater autonomy than others do. This is often done in recognition of the existence of a distinct culture in a particular region or regions. In Spain, the Basques and Catalans, as well as the Galicians, spearheaded a historic movement to have their national specificity recognized, crystallizing in the "historical communities" such as Navarre, Galicia, Catalonia and the Basque Country. They have more powers than the later expanded arrangement for other Spanish regions, or the Spain of the autonomous communities (called also the "coffee for everyone" arrangement), partly to deal with their separate identity and to appease peripheral nationalist leanings, partly out of respect to specific rights they had held earlier in history. However, strictly speaking, Spain is not a federalism, but a decentralized administrative organization of the state.

It is common that during the historical evolution of a federation there is a gradual movement of power from the component states to the centre, as the federal government acquires additional powers, sometimes to deal with unforeseen circumstances. The acquisition of new powers by a federal government may occur through formal constitutional amendment or simply through a broadening of the interpretation of a government's existing constitutional powers given by the courts.

Usually, a federation is formed at two levels: the central government and the regions (states, provinces, territories), and little to nothing is said about second or third level administrative political entities. Brazil is an exception, because the 1988 Constitution included the municipalities as autonomous political entities making the federation tripartite, encompassing the Union, the States, and the municipalities. Each state is divided into municipalities (*municípios*) with their own legislative council (*camara de vereadores*) and a mayor (*prefeito*), which are partly autonomous from both Federal and State Government. Each municipality has a "little constitution", called "organic law" (*lei organica*). Mexico is an intermediate case, in that municipalities are granted full autonomy by the federal constitution and their existence as autonomous entities (*municipio libre*, "free municipality") is established by the federal government and cannot be revoked by the states' constitutions. Moreover, the federal constitution determines which powers and competencies belong

exclusively to the municipalities and not to the consultant states. However, municipalities do not have an elected legislative assembly.

Federations often employ the paradox of being a union of states, while still being states (or having aspects of statehood) in themselves. For example, James Madison (author of the US Constitution) wrote in Federalist Paper No. 39 that the US Constitution is in strictness neither a national nor a federal constitution; but a composition of both. In its foundation, it is federal, not national; in the sources from which the ordinary powers of the Government are drawn, it is partly federal, and partly national. This stems from the fact that states in the US maintain all sovereignty that they do not yield to the federation by their own consent. This was reaffirmed by the Tenth Amendment to the United States Constitution, which reserves all powers and rights that are not delegated to the Federal Government as left to the States and to the people.

Organs of Government: The structures of most federal governments incorporate mechanisms to protect the rights of component states. One method, known as intrastate federalism, is to directly represent the governments of component states in federal political institutions. Where a federation has a bicameral legislature, the upper house is often used to represent the component states while the lower house represents the people of the nation as a whole. A federal upper house may be based on a special scheme of apportionment, as is the case in the senates of the United States and Australia, where each state is represented by an equal number of senators irrespective of the size of its population.

Alternatively, or in addition to this practice, the members of an upper house may be indirectly elected by the government or legislature of the component states, as occurred in the United States prior to 1913, or be actual members or delegates of the state governments, as, for example, is the case in the German Bundesrat and in the Council of the European Union. The lower house of a federal legislature is usually directly elected, with apportionment in proportion to population, although states may sometimes still be guaranteed a certain minimum number of seats.

In Canada, the provincial governments represent regional interests and negotiate directly with the central government. A First Ministers conference of the prime minister and the provincial premiers is the *de facto* highest political forum in the land, although it is not mentioned in the constitution.

Federations often have special procedures for amendment of the federal constitution. As well as reflecting the federal structure of the state, this may guarantee that the self-governing status of the component states cannot be abolished without their consent. An amendment to the constitution of the United States must be ratified by three-quarters of either the state legislatures, or of constitutional conventions specially elected in each of the states, before it can come into effect. In referendums to amend the constitutions of Australia and Switzerland, it is required that a proposal be endorsed not just by an overall majority of the electorate in the nation as a whole, but also by separate majorities in each of a majority of the states or cantons. In Australia, this latter requirement is known as a double majority.

Some federal constitutions also provide that certain constitutional amendments cannot occur without the unanimous consent of all states or of a particular state. The US constitution provides that no state may be deprived of equal representation in the senate without its consent. In Australia, if a proposed amendment will specifically impact one or more states, then it must be endorsed in the referendum held in each of those states. Any amendment to the Canadian constitution that would modify the role of the monarchy would require

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unanimous consent of the provinces. The German Basic Law provides that no amendment is admissible at all that would abolish the federal system.

Other Technical Terms: Fiscal federalism – federalism involving the transfer of funds between different levels of government.

Formal federalism (or ‘constitutional federalism’) – the delineation of powers is specified in a written constitution.

Executive federalism (also known as ‘administrative federalism’).

Federalism as a Political Philosophy: The meaning of federalism, as a political movement, and of what constitutes a ‘federalist’, varies with country and historical context. Movements associated with the establishment or development of federations can exhibit either centralizing or decentralizing trends.

5.2 ECONOMIC GROWTH

Economic Growth: Economic growth is a long-term process involving a period of many decades. Economic growth is accompanied by substantial rise both in the total population as well as real national income. In other words, Economic Growth implies transformation of an economy from a state of underdevelopment to a state of development, from an agrarian to a highly industrialized society, from a low saver to a high saver and from a predominantly rural to a highly urbanized society. This transformation is mainly reflected in a sustained and steady rise in national and per capita incomes. In the words of Peterson, Economic Growth involves an increase over time in the actual output of goods and services as well as an increase in the economy’s capability to produce goods and services. Therefore, Economic Growth implies increase in per capita income of the country at constant prices. A higher per capita income would mean that people are better off and enjoy a higher standard of living. The increase in national or per capita income must be maintained for a long time is implicit in the theory of economic growth. Literally, economic growth means an increase in the country’s Net National Product (NNP).

Economic Development: The term economic development is a process whereby an economy’s real national income increases over a long period of time. Alternatively, the term economic development may be defined with reference to a set of criteria or values or desired conditions in society. So, economic development is a normative concept. It means more than what economic growth connotes. According to Streeten, development implies modernization and modernization implies transformation of human beings. Development as an objective and development as a process both embrace a change in fundamental attitudes to life, work in social, cultural and political institutions. Streeten views about development as an interrelated process of several dimensions which include output and incomes, conditions of production, levels of living (i.e., nutrition, housing, health and education), attitudes to work, institutions and policies. The well-known ‘Basic Needs Approach’ to development is derived from his concept. According to this approach, development is to be measured with reference to the extent to which the basic needs of the people are satisfied.

Differences between Economic Growth and Economic Development

Growth and development are often used synonymously in economic discussion. But question is – What is economic growth? What is economic development? Thus, before explaining in detail about economic growth in this chapter, let us first of all clear the basic concept of these two important terms here.

Factors Affecting Economic Growth: The primary driving force of economic growth is the growth of productivity, which is the ratio of economic output to inputs such as capital, labour, energy, materials and business services. Increase in productivity lowers the cost of goods, which is called a shift in supply. According to John W. Kendrick's estimate, three-quarters of increase in US per capita GDP from 1889 to 1957 was due to increased productivity. Over the 20th century, the real price of many goods declined by over 90 percent. Lower prices create an increase in aggregate demand, but demand for individual goods and services is subject to diminishing marginal utility. Additional demand is created by new or improved products.

Demographic factors influence growth by changing the employment to population ratio and the labour force participation rate. Because of their spending patterns the working age population is an important source of aggregate demand. Other factors affecting economic growth include the quantity and quality of available natural resources, including land.

Measuring Economic Growth: Measures of National Income and Output: Variety of measures of national income and output are used in economics to estimate total economic activity in a country or region, including gross domestic product (GDP), gross national product (GNP), net national income (NNI), and adjusted national income (NNI adjusted for natural resource depletion). All are specially concerned with counting the total amount of goods as well as services produced within some 'boundary'. The boundary is usually defined by geography or citizenship and may also restrict the goods and services that are counted. For example, some measures count only goods and services that are exchanged for money, excluding bartered goods, while other measures may attempt to include bartered goods by imputing monetary values to them.

National Accounts: National accounts or national account systems (NAS) are implementation of complete and consistent accounting techniques for measuring economic activity of a nation, which include detailed underlying measures that rely on double-entry accounting. Such accounting makes the totals on both sides of an account equal even though they each measure different characteristics, for instance production and income from it. As a technique, the subject is termed as national accounting or social accounting. Alternatively, national accounts as systems may be distinguished from the economic data associated with those systems. While sharing several common principles with business accounting, national accounts are based upon economic concepts. One conceptual construct for representing flows of all economic transactions that takes place in an economy is a social accounting matrix with accounts in every respective row-column entry.

National accounting has developed in tandem with macroeconomics from 1930s, with its relation of aggregate demand to total output through interaction of such broad expenditure categories as consumption and investment. Economic data from national accounts are also used for empirical analysis of economic growth and development.

Economic Growth versus the Business Cycle: Economists differentiate between short-run economic changes in production and long-run economic growth. Short-run variation in economic growth is known as business cycle. Business cycle is made up of booms and drops in production that takes place over a period of months or even years. Usually, economists attribute the ups and downs in the business cycle to fluctuations in aggregate demand.

In contrast, the topic of economic growth is concerned with the long-run trend in production due to structural causes like technological growth and factor accumulation. Business cycle moves up and down, creates fluctuations around the long-run trend in economic growth.

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5.3 THEORY OF FEDERALISM

Indian Federalism: A Critical Appraisal

With remarkable prescience, the framers of the Indian constitution have equipped the Indian state to respond to the demands for autonomy through the double mechanism of individual and group rights, as well as the federal construction of political power.

During the first phase of India's constitutional development, some of these instruments were useful in empowering political majorities below the level of the national state through the effective enactment of provincial administrations.

The second phase of constitutional development through the states reorganization of 1956-57, which created linguistically homogeneous states and counter-balanced the likely chauvinism through the promotion of the tree language formula, requiring the use of Hindi, English, and the regional language, made it possible to institutionalize the multicultural nature of the Indian state, *albeit* with regional divergences of successes and failures in its implementation.

In its third phase, the same process of constitutional development of federalism in the 1990s, India has witnessed the deepening of the principle of power sharing by the constitutional and statutory powers accorded to village councils after 1993. One extreme point of view is that India is definitely unifederal. As Prof. K.P. Mukherjee contends that Indian constitution is definitely unifederal or a unitary constitution. Likewise, K. Santhanam has remarked that by means of this provision the fundamental principal that a federation depends upon the territorial integrity of states seems to have been forgotten. K.V. Rao observes that the Units are very weak compared with the Centre. According to him, while Articles 1 and 2 guarantee the existence of the States and this granted by the Constitution itself, the continued existence of the Units, and especially their inclusion in a particular part in the First Schedule, is at the mercy of the Centre, nay, at the mercy of a bare majority of the Parliament (Article 4). The other extreme view is of designating India as extremely federal. Likewise, C.H. Alexandrowicz opines — It is undoubtedly a federation in which the attributes of sovereignty are shared between the Centre and the States. In between these two interpretations, we have a plethora of moderate interpreters. Granville Austin advocates the thesis of co-operative federalism. He believes that the very concept of co-operative federalism implies a strong Centre; provincial governments are largely administrative agencies for central policies. Secondly, Prof. Morris Jones talks of Indian federalism as bargaining federalism. He says — whereas the emphasis in the Constitution is on demarcation, that of political relations is on co-operative bargaining. He points out that the Finance Commission declined in relative importance as compared with the rise of a system of matching grants which are made under Article 282 of the Constitution. Hard competitive bargaining keeps on going between the Centre and States of getting these matching grants.

The new group of regional leaders of India, drawing on their power bases in the states, often consisting of people from India's periphery (in terms of religion, elite caste status, or geographic distance from the Centre), are able to generate a different and new construction of the Indian nation state. In terms of the actual policies of the state, the regionalists are much more willing and (in view of their social base) able to listen to the minorities, to regions with historical grievances, to sections of society that entered post-Independence politics with unsolved, pre-Independence grievances.

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The horizontal and vertical expansion of the federal process has brought greater legitimacy to the Indian state and cohesion to the India nation. Rather than grand design, the process has been based on a series of ad hoc decision, based on the perceived benefits of the respective political actors of the day, sometimes against the advice of specialists who have made the conventional arguments based on the imperatives of modernization and the logic of economic viability.

One important weakness of institutional design and the federal process is clearly the lack of effective mechanisms for a coordinated interest aggregation of states versus the Central government. Co-ordination mechanisms, such as the informal conference of Chief Ministers and to some extent, also the Interstate Council, have largely proven to be limited in their effectiveness. Nevertheless, coordination among Chief Ministers belonging to parties not included in the Central government coalition has taken place, as have collusion and coordination between the Central government and many of those Chief Ministers belonging to parties which support the Central government in the Lok Sabha. In its own way, therefore, the Indian experience with the unprecedented and unconventional expansion of the federal principle serves to enrich the theory of federalism in confirming or disconfirming received knowledge about the strengths and weaknesses of federal systems the world over.

5.4 DIVISION OF SOURCES OF REVENUE BETWEEN THE CENTRAL AND STATE GOVERNMENTS WITH SPECIAL REFERENCE TO INDIAN ADJUSTING MECHANISM

In all federations of the world, the centre is financially stronger than the states. Allocation of resources has been done in a manner as to give the centre a proportionately much larger share of revenues than that of states. Further, sources of revenue at the disposal of the federal authority are more elastic than those with the states. This has been so in older federations and almost all the new federations have copied this arrangement. The central government has responsibility for economic development and stability. Financial stability and strength at centre is necessary for discharge of these functions. Centre has, therefore, been given fiscal powers appropriate for this purpose.

Under such circumstances, transfer of resources from centre to states are essential part of the financial arrangements in a federation. There are three problems which give rise to the need for such transfers. Firstly, there is an imbalance of revenue between the centre and the states. Allocation of the sources of revenue is such that those with the centre are more paying, e.g., customs and excises. Secondly, all states in a federation have not reached the same stage of development. There is not enough base for taxation in some states. Thirdly, welfare and development activities have to be undertaken by states, for which means available to them are not adequate and transfer of resources from Centre become, indispensable. Transfers usually take three forms: (1) Division of proceeds of certain taxes, (2) Grants by the Centre to States and (3) Loans given by the Centre to the States.

1. Division of the Proceeds of Certain Taxes: Proceeds of certain taxes are shared between centre and states. In India, this is done in respect of income tax and excise. In many cases, there are certain taxes levied and collected by centre but proceeds of those are wholly distributed to states. These taxes could as well be levied and collected by states but central management is for uniformity in rates and coverage. Estate duty in India is a standing example. There are certain other taxes which are levied by centre but which are collected and appropriated by states.

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The sharing is so done that the centre has a larger share sufficient for its requirements and rest is distributed among states. There are three principles which are suggested for distribution:

- (i) States' share may be on the principle of compensation for loss of revenue on account of federalization and federal policies. This is difficult to determine, particularly in the case of federations that have come into being as a consequence of devolution of powers by a unitary centre.
- (ii) Another principle is requirement needs of the states. These may be measured in terms of population or policies and schemes adopted by states.
- (iii) Backwardness of a state may also be a criterion for which some kind of an index of backwardness has to be worked out.

Complete justice and satisfaction to all states is impossible under any system of distribution. There are always pulls and pushes from states for the adoption and rejection of specific criteria. It is difficult to estimate requirements of states by any objective criterion. Perhaps, best scheme is for a commission to go into the state budgets, examine their plans for development and welfare and only thereafter suggest a suitable basis for distribution.

Distribution of tax revenues has certain disadvantages. Sometimes, rates of federal taxes have to be kept unduly high to meet financial requirements of states. Other effects of these taxes are ignored. Further, while collecting, government incurs all unpopularity while states that receive shares get benefits. There is also no inducement for states to effect economies in their expenditure.

2. Grants by the Centre to the States: Sometimes transfers take the form of grants. These are given primarily on the basis necessity of the states. Requirements have to be carefully estimated in relation to the resources of the states and grants are given to them. Requirements are measured in terms of population, percentage of collection, plans for welfare and development, and backwardness of states. These grants bring about a certain measure of uniformity in resources available to states.

Grants are given to enable centre to exercise a certain measure of influence upon policies and schemes adopted by states. Centre can persuade units to adopt measures which serve certain national purposes. Centre may also encourage grant receiving states to adopt schemes for their own benefit but which fit into general national plan.

Grants are based on two principles. One is authority transferring resources may retain responsibility for their proper use. These are called 'Conditional Grants' and are given for specific purposes. Other, 'Unconditional Grants' are given unconditionally but are to be spent in conformity with general principles of sound finance. Actual arrangements may be between, these two extremes. Centre gives both these grants. There are some grants to which no specific conditions are attached. There are others which have to be spent by states for specific purposes such as education, public health, housing, improvements of certain industries, etc. In developing countries, some grants are given to implement specific programmes of development.

3. Loans Given by the Centre to the States: States raise loans in the capital market, but they also get short-term and long-term loans from the central government. Loans may be for specific schemes or for general purposes. Like other kinds of transfer of resources, this form also necessitates a central watch over the purpose and use for which states borrow.

5.5 PROBLEMS OF RESOURCES MOBILIZATION AT THE REGIONAL LEVEL

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Regarding demarcation of sources of revenue between centre and state, yet, financial arrangement between two are utmost important. As governments have their own allocated functions, thus, they must possess sufficient or adequate resource to fulfill those needs. Alternatively, division of function pre-supposes division of resources. Constitutions of each federal state has distinct provision in this regard.

So far as basis of such division of resources are concerned, taxes and other sources provides as base extending over entire nation, which mark its impact upon economic life of a country included in the federal list. But, on contrary, other taxes those are based in individual states and impacts of that seldom crosses beyond boundaries of a state are allocated in that respective state only. For instance, suppose customs duties which is related to trade of entire country are generally a central head of revenue. But taxes on land and other immovable property which is concerned to states only are usually sources of revenue in the hands of respective states only.

Distribution of resources in all federations aims at providing fiscal independence to all governments. Central and state authorities are given sources of income to fulfill their needs. Government should manage its resources efficiently to make its optimum utilization. Along with this, it should also maintain expenditure at a specific level so that it remains within the mean available to it. It shows a sense of responsibility at the hand of units which is inevitable for effective operations of federal system.

Financial arrangement in most federation in fact desirable from both economic as well as political point of view. It makes units dependent upon centre and reduces fiscal autonomy to a mere ideal, which is difficult to achieve. Therefore, various adjustments are required besides a mere distribution of revenue resources have to be in financial relations between centre and state units.

India has a federal form of Government, and hence federal finance system. Essence of a federal form of Government is that Central and State Governments should be independent of each in their respective, constitutionally demarcated spheres of action. Once the functions of the Governments are spelt out, it becomes equally important that each Governments should be provided with sources of raising adequate revenue to discharge functions entrusted to them. For successful operation of federal form of Government financial independence and adequacy form the backbone.

Evolution of the finance system in India can be traced to the Government of India Act, 1935. This Act was based upon general principle of financial independence for provinces. The constitution of India accepted this basic principle of federal finance and apart from that tried to achieve a few more principles among them *first* and the foremost is achievement of a financially strong Centre. This is done by adopting the following measures: (a) Powers of concurrent taxation has been avoided; (b) Centre has been assigned more elastic and high yielding sources of revenues; (c) Centre has been given the subjects of money and banks, currency and coinage; and powers to resort to deficit financing; (d) Centre has been provided with certain exclusive sources of revenue; and (e) Residuary powers lies with the centre.

Secondly, the constitution has divided the various functions into three lists, viz., (a) Union List, (b) States' List and (c) Concurrent List. Financial powers have likewise been divided between the Centre and the States.

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Thirdly, the constitution has made provision for transfer of resources. This is to be achieved by three means, viz., (a) tax sharing, (b) grants and (c) loans. These are sometimes referred as “balancing factors” to correct inter-regional inequalities of income. One basic principle of federal finance is functions and resources should go together. However, in most federation, there is always a gap between functions to be discharged and financial resources needed to discharge them. Hence, regional imbalances constitute a source of conflict and this conflict is solved by the use of the balancing factors.

Fourthly, there exists a flexibility in transfer of resources. The reason is, resource are transferred from the Centre to the States according to recommendations of the finance commission constituted by the President under the provisions of Article 280 of the constitution. The Commission does not have any set procedure to go by. It has to make its own choice. It lends flexibility to the system. Appointment of the Finance Commission is of great importance for it enables the financial relation between the Centre and the States to be altered in accordance with changes in need and circumstances.

Constitutional provisions relating to federal finance are segregated into three broad heads: i.e., (A) distribution of financial powers, (B) mechanism of resource transfers and (C) finance commissions.

A. Distribution of Financial Powers: The constitution makes a clear division of financial resources between Centre and States. Sources of revenue can be grouped under two heads, viz., (a) Sources of revenue for Centre and (b) Sources of revenue for States.

Sources of revenue to Centre are: (1) sources of tax revenue; and (2) sources of non-tax revenue. Sources of tax revenue include 12 items like taxes on income other than agricultural income, corporation tax etc. The non-tax resources are: (1) borrowings; (2) income from Government undertakings and monopolies; (3) income from Government property and income arising out of the exercise of various Governmental functions and rights; (4) interest earnings on loans as well as advances to State Governments’ commercial and non-commercial undertakings; (5) gifts, donations etc; (6) fees in respect of any of the matters in the Union List but not including fees taken in any court; and (7) fees taken in the Supreme court.

Similarly, the sources of revenue to the State Governments can be divided into: (a) sources of tax revenue; and (b) sources of non-tax revenue. Under constitution, States have been given independent tax powers and the State list contains 19 items like land revenue, taxes on agricultural income, sales tax etc. The non-tax revenue includes: (a) fees taken in all courts except the Supreme court; (b) income from undertakings owned partly or fully by respective State Governments; (c) income earned from property owned by State Governments; (d) borrowings from within the country; (e) royalty from mines, forests, etc.; (f) grants-in-aid from centre; and (g) other grants from the Central Government.

Various taxes imposed by the Central Government are divided as follows:

1. Taxes and duties which accrue wholly to the Union Government, e.g., customs duties including export duties, corporation taxes etc.
2. Taxes levied and collected by the Union but which may be shared with States (Article 272 of the constitution).
3. Taxes and duties levied and collected by centre but the proceeds of which are assigned to States (Article 269 of the constitution), e.g., succession duty in respect of property other than agricultural land, terminal tax etc.
4. Taxes and duties levied by Centre but collected and appropriated by State concerned (Article 268 of the constitution), e.g., stamp duties and excise duties, duties on medicinal and toilet preparations etc.

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This sort of the division of tax powers reflects on operational distinction made between levying, collection and appropriation of tax proceeds. Each part has been decided on the basis of maximum efficiency expected under the constitution.

B. Mechanism of Resource Transfer: Important means of resource transfer are: (a) assignments; (b) tax-sharing; (c) grants-in-aid and (d) loans.

C. Finance Commissions: Specific provision has been made in the constitution for the appointment of a finance commission every five years or earlier. Under Section 280 of the constitution, the President is empowered to appoint a finance commission at the expiry of every fifth year or earlier which shall consist of a chairman and four other members.

The finance commission makes recommendations to the President in regarding: (1) distribution of net proceeds of taxes to be shared between Union and States and allocation of shares of such proceeds among States; (2) principles which should govern the grants-in-aid to the revenues of States out of consolidated Fund of India; and (3) any other matter the finance commission may deem fit. Important recommendations of all the ten commissions so far reported have been accepted and acted upon by the Central Government, in the spirit of the constitution.

Centre-State Conflict on Finances: Financial relations between Centre and States are of vital importance for smooth functioning of a federation. Since last few years, there has been growing conflict and tension between Indian Union and States. This conflict has been aggravated by political and ideological differences among different parties governing the Centre and States. In the first place, the financial provisions of the constitution gave very extensive financial resources to the Union and on the other hand, State Governments were given important responsibilities but inelastic and unproductive resources. This has been a major reason of conflict between the Centre and States.

Secondly, under the weight of successive plans of economic and social development, there is a growing divergence between responsibilities arising from original distribution of powers and fiscal capacities between the Union and States.

Thirdly, there have been serious regional imbalances in economic development so much so that some States have been left behind while others have made considerable economic progress.

However, it must be stated that the amount of imbalance between regions is inevitable in a large country like ours. But Central Government did not use its financial resources or its policy of economic planning to bring about balanced development of all regions. Naturally, the backward and neglected States clamour for more powers and more financial resources.

Finally, the Indian Constitution provided for inter-governmental grants and loans, so that the Centre might come to the help of those States which were in difficulties and also to bring about balanced development among different regions. Use of grants and loans in the last 40 years or so, however, has resulted in complete domination and control of the States by the Centre and utter dependence, and to a certain extent even financial irresponsibility and indiscipline on the part of the States. A stage has now been reached that while Centre-States financial relations will have to be reviewed thoroughly. The Thavaraj Committee (Report of the Taxation Enquiry Committee, Kerala government), the Rajamannar Committee on Centre-State relations appointed by the DMK Government of Tamil Nadu and the document on Centre-State relations adopted by the West Bengal cabinet led by the CPI(M) United Front — all these have the same theme, i.e., political and financial autonomy for States and drastic restriction upon power as well as financial resources of the Centre.

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5.6 SUMMARY

1. Federalism is a political concept in which a group of members are bound together by covenant (Latin: foedus, covenant) with a governing representative head.
2. Federalist is sometimes used to describe those who favour a common federal government, with distributed power at regional, national and supranational levels.
3. In Canada, federalism typically implies opposition to sovereigntist movements (most commonly Quebec separatism).
4. The term economic development is a process whereby an economy's real national income increases over a long period of time.
5. The primary driving force of economic growth is the growth of productivity, which is the ratio of economic output to inputs such as capital, labour, energy, materials and business services.

5.7 SELF ASSESSMENT QUESTIONS**I. Fill in the Blanks**

1. A distinguishing aspect of Indian federalism is that unlike many other forms of federalism, it is _____.
2. In a federation, the division of power between _____ and _____ is usually outlined in the constitution.

II. True and False

1. In almost all federations, the central government enjoys the powers of foreign policy and national defense.
2. Usually, a federation is formed at two levels: the central government and the regions (states, provinces, territories), and little to nothing is said about second or third level administrative political entities.

III. Multiple Choice Questions

1. In economics, a production-possibility frontier (PPF), sometimes called _____.
 - (a) Production-possibility curve
 - (b) Production-possibility boundary curve
 - (c) Product transformation curve
 - (d) All of the above
2. Economic growth is _____.
 - (a) A long-term process involving a period of many decades
 - (b) A short-term process
 - (c) A periodic study
 - (d) None of the above

Short Answer Questions

1. Explain in brief the term 'Economic Growth'.
2. What are the measures of the economic growth?

Long Answer Questions

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1. Critically analyze the term 'Federalism'. What are its constitutional structure?
2. Explain the neo-classical growth model.

5.8 KEY TERMS

- Ecclesiologies
- Federalism
- Federalist
- Production-possibility frontier

5.9 KEY TO CHECK YOUR ANSWER

- I. 1. asymmetric, 2. federal, regional governments.
- II. 1. True, 2. True.
- III. 1. (d), 2. (a)

UNIT V: STABILIZATION AND GROWTH

6

Chapter

REGIONAL DISPARITY AND STABILIZATION MEASURES

Objectives

This Chapter is focused on the following objectives:

- Regional aspects of stabilization and growth policy
- Post- war regional cyclical behaviour and policy measure for stabilization
- Theories to explain regional differences in growth
- Fiscal programmes
- Tax
- Transfer programmes
- Fiscal responses of power level governments
- Regional orientation to policy programmes and central responsibility

Structure:

- 6.1 Regional Aspects of Stabilization and Growth Policy
- 6.2 Post -war Regional Cyclical Behaviour and Policy Measure for Stabilization
- 6.3 Theories to Explain Regional Differences in Growth
- 6.4 Fiscal Programmes
- 6.5 Tax
- 6.6 Transfer Programmes
- 6.7 Fiscal Responses of Power Level Governments
- 6.8 Regional Orientation to Policy Programmes and Central Responsibility
- 6.9 Summary
- 6.10 Self Assessment Questions
- 6.11 Key Terms
- 6.12 Key to Check Your Answer

6.1 REGIONAL ASPECTS OF STABILIZATION AND GROWTH POLICY

Indian Economy stabilizes, but high inflation, slow growth key concerns India has restored macroeconomic and financial stability, but structural impediments to growth and persistently high inflation remain key concerns. Over recent months, India has taken substantive measures to narrow external and fiscal imbalances, tighten monetary policy,

move forward on structural reforms and address market volatility. This has reduced its vulnerability to shocks. Though spillovers from global financial market volatility continue to pose a significant risk, Indian economy is now better placed to handle financial shocks. The current account deficit has contracted, the fiscal deficit target has been met and investment project approvals are accelerating. In addition to that, India has significant foreign exchange reserves to deploy in the event of external financing pressures. Exchange rate flexibility, a tightening of liquidity conditions and limited foreign exchange interventions, had served India well in responding to the present volatility.

Handling External Pressures: The report stressed the need to foster an environment conducive to foreign direct investment to finance India's current account deficit. In the event of a resurgence of market volatility, the IMF stressed the importance of a well-communicated package of policy measures to minimize disruptive movements in the currency and bolster market confidence. This would involve continued flexibility in the rupee, complemented by the judicious use of reserves, tightening of monetary conditions, additional fiscal consolidation efforts, and further easing of constraints on capital inflows.

Growth Eases: India's growth, although among the highest in the world, has slowed in the last two years. Growth is projected at 4.6 percent in 2013-14, but with a modest pick up to 5.4 percent in 2014-15, helped by slightly stronger global growth, improving export competitiveness, a favourable monsoon and a confidence boost from recent policy actions. India's growth is expected to rise to its medium-term growth potential of about 6¾ percent once recently approved investment projects are implemented and as global growth improves. Several important policy decisions have been made that should help revive investment activities, so that India can easily go back to an 8 percent growth trajectory if further structural reforms, particularly in the fields of energy, agriculture and also the labour market.

Inflation Remains Elevated: Persistently high inflation is a key macroeconomic challenge for India. Over the past several years, it has induced double-digit inflation expectations and given rise to a high demand for gold. It has also eroded households' financial savings and undermined the stability of the rupee. Achieving a sustained reduction in inflation requires a tightening of the monetary stance, possibly over a protracted period. It will also be critical in achieving sustained, robust and inclusive growth. Food and fuel price shocks propagate rapidly into core inflation and inflation expectations and wage formation are closely linked to CPI inflation.

Challenges and Policy Priorities: The IMF in its report commended the authorities' resolve to meet the budget deficit target despite slowing growth, but highlighted the need to improve the quality of fiscal consolidation and make it more growth friendly. While the medium-term fiscal targets and resulting pace of consolidation are broadly appropriate, measures still need to be articulated and implemented to underpin the targeted fiscal adjustment. The report praised the progress made in tying India's social safety net to the Aadhaar (India's Unique Identification Programme). The report said that achieving durable medium-term fiscal adjustment will require more efficient taxation (including through the introduction of the goods and services tax) and better allocation of spending (including through reforms to fuel and fertilizer subsidies).

Further, raising the tax-to-GDP ratio to the pre-crisis level and reforming fuel and fertilizer subsidies will help reorient spending toward social priorities in health and education. According to the IMF's assessment, India's financial system remains well capitalized and supervised, but slowing growth is highlighting corporate vulnerabilities and leading to deteriorating bank asset quality.

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IMF in its report welcomed the Reserve Bank of India's recent initiatives to increase provisioning and capital requirements for bank lending to firms with sizeable foreign currency exposures and for improving the recognition of restructured advances on bank balance sheets. Although no firm has come under severe stress so far, there is a key information gap about the extent of unhedged foreign currency exposure of large firms, which needs to be rectified. Improvements in the legal and institutional insolvency framework will also help deepen domestic capital markets.

6.2 POST-WAR REGIONAL CYCLICAL BEHAVIOUR AND POLICY MEASURE FOR STABILIZATION

Economic Fluctuations and Stabilization Policies (Post-war): Growth, stability and distribution are the three principal concerns of economics. Since economics deals with the material well-being alone, the growth is defined in terms of the growth in real national income, the stability in terms of the fluctuations in real national income or in the rate of unemployment and in the (general) price level (inflation or deflation) and the distribution in terms of the income distribution across households. Economists are unanimous in each country aiming at a high growth rate, high stability and a fair, though not equal, distribution. But, most economists believe that the growth and price stability are incompatible goals in the short run (Phillips' curve) and thus, an ideal mix of the two is a debatable issue. The famous Kuznets' curve suggests that the growth and desired income distribution do not always move in tandem. The basic purpose of this discussion is basically addressed to economic fluctuations and their monitoring through the application of stabilization policies. Time series data on economic fluctuations and the indicators of stabilizing policies in selected countries are analyzed to examine the depth and spread of these fluctuations and the actual uses of the corresponding policies. Inherent limitations of these policies are highlighted to appreciate their less than perfect role in taming business cycles.

Economic Fluctuations: Economic fluctuations are fact of life. All countries have suffered from these, though the booms and busts have not always synchronized across countries and neither the length nor the amplitude have been uniform. The average growth rate in these countries during the last about 40 years (1964-1997) has fluctuated between the low of 2.3 percent in UK and the high of 9.2 percent in China, with the standard deviations of 2.2 percent and 6.7 percent, respectively. For the world as a whole, while the average growth rate during the said period stood at 3.7 percent, the standard deviation of that turned out to be 1.4 percent, giving a coefficient of variation of 38 percent. These indicate a fairly high degree of volatility both over space and time. The maximum fluctuations in the growth rate were in China, in the unemployment rate in UK, and in the inflation rate in India. In India, the drought of 1979-80 (when the agriculture output fell by 12 percent) left that year the worst with a negative growth rate of 6 percent and the mild reforms induced prosperity (when industrial output went up by 9.6 percent and finance, insurance, real estate and business services output was up by 11.4 percent) of the second half of the 1980s took the growth rate to its peak rate of around 10 percent in 1988-89. Some striking examples of extreme fluctuations in the globe are cited below:

(a) The Great Depression of 1929-33 was fairly widespread across all countries. During these four years, the GDP fell by about 29 percent in USA, 22 percent in Australia, 18 percent in Czechoslovakia, 16 percent in Germany, 11 percent in each of France and

Hungary, 9 percent in Sweden, 6 percent in UK and so on. The unemployment rates were high accordingly and most countries had experienced fairly high rates of deflation.

(b). The hyper-inflation (inflation over 1000 percent/year) plagued several European countries, including Germany, Hungary, Austria and Poland, during the 1920s and again Hungary during August 1945 to July 1946. Several Latin American countries, including Argentina, Bolivia, Brazil, Nicaragua, Peru and Ukraine, have suffered from this disease during the 1980s and 1990s.

(c) The stagflation during 1974-75 and 1979-82 was fairly widespread throughout the world. Growth rate in the world output fell monotonously from 5.8 percent in 1973 to 0.7 percent in 1975 and from 4.1 percent in 1978 to 0.4 percent in 1982. The world inflation rate stood at the two-digit levels in all these years. Several countries including USA and UK had experienced negative growth rates in most of these years and the rest had lower than their respective trend rates in all these years. Most of the countries had suffered a two-digit inflation rate or a high one-digit rate.

(d) The fast growing prosperity was witnessed in Japan during the 1950s and 1960s. The Japanese economy is currently suffering from recession for over a decade. China had experienced a relatively high growth rate (two-digit level) during the most of the 1960s (barring 1967, during the worst recession), and the 1980s and 1990s. USA suffered the worst recession after the Great Depression during 1979-82 but has performed reasonably well during the most of the 1990s. India has had a negative growth rate in 1956-57, 1964-65, 1972-73, and 1979-80 (maximum at -6.0 percent) and a maximum growth rate of about 10 percent in 1988-89. Most of the South-East Asian nations have achieved high growth rates during 1986 through 1996 until they were caught up by the recent financial crisis. The business cycles are found in Europe as well as the growth rates in those countries were either negative or low during the periods of stagflation (1974-75, 1979-82) as well as the early 1990s and better in most other years. African countries and Latin American countries have witnessed even worse cycles. The world recorded the highest growth rate at 6.2 percent in 1964 and the lowest at 0.4 percent in 1982. In general, the 1980s and 1990s have been the decades of a relatively good performance in most countries.

(e) Since the early 2001, most regions in the world are experiencing a recession, which is in terms of a fall in the growth rate rather than a negative growth rate. This recession, like the Great Depression of the early 1930s, and the stagflation of the mid-Seventies and early Eighties is well spread across countries. However, the inflation rate has been quite modest lately in most countries. The unemployment and inflation further demonstrate the recurrence of business cycles. According to the Arthur Okun's law, the unemployment figures are just the mirror image of the growth rate. The average inflation rate during 1964-2000 fluctuated between 3.2 percent in Germany and 9.1 percent in India, with a standard deviation of 1.8 percent and 2.8 percent respectively. The said figures for the world turned out to be 11.1 percent and 5.9 percent, respectively. Therefore, the standard deviation of inflation was fairly high as well.

3. Fluctuations in the real income and inflation rate have not been uniform through the various cycles. During the great depression, both the real income as well as the price fell. During the stagflation, the former fell while the latter rose. The same trend was witnessed, though at very different rates, during the hyper-inflation. During the last decade, the prosperity was accompanied with mild inflation. While inflation was perhaps the number one economic ill during the stagflation and hyper-inflation, currently it is very much within the desired range in most parts of the world.

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4. The fundamental factors behind these fluctuations are shocks in aggregate demand (AD) and aggregate supply (AS). These can be caused by changes in one or more of the exogenous variables (policy or non-policy ones) and the behavioural parameters of the decision-makers, viz., consumers, input suppliers and firms. The non-policy variables that affect AD include autonomous components of consumption, investment, export and imports, which, in turn, are guided by the confidence and expectations of consumers and firms, both domestic and foreign. The policy variables that have bearings on AD include money supply (or the high-powered money), government fiscal operations like government expenditure, taxation and transfer payments, and the foreign exchange rate, tariffs and quotas. The classists (supply siders) believe that direct taxes (personal income tax, corporate tax and the rebates on saving and investment) affect AS as well, through incentives or disincentives to supply more labour and save and invest more or less.

Besides, the behavioural parameters affecting AD include propensities to consume or save, invest and import, interest sensitiveness of investment and money demands, price elasticities of import and export, etc. Workers' leisure-work preference, firms' attitude towards risk and profit, industrial relations and riots, etc. constitute the behavioural parameters that affect AS. While the behavioural parameters are fairly constant in the short run, the non-policy and policy variables do change even in the short run. Therefore, the shifts in AD and AS could be caused by a variety of factors even in the short run and any one or more of them could have triggered or reinforced a particular contraction or recovery.

Economists are unanimous with regard to the downward sloping of the AD curve, which is caused by the Keynesian, Pigou and international trade effects, though these are partly offset by the income redistribution and price expectations' effects. Apart from that, there is a near consensus even about the slope of the AS curve, which is upward sloping up to the potential (natural level of) output in the short-run and vertical thereafter and vertical at the potential output in the long run. However, different schools attach varying significance for the reasons behind this slope. For instance, the classists think that the short-run AS curve slopes upward primarily because of the mis-perceptions about the real wage and relative prices, the Keynesians think the shape is largely due to the nominal wage-price rigidity. What had caused the Great Depression, hyper-inflation, stagflation, relative prosperity of the 1980s and 1990s and recent recession? Obviously, not a single factor but may be one could talk of the major factor behind each of these big events. Hitherto, economists used to distinguish between the real and monetary business cycles, the former caused by the supply factors (classists) and the latter by the demand factors (Keynesians). However, today, we have the convergence of these two schools and the unified theory, called the eclectic or heterodox approach, recognizing the role of both kinds of such factors. Of course, even today, the different schools attach varying emphasis on the main factors behind the cycles. In particular, while the classicalists, postulating the wage-price flexibility and market clearing, argue for the technological changes, inter-temporal substitution of leisure, and misperceptions about the real wage and relative prices as the principal factors behind fluctuations, the Keynesians consider the nominal wage-price rigidity as the main source of business cycles.

Lack of effective demand has been identified as the single most important factor that caused the Great Depression. The stock market crashed on October 29, 1929 (Monday) with the Dow Jones Industrial Average (DJIA) falling by 12 percent in a single day. The wealth of the households got eroded, which affected consumption expenditure adversely. Banks got into the problem of recovering their loans and thereby, their non-performing assets mounted, thus, investment suffered. The confidence of both the consumers and firms shattered. The fall

in demand led to poor sales, causing high level of inventories, which prompted firms to cut productions and lay-off of the workers. The unemployment grew and the vicious circle led to a deep recession. Since USA happens to be an economic power, it got spread across other countries and there was the Great Depression. As it was demand caused, both output and price fell simultaneously.

The stagflation was triggered by the formation of a cartel by oil exporters (OPEC), leading to the restricted oil supply and significant increases in the crude oil price. The increase in the energy cost led to increase in the production cost of all goods and all over the world. The firms were forced to jack up their prices, and hence the AS curve shifted upward. This being an adverse supply shock, while the output fell, prices went up. In consequence, the world for the first time experienced the twin evils of unemployed and inflation at the same time.

The hyper-inflation of Europe in the 1920s was triggered by the war time damages and their reconstruction, causing heavy debts. While the debt became unsustainable, those countries fell on financing the deficits through increasing the high-powered (base) money (and thereby money supply) more and more, giving rise to hyper-inflation. The Latin America's hyper-inflation was caused by their attempts to grow through debts and when debt became unsustainable, some of the countries got into external debt crisis and all of them resorted to excessive printing of currency, causing hyper-inflation. Needless to say, all these hyper-inflations were accompanied by the equally high growths in the high-powered money.

The prosperity of the 1980s and 1990s could be credited to the spread of globalization, technical progress and the proper handling of stabilizing policies. The countries, which liberalized the trade and international capital flows, grew faster than the others. The South-East Asian countries and China provide enough evidence to this hypothesis. The collapse of the USSR and the poor experience of the African countries offer the added support. The part shifting of the production base from the high cost North American, Japanese and European regions to the low-cost Asian and Latin American regions has helped taming the inflation throughout the world. The telecommunication and computerization boom resulted into a structural shift from the traditional industries to the knowledge-based industries and services. The busting of this boom and the speculations in foreign exchange, causing the Asian financial crisis of the 1997-98, are considered to be among the main factors responsible for the current growth recession. The growing terrorism, fluctuating monsoons and environmental hazards have added fuel to the fire in aggravating the recession.

III. Stabilization Policies: The built-in (automatic) stabilizers, viz., progressive direct taxes and social security system, are never enough to counter business cycles. Fiscal policy, monetary policy and the foreign exchange rate system provide the necessary tools in the hands of the policy makers to tame economic fluctuations. Governments' fiscal operations, viz., government expenditure and taxation affect aggregate demand both directly and indirectly and aggregate supply indirectly. Government expenditure is a component of AD, and taxation reduces private income, thereby the private consumption and investment. Part of the effect of the expansionary fiscal policy is crowded out through the reduction in private investment and net exports, as increased government expenditure leads to increase in interest rate and through that the appreciation of the exchange rate (if the economy is on a floating rate system). The fiscal policy is more effective in a closed economy than in an open economy with floating forex rate and free movements of capital. In addition, tax cuts provide incentives to work longer and harder, and to save and invest more, thereby to increase aggregate supply.

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The monetary policy operates through regulating the supply of money via its control on the high-powered money, and the other instruments like the bank rate, open market operations, cash reserve requirements and statutory liquidity ratio. It affects the interest rate, which, in turn, exert influence on investment (Keynes effect) and net export (via forex rate, if floating). The real balance (Pigou) effect provides yet another source for the effectiveness of monetary policy. The foreign exchange rate exerts its influence on the relative price in the country in relation to abroad and thereby affects net export, which is a component of AD.

If all these policies are there, how is it that these did not work to counter business cycles? Two reasons. One, each of these policies is subject to some inherent limitations, and two, the respective governments may have failed to use them appropriately. Taking up the specific policy-wise limitations first, the fiscal policy suffers from the following:

- (a) Fiscal expansion leads to fiscal deficits, which add to the public debt. Obviously, debt is sustainable only upto a limit.
- (b) Ricardo-Barro equivalence theorem suggests that if people have bequest motive and no liquidity constraint, tax financed government expenditure is tantamount to debt financed government expenditure, and the either is mostly crowded out through cuts in private expenditure, leaving little impact on AD.
- (c) Open economies with the floating exchange rate have additional crowding out of fiscal expansion through contraction in net export, via forex rate appreciation.
- (d) Public has little tolerance to cuts in government expenditure and increases in tax rates, and this limits the operations of fiscal policy in restricting the unsustainable recovery or prosperity. In other words, fiscal policy is asymmetric.
- (e) If the interest sensitiveness of money demand is low, and/or that of investment is high, fiscal policy is of little use.

The monetary policy also suffers from some unique factors:

- (a) In some countries, monetary tools subserve the fiscal instruments. This happens when the central bank is required to monetize some part of fiscal deficit. The US Federal Reserve Bank is independent in this regard and the Reserve Bank of India is theoretical independent lately only.
- (b) In countries where the exchange rate is fixed and there are significance restrictions on the movements of capital in or out, the tools of monetary policy are not available to mitigate economic fluctuations. This is what is called, the international trilemma or impossible trinity. The Euro region of Europe, thus, does not enjoy the power of regulating their money supply. So are countries like Hong Kong and UAE, which are on the Currency Board and Panama and Equador, which have “dollarized” (USA) their medium of exchange.
- (c) The counter policy changes in the income velocity of money or liquidity preference could also frustrate the efforts of monetary authorities.
- (d) The low interest sensitiveness of investment and high that of money demand acts as yet another constraints in the effectiveness of monetary policy.

The forex rate policy suffers from the limitations like:

- (a) Low price elasticities of exports and imports.
- (b) Counter reactions from other countries, as devaluation and re-valuation are components of “beggar-thy-neighbour” tools.

- (c) Considerations, which suggest the adoption of the fixed exchange rate system/currency board/currency union or the dollarization (US \$), which prohibit the use of the exchange rate policy.

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In addition to the above policy specific constraints, all the stabilization policies suffer from following limitations:

- (a) Policy lags, inside and outside, which are long and variable.
- (b) Errors in forecasting the exact magnitude of the recession or recovery.
- (c) Changing structure, causing the multipliers to be dynamic and not quite known.
- (d) Political costs of hard policies.

The basic question now is, why these policies really failed to check the significant business cycles? Analyzing first the Great Depression, we can safely say that the fiscal policy was not adequately applied, monetary authorities than had only limited powers to regulate the money supply, and the flexibility in the forex rate was not available due to the presence of the gold standard. If one examines the US data, the government expenditure as a proportion of GNP increased from 10 percent in 1929 to 19.2 percent in 1933 and the fiscal deficit increased from -1 percent (surplus of 1 percent) to 2.5 percent of GNP during the period. This limited use was due to the then prevailing classical belief in the non-interventionist policy, and the policy makers over riding concern of ensuring the balanced budget operations. The beauty of the fiscal policy, especially during the recession, was then hardly known.

During the four year period of the Great Depression, the nominal money supply in the US actually fell by over 25 percent, though leaving the real money supply practically unchanged. Interest rate hardly moved to the either direction. Being on the gold standard, the Federal Reserve Bank did not possess the flexibility in issuing the high-powered money. Due to bank failures and non-availability of insurance against bank deposits, households and banks' preferences for the currency and reserves went up, which adversely affected the deposit money (money multiplier). Further, the low level of interest rate augmented the liquidity preference, which, in turn, reduced the effectiveness of monetary policy.

Stabilizing policies suffered the set back during the stagflation, as they operate basically through aggregate demand. These policies could attack unemployment through being used as accommodating or inflation through being extinguishing. However, countering unemployment leads to aggravate inflation and taming inflation worsens unemployment. To some extent, this hypothesis was modified by the "supply-side economics", which recognizes the effect of these policies on aggregate supply. Prompted by the latter possibility, many governments resorted to tax cuts and tax breaks on saving and investment. The results were only partially successful and accordingly there were ups and downs in unemployment and inflation during the said period. The recognition of the natural rate of output and unemployment, policy lags and rational expectations hypothesis, further limited the scope of all stabilizing policies in taming business cycles.

Stabilizing policies have helped rescue the debt and foreign exchange crises faced by several countries, including Mexico, Argentina, Thailand and Indonesia during the 1980s and 1990s. Currently, these tools are being applied successfully in many countries, including USA and India to tame the growth recession and to come out of the serious problem.

Economists differ with regard to the relative effectiveness of different stabilizing policies. The classists favour the monetary policy over the fiscal instruments, as they believed that the demand for money and the other behavioural functions are relatively stable. In contrast, the Keynesians favour the fiscal policy, particularly to check recession, when the

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interest rate hardly responds to fiscal deficit. Both schools believe that for policies to be effective, they have to be credible.

The foreign exchange rate policy has not been used much in stabilizing the economy. The other two have been applied with varied success. Further, the improvements in the knowledge base, technology and transparency in policies and recognition of the significance of macro economic (fiscal) balance in economic growth, among other factors, are responsible for the inadequate effectiveness of policies in countering the current growth recession. In summary, one can now simply state that policies exist to counter economic fluctuations, but these policies even today are not good enough to do away with business cycles entirely. Pump priming is desirable during recessions and thus easy fiscal-monetary policy mix is a good policy currently in operation in many countries.

Thus, to conclude, economic fluctuations have occurred, would continue to recur and they are not entirely bad. There are ups and downs in all walks of life and economic performance can not be an exception. There is nothing perfect in real life and so policies can not guarantee full freedom from fluctuations. Recessions provide opportunities to introspect, relax, learn the motivated to revolutionize macroeconomic theory and policy on experiencing the Great Depression? As also, Milton Friedman to counter the inadequacy of the Keynesian theory to account for the stagflation through his hypotheses of price expectations, natural rate of unemployment and policy lags. His ideas got the added support from Robert Lucas and others, through their advancement of the rational expectations' hypothesis. The new Keynesians accepted the rational expectations' theory and rationalized the wage-price rigidity hypothesis of the old Keynesian school. These, among others, have enriched our understanding of the economy and accordingly economic fluctuations are now better understood and managed than ever before. The discoveries of new products, new technologies and trends towards mergers and globalization, etc. have been inspired by the business cycles.

Deep or long recessions and unsustainable prosperity are of course, not good. The former brings undue hardship, resulting into both economic and social or psychological loss. The latter tends to raise the standard of living, which no one likes to reverse. Fortunately, atleast one of the three stabilizing policies analyzed above, is effective under any condition to atleast partially counter fluctuations. It is because of this that the world has not seen any deep recession since 1929-33 and one can safely state that such a great depression would never be there in future. Countries have faced the slow down but they have all been short-lived and relatively shallow. The credit for this goes squarely to the development in macroeconomics and its application by policy makers across the globe. These policies have been applied in the real world with varying successes. The lack of full success has been partly due to the inherent limitations of these policies and partly due to their poor applications. Needless to say, the international organizations, like the World Bank and IMF have helped the member nations to implement the effective counter cyclical policies, though the literature provides examples of their poor guidance or force as well. The policies do have side effects, some of which may be undesirable, but a judicious combination of the various tools can minimize the bad effects. For instance, a proper mix of an expansionary fiscal and an expansionary monetary policy would tend to raise output without raising interest rate. Also, if an expansionary fiscal or monetary policy were accompanied with a devaluation of the foreign exchange rate, we would have higher output without endangering the trade balance.

6.3 THEORIES TO EXPLAIN REGIONAL DIFFERENCES IN GROWTH

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Regional Disparities in Economic Growth

In India, regional imbalance has been one of the major concerns before policy makers and planners. There had been a huge gap between active and vibrant regions and hinterland during pre-independence period in terms of availability of facilities and this has resulted in the form of unequal levels of development both in terms of economic and human. After independence, reduction in inter-state disparities has been emphasized during successive Five Year Plans, but the menace continued unabated. For instance, the World Bank (2006) in its reported entitled, “India – Inclusive Growth and Service Delivery: Building of India’s Success” has observed sharp differentiation across states since the early 1990s reflects acceleration of growth in some states but deceleration in others. The report further adds that more worryingly, growth failed to pick up in states such as Bihar, Orissa and Uttar Pradesh that were initially poor to start with, with the result that the gap in performance between India’s rich and poor states widened dramatically during the 1990s. The World Bank (2008) again in its recent release “The Growth Report Strategies for Sustained Growth and Inclusive Development” has mentioned that disparity in income distribution in India has risen during 1993-2005 which is revealed by fact that Gini coefficient in this connection has risen from 0.3152 in 1993-94 to 0.3676 in 2004-05. The Draft Eleventh Five Year Plan (2007-2012, Vol. I), has also admitted that regional disparities have continued to grow and the gap have been accentuated as the benefits of economic growth have been largely confined to the better developed areas.

In this section, we shall discuss against this backdrop. In order to accomplish the task, inter-state disparity in total as well as per capita SDP for 20 major Indian states for the period 1980-2002 has been examined with the help of inequality indices that are based on properties of Lorenz curve, Atkinson’s social welfare function, Herfindahl’s concentration indices etc. Inter-state inequality trend has also been examined through ‘convergence hypothesis’ as β -convergence and σ -convergence. Empirical results revealed disparity among states in terms of total or per capita SDP has risen sharply as inequality indices like Gini, Theil’s index, RMD, Kakwani’s as well as Atkinson’s indices have shown surge, especially after the economic reforms of 1991.

The nexus in between and inequality has been debated extensively by the scholars in terms of theory as well as empirical investigators. For example, starting with the classical economists, Ricardo’s two-sector model which mainly concentrated on growth and distribution within agriculture and industry addressed the shares of rent and profits and growth process eventually approaching the steady state of zero growth due to diminishing returns in agriculture (Boyer, 1996). Karl Marx also believed that capitalist development would inherently result in uneven distribution of wealth and capitalist have an incentive for pushing wages to the subsistence level (Martin and Sunley, 1998; Dunford and Smith 2000). The neo-classical growth models for closed economies [Solow (1956, 1957, 1970), Cass (1965) and Koopmans (1965)] state that per capita growth rate tends to be inversely related to the starting level of output/income per head and if economies are similar in respect of preferences and technologies, then poor economies grow faster than rich ones. The neo-classicals, however, were more optimistic about market forces and postulated that regional inequality is a passing phase and that market forces would ensure that the returns to all factors of production would approach their marginal products (Smith, 1975). Neo-Keynesians such as Kalecki (1954, 71), Steindl (1952), Kaldor (1955-6, 60) and Pasinetti (1962, 77, 81)

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have explained the interrelationship between income distribution and economic growth. By and large, Neo-Keynesian growth models have concluded that reduction in concentration raises the real wage and provides a redistribution of income which leads to higher capacity utilization and higher rate of economic growth.

The link between inequality and average well-being for two-sector economy is known as Kuznet's hypothesis (1955, 1963) which maintains that given a two-sector economy with not too distinct degrees of sectoral mean incomes, a perennial shift of population from one sector to another will initially raise aggregate inequality and it will decrease at later stage. This formulation has been labelled as the "Inverted U" (I-U) hypothesis or Kuznet's cycle (Branlke, 1983). Regional concentration or diversification has also been examined through 'convergence hypothesis' which has primarily emerged due to seminal theoretical contributions on endogenous growth models by Romer (1986, 1987, 1990, 1992, 1993) and Lucas (1988). The hypothesis asserts that differences in contemporaneous per capita income between any pair of regions will be transitory so long as the two regions contain identical technologies, preferences and population growth (Bernard and Durlauf, 1966). The bulk of the new theoretical literature on growth and inequality has focused on models which generate divergence across nations. The theoretical as well as empirical presentation by Barro, Robert J. (1990, 1991, 1999), Borro, Robert J. and Jong-Wha Lee (1994), Barro, Robert J., N. Gregory Mankiw, and Xavier Sala-i-Martin (1991, 1992a, 1992b, 1992c, 1997, 2007) etc. deal with process of convergence or divergence at national as well as international level.

In India, inter-state or region inequality has been one of the major concerns before policy makers and planners. There had been a huge gap between active and vibrant region and the hinterland during the pre-independence period in terms of availability of facilities and this manifested itself in the form of unequal levels of development both in terms of economic and human. After independence, reduction in inter-state or region disparities has been emphasized during the successive five year plans. Apart from that, the issue has been examined, in depth, by the scholars like Chattopadhyaya, R.N. and M.N. Pal (1972), Rao, S.K. (1973), Nair, K.R.G. (1973, 1982), Sampat, R.K. (1977), Mohapatra, A.C. (1978), Mathur, Ashok (1983, 1987, 1992), Datt and Ravallion (1993, 1998, 2002), Dreeze and Sen (1995), Dreeze and Srinivasan (1996), Marie-Ange Veganzones (1998), Rao etc. For instance, according to Dreze and Sen (1995), enormous variations in regional experiences and achievements coupled with the even sharper contrasts in some fields of social development have resulted in remarkable internal diversities in India. Furthermore, the long-term progress in raising rural living standards has been diverse across Indian states (Datt and Ravallion, 1998). Such disparities are responsible for various states having different capacities for poverty reduction (Datt and Ravallion, 2002). Similarly, Rajarshi Majumdar (2004) in his paper entitled "Human Development in India: Regional Pattern and Policy Issues" has explained that states like Kerala, Maharashtra and Himachal Pradesh put up consistently good performance regarding social and human development indicators. However, Kerala has not been able to convert its social development into economic progress. On the other hand, Gujarat, in spite of its having low Human Development (HD) ranks, have consistently good ranking in per capita Net State Domestic Product (PCNSDP).

The National Human Development Report 2001 for India reveals considerable differences in human development among Indian states during 1981-2001. The report notes that in the early eighties, states like Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan and Orissa had HDI close to just half that of Kerala's. The inter-state differences in human poverty are quite striking and report notes that while there have been improvements in the

human development index and human poverty index during the 1980s, the inter-state disparities and the relative position of the states has practically remained the same. Facts show that inter-state disparity as measured in terms of standard deviation in human development index stood 0.083 for 1981 which further increased and stood at 0.100 in 1991 [Tenth Five Year Plan (2002-2007), Vol. III]. The World Bank (2006) in its report entitled, "India – Inclusive Growth and Service Delivery: Building on India's Success" has observed sharp differentiation across states since the early 1990s reflects acceleration of growth in some states but deceleration in others. The report further adds that more worryingly, growth failed to pick up in states such as Bihar, Orissa and Uttar Pradesh that were initially poor to start with, with the result that the gap in performance between India's rich and poor states widened dramatically during the 1990s. An approach to the 11th Five Year Plan (Planning Commission, Government of India, 2006) has also acknowledged regional backwardness as an issue of concern. The differences across states have long been a cause of concern and therefore, we cannot let large parts of the country be trapped in a prison of discontent, injustice and frustration that will only breed extremism. The World Bank (2008) in its recent release "The Growth Report Strategies for Sustained Growth and Inclusive Development" has mentioned that disparity in income distribution in India has risen during 1993-2005.

According to the report, Gini coefficient stood at 0.3152 during 1993-94 which increased later on and was recorded at 0.3676 in the year 2004-05.

The data on State Domestic Product (Total as well as Per Capita) for twenty major Indian States has been taken for the period 1980-2002. Inter-state disparity in SDP has been examined with the help of several inequality indices that are based on properties of Lorenz Curve, Atkinson's Social Welfare Function, Herfindahl's indices followed by traditional measures like, CV and Log-normal Distribution. In addition, 'convergence hypothesis' as σ -convergence and β -convergence has been tested to detect inter-state disparities during the period 1980-2002. Section II deals with data and methodology (technical note) while empirical results are contained in Section III. Concluding remarks and policy observations are contained in Section IV.

Data and Methodology

The present study attempts to examine inter-state disparities in terms of state domestic product (SDP) and per capita state domestic product (PC SDP) over the period 1980-81 to 2001-02. Significant to mention that state income and per capita income have their limitations in any study of inter-state comparisons (Bhattacharya and Sakthivel, 2004). Inter-state comparison of SDP is also hampered by the quality of statistics provided by different states and the CSO has revised the base year from 1980-81 to 1993-94. The modifications in the new GDP and SDP series have been done in terms of price, production boundaries for many sectors etc. and hence, any comparison of inter-state income levels and growth rate based on 1980-81 base series upto 1993-94 base series may not yield the correct picture. In view of this, an important task before analyzing the trends in income disparities is to evolve a comparable income series with a single base year. This has been done through the technique of base shifting and SDP data onwards 1998-99 up to 2001-02 at the base 1993-94 has been converted at the base 1980-81 in order to prepare inter-state SDP from 1980-81 to 2001-02 at the base 1980-81. In the present paper, Net State Domestic Product (at current prices – base 1980-81) and per capita Net State Domestic Product (at current prices – base 1980-81) for twenty major Indian states have been taken for the period 1980-81 to 2001-02.

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Measures of Income Inequality

There exists plethora of literature on measures of income and wealth inequality. The conventional inequality measures (Atkinson 1970, 83) that are most frequently used in empirical research are:

$$(a) \text{ the coefficient of variation, i.e., } \sigma/\mu \quad \dots (1)$$

$$(b) \text{ the standard deviation of logarithms, i.e., } \int_0^Y \{\log(y/\mu)\}^2 f(y) \quad \dots (2)$$

where Y , σ and μ are in usual notations.

Dalton's Principle of transfer (1920) has established that measure of inequality should increase when income is transferred from a poor person to a richer person. Chapernowne (1974) argues that coefficient of variation is most sensitive to inequality of extreme income that procedures a flat response to the transfers. The variance of logarithms of income may be interpreted as a measure of concentration of incomes since it can be estimated through the framework of Lorenz's measures of concentration.

An attractive way to measure income inequality without imposing a functional form of statistical distribution on income graduation is to use Lorenz-based inequality measures. In the Lorenz diagram (Fig. 1), the proportion of income receivers having income less than x is measured along X axis and the proportion of total income accruing to the same income receivers along the Y axis. The points plotted for the various values of x trace out a curve below the line sloping 45° from the curve explains the relation between the distribution function $F(x)$ and the first-moment distribution function $F_1(x)$, given by

$$F_1(x) = \int_0^x t dF(t) / \int_0^\infty t dF(t) \quad \dots (3)$$

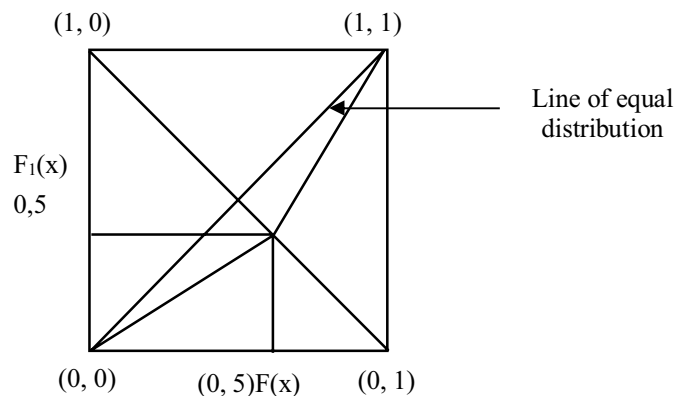
Tax Proposals

Fig. 6.1: Lorenz Diagram

It is obvious from the Lorenz diagram that the measure of income concentration is the ratio of the shaded area between the Lorenz curve and the 45° line. The income concentration (L) for the log normal hypothesis is defined as:

$$L = 1 - 2 \int_0^\infty F_1(x) dF(x) \quad \dots (4)$$

Substituting the value of $F_1(X)$ in Equation (4), we get,

$$L = [2N \{\sigma^2/2, 1\} - 1] \quad \dots (5)$$

Obviously, the measure of concentration (L) is monotonically related to value of σ^2 and thus the parameter σ^2 (variance of logarithms of the income) may well be interpreted as a measure of income inequality.

The Lorenz curve may again be generated by defining the income earner units, say, quintile shares where q_i , $i = 1, 2, \dots, n$ reveals the share of i th income earner. Let, incomes are arranged in ascending order, i.e.,

$$0 \leq q_1 \leq q_2 \dots \leq q_i \dots \leq q_n \leq 1 \quad \dots (6)$$

From the order of the incomes as shown by Equation (6), several well-known income inequality measures may be derived. For example, the Gini (1912) measure of income inequality is given by the order of the incomes by Equation (6), several well-known

$$G = 1 - 1/n - 2/n \cdot \sum_{i=1}^{n-1} (n-i) q_i \quad \dots (7)$$

and the relative mean deviation

$$R = 1/2 \cdot n/n - 1 \left[\sum_{i=1}^n q_i - 1/n \right] \quad \dots (8)$$

On contrary, the Gini coefficient suffer with serious drawbacks, such as the simple aging of a populations will raise income inequality. Gini coefficient is also insensitivity to non-money components and differential price indices between states which exaggerate income inequality in rural areas. The Gini ratio measures a property of distribution inequality that varies in direct proportion to the area of the closed geometric representation as shown in Fig. 6.1.

Results and Interpretation: In order to study inter-state disparities in economic growth, total as well as per capita State Domestic Product (SDP) at current prices for the period 1980-2002 has been taken. State income are available from 1980-81 to 1998-99 at 1980-81 base and later on it is available at 1993-94 base year. Thus, in order to evolve a comparable SDP with a single base year, technique of base shifting has been applied for SDP data onwards upto 1998-99 upto 2001-02 and SDP data for this period at base 1993-94 has been converted at the base 1980-81 to prepare inter-state SDP from 1980-81 to 2001-02 at the base of 1980-81.

Average annual growth in total SDP for 1980-02 has been examined in the semi-log model with the help of slope-dummy and intercept-dummy technique with dummy variable for year 1991, in order to detect any Kink, if any, in per annum growth in SDP around year 1991, i.e., the period when economic reforms were introduced in India. Actually, per annum growth in total SDP has fallen for 20 states during reform period (1990-02). Disparity in total SDP during this period has widen as per annum growth for relatively developed states like Gujarat (11.6 percent), Haryana (10.5 percent) and Maharashtra (10.9 percent) has been found higher than poor states like Bihar (7.4 percent), Madhya Pradesh (9.4 percent), Orissa (8.7 percent) and Uttar Pradesh (8.8 percent). Likewise, during reform period, per annum growth in total SDP were found lower for hill states as Assam (7.6 percent), Himachal Pradesh (7.2 percent), Jammu & Kashmir (7.4 percent), Manipur (9.9 percent) and Tripura (7.8 percent) as compared to developed states like Gujarat, Haryana and Maharashtra. Widening economic disparities among states in terms of total as well as per capita SDP is corroborated through enhancement in inequality indices over the period. Facts reveal that Gini index, RMD index, Theil's index and Kakwani's index for total SDP during 1980-81 stood at 0.4409, 0.3372, 0.1147 and 0.1804 respectively and they remained almost stagnant

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upto 1990-91. But later on, these indices have risen and were recorded at 0.4558, 0.3459, 0.1237 and 0.1929 respectively during 2001-02. Similarly, for per capita SDP, Gini index, RMD-index, Theil's index and Kakwani's index stood at 0.1493, 0.1177, 0.0124 and 0.0215 respectively in 1980-81 and with mild enhancement these indices stood at 0.1596, 0.1164, 0.0144 and 0.0248 respectively in 1990-91. Later on, a surge was found among these inequality indices and finally these stood at 0.2171, 0.1660, 0.0249 and 0.0429 respectively in 2001-02. Inequality indices pertaining to total as well as per capita SDP for 1980-2002 reveal the harsh inequalities at aggregate as well as per capita level have increased with is evident in increasing values of inequality indices as mentioned above. These inequalities have been much more prominent during the reform (1991-2002) period. Different measures of convergence/divergence, for instance σ -convergence and β -convergence, have also been estimated for the period 1980-2002 in order to examine the trends and issues pertaining to inter-state income disparities among twenty major Indian states. The estimated beta-coefficient are found positive and significant for all three periods, i.e., 1980-81 to 1990-91, 1991-92 to 2001-02 and 1980-81 to 2001-02. Beta coefficients for reform period (1991-2002) as compared to pre-reform (1980-91) period suggest that economic reforms have resulted in widening of inter-state disparities. As β -coefficient for total as well as per capita SDP were found negative (insignificant) during pre-reform (1980-1991) period indicating weak convergence in state income during this period. However, Beta coefficient were found positive and significant for total as well as per capita SDP during reform (1991-2002) period revealing the fact that divergence in state income (total/per capita) resulting in increasing inter-state disparities has occurred after the reforms of 1991 have been introduced.

Thus, to conclude, the empirical results pertaining to interstate disparity in terms of total as well as per capita for 20 major Indian states during the period 1980-2002 are quite pathetic and alarming. Inequality indices for total SDP in terms of Gini ratio, RMD, Theil's index and Kakwani index stood at 0.4409, 0.3372, 0.1147 and 0.1804 respectively during 1980-81 and these indices have risen, however moderately, and stood at 0.4558, 0.3459, 0.1237 and 0.1929 respectively in 2001-02. These indices for per capita SDP were noted at 0.1493, 0.1177, 0.0124 and 0.0215 respectively during 1980-81 and these indices have risen drastically later on and were observed at 0.2171, 0.1660, 0.0249 and 0.0429 in the year 2001-02. Widening gap in terms of income among rich and poor states, especially after 1991 has also been established through empirical results based on β -convergence and σ -convergence. This is indeed an alarming situation and a potential threat for stability of a federation like India. Redressal of horizontal economic disparity happens to be an important objective in any scheme of federal devolution of funds among federating states. In India, this task is done by the Planning Commission and Finance Commission. The Thirteenth Finance Commission (2010-15) should assign due weight age to this factor in its scheme of devolution of taxes or grants for states such that inter-state economic disparities may be rectified effectively.

6.4 FISCAL PROGRAMMES

Fiscal policy deals with the taxation and expenditure decisions of the government. Monetary policy deals with the supply of money in the economy and the rate of interest. These are the main policy approaches used by economic managers to steer the broad aspects of the economy. In most modern economies, the government deals with fiscal policy while the central bank is responsible for monetary policy. Fiscal policy is composed of several parts. These include tax policy, expenditure policy, investment or disinvestment strategies and debt or surplus management. Fiscal policy is an important constituent of the overall economic

framework of a country and is therefore intimately linked with its general economic policy strategy.

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Fiscal policy also feeds into economic trends and influences monetary policy. When the government receives more than it spends, it has a surplus. If the government spends more than it receives, it runs a deficit. To meet the additional expenditures, it needs to borrow from domestic or foreign sources, draw upon its foreign exchange reserves or print an equivalent amount of money. This tends to influence other economic variables. On a broad generalization, excessive printing of money leads to inflation. If the government borrows too much from abroad, it leads to a debt crisis. If it draws down on its foreign exchange reserves, a balance of payments crisis may arise. Excessive domestic borrowing by the government may lead to higher real interest rates and the domestic private sector being unable to access funds resulting in the crowding out of private investment. Sometimes, a combination of these can occur. In any case, the impact of a large deficit on long-run growth and economic well-being is negative. Therefore, there is broad agreement that it is not prudent for a government to run an unduly large deficit. However, in case of developing countries, where the need for infrastructure and social investments may be substantial, it is sometimes argued that running surpluses at the cost of long-term growth might also not be wise. The challenge then for most developing country governments is to meet infrastructure and social needs while managing the government's finances in a way that the deficit or the accumulating debt burden is not too great.

Here, we shall study the trajectory of India's fiscal policy with particular focus on historical trends, the development of fiscal discipline frameworks, the recent experience of fiscal response to the global financial crisis and subsequent return to a fiscal consolidation path. The initial years of India's planned development strategy were characterized by a conservative fiscal policy whereby deficits were kept under control. The tax system was geared to transfer resources from the private sector to fund the large public sector driven industrialization process and also cover social welfare schemes. Indirect taxes were a larger source of revenue than direct taxes. However, growth was anaemic and the system was prone to inefficiencies. In the 1980s, some attempts were made to reform particular sectors and make some changes in the tax system. But the public debt increased, as did the fiscal deficit. Triggered by higher oil prices and political uncertainties, the balance of payments crisis of 1991 led to economic liberalization. The reform of the tax system commenced with direct taxes increasing their share in comparison to indirect taxes. The fiscal deficit was brought under control. When the deficit and debt situation again threatened to go out of control in the early 2000s, fiscal discipline legalizations were instituted at the central level and in most states. The deficit was brought under control and by 2007-08 a benign macro-fiscal situation with high growth and moderate inflation prevailed. The global financial crisis tested the fiscal policy framework and it responded with counter-cyclical measures including tax cuts and increases in expenditures. The post-crisis recovery of the Indian economy is witnessing a correction of the fiscal policy path towards a regime of prudence. In the future, the focus would probably be on bringing in new tax reforms and better targeting of social expenditures.

Basic Concepts

At the outset, it is important to clarify certain basic concepts. The most elementary is perhaps the difference between revenue and capital flows, be they receipts or expenditures. While there are various complex legal and formal definitions for these ideas, presenting some simplified and stylized conceptual clarifications is deemed appropriate. A spending item is a capital expenditure if it relates to the creation of an asset that is likely to last for a

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considerable period of time and includes loan disbursements. Such expenditures are generally not routine in nature. By the same logic, a capital receipt arises from the liquidation of an asset including the sale of government shares in public sector companies (disinvestments), the return of funds given on loan or the receipt of a loan. This again usually arises from a comparatively irregular event and is not routine. In contrast, revenue expenditures are fairly regular and generally intended to meet certain routine requirements like salaries, pensions, subsidies, interest payments, and the like. Revenue receipts represent regular earnings, for instance, tax receipts and non-tax revenues including from sale of telecom spectrums.

There are various ways to represent and interpret a government's deficit. The simplest is the revenue deficit which is just the difference between revenue receipts and revenue expenditures.

Revenue Deficit = Revenue Expenditure – Revenue Receipts (i.e., Tax + Non-tax Revenue)

A more comprehensive indicator of the government's deficit is the fiscal deficit. This is the sum of revenue and capital expenditure less all revenue and capital receipts other than loans taken. This gives a more holistic view of the government's funding situation since it gives the difference between all receipts and expenditures other than loans taken to meet such expenditures.

Fiscal Deficit = Total Expenditure (i.e., Revenue Expenditure + Capital Expenditure) – (Revenue Receipts + Recoveries of Loans + Other Capital Receipts (i.e., all Revenue and Capital Receipts other than loans taken))

The gross fiscal deficit (GFD) of government is the excess of its total expenditure, current and capital, including loans net of recovery, over revenue receipts (including external grants) and non-debt capital receipts. The net fiscal deficit is the gross fiscal deficit reduced by net lending by government. The gross primary deficit is the GFD less interest payments while the primary revenue deficit is the revenue deficit less interest payments.

India's Fiscal Policy Architecture

The Indian Constitution provides the overarching framework for the country's fiscal policy. India has a federal form of government with taxing powers and spending responsibilities being divided between the Central and the State Governments according to the Constitution. There is also a third tier of government at the local level. Since the taxing abilities of the states are not necessarily commensurate with their spending responsibilities, some of the centre's revenues need to be assigned to the state governments. To provide the basis for this assignment and give medium term guidance on fiscal matters, the Constitution provides for the formation of a Finance Commission (FC) every five years. Based on the report of the FC, the central taxes are devolved to the state governments. The Constitution also provides that for every financial year, the government shall place before the legislature a statement of its proposed taxing and spending provisions for legislative debate and approval. This is referred to as the Budget. The central and the state governments each have their own budgets.

The central government is responsible for issues that usually concern the country as a whole like national defence, foreign policy, railways, national highways, shipping, airways, post and telegraphs, foreign trade and banking. The state governments are responsible for other items including, law and order, agriculture, fisheries, water supply and irrigation, and public health. Some items for which responsibility vests in both the Centre and the States

include forests, economic and social planning, education, trade unions and industrial disputes, price control and electricity. There is now increasing devolution of some powers to local governments at the city, town and village levels. The taxing powers of the central government encompass taxes on income (except agricultural income), excise on goods produced (other than alcohol), customs duties, and inter-state sale of goods. The state governments are vested with the power to tax agricultural income, land and buildings, sale of goods (other than inter-state), and excise on alcohol.

Besides the annual budgetary process, since 1950, India has followed a system of five year plans for ensuring long-term economic objectives. This process is steered by the Planning Commission for which there is no specific provision in the Constitution. The main fiscal impact of the planning process is the division of expenditures into plan and non-plan components. The plan components relate to items dealing with long-term socio-economic goals as determined by the ongoing plan process. They often relate to specific schemes and projects. Furthermore, they are usually routed through central ministries to state governments for achieving certain desired objectives. These funds are generally in addition to the assignment of central taxes as determined by the Finance Commissions. In some cases, the state governments also contribute their own funds to the schemes. Non-plan expenditures broadly relate to routine expenditures of the government for administration, salaries, and the like.

While these institutional arrangements initially appeared adequate for driving the development agenda, the sharp deterioration of the fiscal situation in the 1980s resulted in the balance of payments crisis of 1991, which would be discussed later. Following economic liberalization in 1991, when the fiscal deficit and debt situation again seemed to head towards unsustainable levels around 2000, a new fiscal discipline framework was instituted. At the central level, this framework was initiated in 2003 when the Parliament passed the Fiscal Responsibility and Budget Management Act (FRBMA).

Taxes are the main source of government revenues. Direct taxes are so named since they are charged upon and collected directly from the person or organization that ultimately pays the tax (in a legal sense). Taxes on personal and corporate incomes, personal wealth and professions are direct taxes. In India, the main direct taxes at the central level are the personal and corporate income tax. Both are till date levied through the same piece of legislation, the Income Tax Act of 1961. Income taxes are levied on various heads of income, namely, incomes from business and professions, salaries, house property, capital gains and other sources (like interest and dividends). Other direct taxes include the wealth tax and the securities transactions tax. Some other forms of direct taxation that existed in India from time to time but were removed as part of various reforms include the estate duty, gift tax, expenditure tax and fringe benefits tax. The estate duty was levied on the estate of a deceased person. The fringe benefits tax was charged on employers on the value of in-kind non-cash benefits or perquisites received by employees from their employers. Such perquisites are now largely taxed directly in the hands of employees and added to their personal income tax. Some states charge a tax on professions. Most local governments also charge property owners a tax on land and buildings.

Indirect taxes are charged and collected from persons other than those who finally end up paying the tax. For instance, a tax on sale of goods is collected by the seller from the buyer. The legal responsibility of paying the tax to government lies with the seller, but the tax is paid by the buyer. The current central level indirect taxes are the central excise (a tax on manufactured goods), the service tax, the customs duty (a tax on imports) and the central

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sales tax on inter-state sale of goods. The main state level indirect tax is the post-manufacturing (that is wholesale and retail levels) sales tax (now largely a value added tax with intra-state tax credit). The complications and economic inefficiencies of this multiple cascading taxation across the economic value chain (necessitated by the constitutional assignment of taxing powers) are discussed later in the context of the proposed Goods and Services Tax (GST).

Evolution of Indian Fiscal Policy till 1991

India commenced on the path of planned development with the setting up of the Planning Commission in 1950. That was also the year when the country adopted a Federal Constitution with strong unitary features giving the central government primacy in terms of planning for economic development. The subsequent planning process laid emphasis on strengthening public sector enterprises as a means to achieve economic growth and industrial development. The resulting economic framework imposed administrative controls on various industries and a system of licensing and quotas for private industries. Consequently, the main role of fiscal policy was to transfer private savings to cater to the growing consumption and investment needs of the public sector. Other goals included the reduction of income and wealth inequalities through taxes and transfers, encouraging balanced regional development, fostering small-scale industries and sometimes influencing the trends in economic activities towards desired goals.

In terms of tax policy, this meant that both direct and indirect taxes were focussed on extracting revenues from the private sector to fund the public sector and achieve redistributive goals. The combined centre and state tax revenue to GDP ratio increased from 6.3 percent in 1950-51 to 16.1 percent in 1987-88. For the central government, this ratio was 4.1 percent of GDP in 1950-51 with the larger share coming from indirect taxes at 2.3 percent of GDP and direct taxes at 1.8 percent of GDP. Given their low direct tax levers, the states had 0.6 percent of GDP as direct taxes and 1.7 percent of GDP as indirect taxes in 1950-51.

The government authorized a comprehensive review of the tax system culminating in the Taxation Enquiry Commission Report of 1953. However, the government then invited the British economist Nicholas Kaldor to examine the possibility of reforming the tax system. Kaldor found the system inefficient and inequitable given the narrow tax base and inadequate reporting of property income and taxation. He also found the maximum marginal income tax rate at 92 percent to be too high and suggested it be reduced to 45 percent. In view of his recommendations, the government revived capital gains taxation, brought in a gift tax, a wealth tax and an expenditure tax (which was not continued due to administrative complexities).

Despite Kaldor's recommendations, income and corporate taxes at the highest marginal rate continued to be extraordinarily high. In 1973-74, the maximum rate taking into account the surcharge was 97.5 percent for personal income above ₹ 0.2 million. The system was also complex with as many as eleven tax brackets. The corporate income tax was differential for widely held and closely held companies with the tax rate varying from 45 to 65 percent for some widely held companies. Though the statutory tax rates were high, given a large number of special allowances and depreciation, effective tax rates were much lower. The Direct Taxes Enquiry Committee of 1971 found that the high tax rates encouraged tax evasion. Following its recommendations in 1974-75, the personal income tax rate was brought down to 77 percent but the wealth tax rate was increased. The next major simplification was in

1985-86 when the number of tax brackets was reduced from eight to four and the highest income tax rate was brought down to 50 percent.

In indirect taxes, a major component was the central excise duty. This was initially used to tax raw materials and intermediate goods and not final consumer goods. But by 1975-76, it was extended to cover all manufactured goods. The excise duty structure at this time was complicated and tended to distort economic decisions. Some commodities had specific duties while others had ad valorem rates. The tax also had a major cascading effect since it was imposed not just on final consumer goods but also on inputs and capital goods. In effect, the tax on the input was again taxed at the next point of manufacture resulting in double taxation of the input. Considering that the states were separately imposing sales tax at the post-manufacturing wholesale and retail levels, this cascading impact was considerable. The Indirect Tax Enquiry Report of 1977 recommended introduction of input tax credits to convert the cascading manufacturing tax into a manufacturing value added tax (MANVAT). Instead, the modified value added tax (MODVAT) was introduced in a phased manner from 1986 covering only selected commodities.

The other main central indirect tax is the customs duty. Given that imports into India were restricted, this was not a very large source of revenue. The tariffs were high and differentiated. Items at later stages of production like finished goods were taxed at higher rates than those at earlier stages, like raw materials. Rates also differed on the basis of perceived income elasticities with necessities taxed at lower rates than luxury goods. In 1985-86, the government presented its Long-term Fiscal Policy stressing on the need to reduce tariffs, have fewer rates and eventually remove quantitative limits on imports. Some reforms were attempted but due to revenue raising considerations, the tariffs in terms of the weighted average rate increased from 38 percent in 1980-81 to 87 percent in 1989-90. By 1990-91, the tariff structure had a range of 0 to 400 percent with over 10 percent of imports subjected to tariffs of 120 percent or more. Further complications arose from exemptions granted outside the budgetary process.

In 1970-71, direct taxes contributed to around 16 percent of the central government's revenues, indirect taxes about 58 percent and the remaining 26 percent came from non-tax revenues. By 1990-91, the share of indirect taxes had increased to 65 percent, direct taxes shrank to 13 percent and non-tax revenues were at 22 percent. India's expenditure norms remained conservative till the 1980s. From 1973-74 to 1978-79 the central government continuously ran revenue surpluses. Its gross fiscal deficit also showed a slow growth with certain episodes of downward movements. The state governments also ran revenue surpluses from 1974-75 to 1986-87, barring only 1984-85. Thereafter, limited reforms in specific areas including trade liberalization, export promotion and investment in modern technologies were accompanied by increased expenditures financed by domestic and foreign borrowings. The central revenue deficit climbed from 1.4 percent of GDP in 1980-81 to 2.44 percent of GDP by 1989-90. Across the same period, the centre's gross fiscal deficit (GFD) climbed from 5.71 percent to 7.31 percent of GDP. Though the external liabilities of the centre fell from 7.16 percent of GDP in 1982-83 to 5.53 percent of GDP by 1990-91, in absolute terms, the liabilities were large. Across the same period, the total liabilities of the centre and the states increased from 51.43 percent of GDP to 64.75 percent of GDP.

This came at the cost of social and capital expenditures. The interest component of aggregate central and state government disbursements reflects this quite clearly. The capital disbursements decreased from around 30 percent in 1980-81 to about 20 percent by 1990-91. In contrast, the interest component increased from around 8 percent to about 15 percent

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across the same period. Within revenue expenditures, in 1970-71, defence expenditures had the highest share of 34 percent, interest component was 19 percent while subsidies were only 3 percent. However, by 1990-91, the largest component was the interest share of 29 percent with subsidies constituting 17 percent and defence only 15 percent. Therefore, besides the burden of servicing the public debt, the subsidy burden was also quite great.

While India's external debt and expenditure patterns were heading for unsustainable levels, the proximate causes of the balance of payments crisis came from certain unforeseen external and domestic political events. The First Gulf War caused a spike in oil prices leading to a sharp increase in the government's fuel subsidy burden. Furthermore, the assassination of former Prime Minister Rajiv Gandhi increased political uncertainties leading to the withdrawal of some foreign funds. The subsequent economic reforms changed the Indian economy forever.

Liberalization, Growth, Inclusion and Fiscal Consolidation (1991-2008)

Following the balance of payments crisis of 1991, the government commenced on a path of economic liberalization whereby the economy was opened up to foreign investment and trade, the private sector was encouraged and the system of quotas and licences was dismantled. Fiscal policy was reoriented to cohere with these changes.

The Tax Reforms Committee provided a blueprint for reforming both direct and indirect taxes. Its main strategy was to reduce the proportion of trade taxes in total tax revenue, increase the share of domestic consumption taxes by converting the excise into a VAT and enhance the contribution of direct taxes to total revenue. It recommended reducing the rates of all major taxes, minimizing exemptions and deductions, simplifying laws and procedures, improving tax administration and increasing computerization and information system modernization.

As a part of the subsequent direct tax reforms, the personal income tax brackets were reduced to three with rates of 20, 30 and 40 percent in 1992-93. Financial assets were removed from the imposition of wealth tax and the maximum rate of wealth tax was reduced to 1 percent. Personal income tax rates were reduced again to 10, 20, and 30 percent in 1997-98. The rates have largely remained the same since with the exemption limit being increased and slab structure raised from time to time. A subsequent 2 percent surcharge to fund education was later made applicable to all taxes. The basic corporate tax rate was reduced to 50 percent and the rates for different closely held companies made uniform at 55 percent. In 1993-94, the distinction between the closely held and the widely held companies was removed and the uniform tax rate was brought down to 40 percent. The rate was further reduced to 35 percent with a 10 percent tax on distributed dividends in 1997-98.

Despite these reforms, the tax system continued to have preferential exemptions and deductions as tax incentives for various socio-economic goals including location of industries in backward areas, export promotion and technology development. This led to the phenomenon of zero-tax companies whereby imaginative arrangements were used to leverage all these tax incentives with an intent to minimize tax liabilities. To counter this trend, the Minimum Alternative Tax (MAT) was introduced in 1996-97. It required a company to pay a minimum of 30 percent of book profits as tax. Further attempts to expand the tax base and increase revenues were the introduction of the securities transaction tax (STT) in 2004 and the fringe benefit tax (FBT) in the budget of 2005-06.

In indirect taxes, the MODVAT credit system for excise was expanded to cover most commodities and provide a comprehensive credit system by 1996-97. The eleven rates were

merged into three with a few luxury items subject to additional non-rebatable tax in 1999-2000. In 2000-01, the three rates were merged in to a single rate and renamed as central VAT (CENVAT). There remained three additional excises of 8, 16 and 24 percent. In case of custom duties, in 1991-92, all duties on non-agriculture goods that were above 150 percent were brought down to this rate. The peak rate was brought down to 40 percent in 1997-98, 30 percent in 2002-03, 25 percent in 2003-04, and 15 percent in 2005-06. The number of major duty rates was also brought down from 22 in 1990-91 to 4 in 2003-04. These four rates covered almost 90 percent of customs collected from items. This period also saw the introduction of the service tax in 1994-95, which was subsequently expanded to cover more and more services. Given that the Indian economy was having an increasingly large service component, this increasingly became a major source of revenue. Eventually, provisions were made for allowing input tax credits for both goods and services at the central indirect tax level.

Despite the reforms in central taxes, even after the economic reforms of 1991, state government tax reforms were inadequate and sporadic. A major move in this direction was the co-ordinated simplification of the state sales tax system in 1999. This eventually led to the introduction of a VAT in 21 states in 2005. The value added tax gives credit to taxes paid on inputs and provides relief from cascading. Implemented at the retail level, this replaced the cascading sales tax providing great relief to consumers and traders alike while enhancing the revenues of the state government. The administrative design of the VAT ensures reporting of inputs and outputs resulting in substantial reduction in tax evasion. The basic features of the tax include two rates of 4 percent for common consumption commodities and inputs and 12.5 percent for the others. Some essential items are exempted and precious metals are taxed at 1 percent. The credit system covers inputs and purchases as also capital goods for manufacturers as well as dealers. Credit for capital goods taxes can be availed over three years of sales. The tax credit operates fully only for intra-state sales. This is a major hindrance to the formation of a smooth nationwide market and is to be addressed by the proposed Goods and Services Tax (GST).

In consonance with the tax reform plans, the sources of central government revenue shifted from indirect taxes towards direct taxes. In 1995-96, about 54 percent of revenues came from indirect taxes while around 20 percent were from direct taxes. In 2000-01, the share of indirect taxes had gone down dramatically to around 45 percent while the contribution from direct taxes had increased to about 26 percent. By 2005-06, indirect taxes accounted for approximately 43 percent while the direct taxes share was about 35 percent. The post-1991 expenditure strategy focussed on reducing subsidies and cutting down on non-capital expenditures. However, the large debt burden meant that the interest component would take a long time to ebb. In 1995-96, of the central government's revenue expenditures, 9 percent went to subsidies, 13 percent to defence and 36 percent to interest.

Five years later in 2000-01, defence and interest remained at 13 percent and 36 percent, respectively, while subsidies increased slightly to 10 percent. This reveals that the composition of government expenditure generally does not change very fast. By 2005-06, the interest component had come down to 30 percent and defence and subsidies each took up 11 percent. As a component of aggregate disbursements of the central and state governments, the interest component continued to rise till around 2002-03 and then started to decline. Capital disbursements showed just the opposite trend falling till around 2002-03 and then rising till 2007-08.

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The rising revenues from tax administration reforms and expenditure control resulted in the deficits being brought under control. The central government's revenue deficit went down to 2.37 percent of GDP in 1996-97 while the GFD was 4.84 percent. The government was also more prudent about its external debt. The debt to GDP ratio went down to 4.3 percent of GDP in 1995-96 and reached a further low point of 2.99 percent in 1999-00. However, government debt and fiscal discipline again seemed to give way in the early 2000s. The central government's revenue deficit climbed up to 4.4 percent of GDP in 2002-03 while the GFD was at 5.91 percent of GDP. By 2003-04, the combined liabilities of the centre and the states were up at 81.09 percent of GDP from 70.59 percent in 2000-01. The external liabilities were, however, kept under control at only 1.67 percent of GDP in 2003-04.

It was obvious that a new fiscal discipline framework was urgently required. After around three years of discussions, the FRBMA was adopted in 2003. This Act gave a medium-term target for balancing current revenues and expenditures and set overall limits to the fiscal deficit at 3 percent of GDP to be achieved according to a phased deficit reduction roadmap. The FRBMA enhanced budgetary transparency by requiring the government to place before the Parliament on an annual basis reports related to its economic assessments, taxation and expenditure strategy and three-year rolling targets for the revenue and fiscal balance. It also required quarterly progress reviews to be placed in Parliament. A large number of state governments also brought out their own fiscal discipline legislations.

These fiscal discipline legislations seemed to have had good impact at both the central and state levels. The year before the global financial crisis in 2007-08, the central government's revenue deficit came down to 1.06 percent of GDP while the GFD was 3.33 percent. The state governments achieved a revenue surplus of 0.58 percent of GDP and a GFD of 1.81 percent of GDP by 2006-07. Even in the year of the crisis, in 2008-09, they had a small revenue surplus of 0.19 percent of GDP and a GFD of 3.2 percent of GDP. This fiscal discipline fed into other economic variables in a positive manner. The aggregate disbursements of the central and state governments showed an increase in capital outlays from 11.87 percent in 2002-03 to 18.59 percent in 2007-08. Inflation was moderate and growth was buoyant at 9.6 percent in 2006-07. This benign macroeconomic environment was disturbed by the global financial crisis.

Crisis and Return to Fiscal Consolidation: The Maturing of Indian Fiscal Policy

The global financial crisis that erupted around September 2008 saw Indian fiscal policy being tested to its limits. The policy makers had to grapple with the impact of the crisis that was affecting the Indian economy through three channels: contagion risks to the financial sector; the negative impact on exports; and the effect on exchange rates. Somewhat serendipitously, the government already had an expansionary fiscal stance in view of a rural farm loan waiver scheme, the expansion of social security schemes under the National Rural Employment Guarantee Act (NREGA) and the implementation of revised salaries and compensations for the central public servants as per the recommendations of the Sixth Pay Commission. Furthermore, the parliamentary elections of 2008 also resulted in further government expenditures.

As the crisis unfolded, the government activated a series of stimulus packages on 7th December 2008, 2nd January 2009 and 24th February 2009. Actions included an overall central excise duty cut of 4 percent, ramping up additional plan expenditure of about ₹ 200 billion, further state government borrowings for planned expenditure amounting to around

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₹ 300 billion, interest subsidies for export finance to support certain export oriented industries, a further 2 percent reduction of central excise duties and service tax for export industries (that is a total 6 percent central excise reduction). The impact of these measures is estimated to be around 1.8 percent of GDP in 2008-09. If the increase in public expenditure across the budgets of 2007-08 and 2008-09 is taken together, it amounted to about 3 percent of GDP.

Given its inherent strengths like a strong and prudently regulated financial sector, a well managed capital account policy, large foreign exchange reserves, strong domestic consumption and effective fiscal policy interventions, the Indian economy weathered the financial crisis rather well. GDP growth declined to 5.8 percent (year-on-year) in the second half of 2008-09 compared to 7.8 percent in the first half. By 2009-10, India's GDP was growing at 8 percent (quick estimates (QE)). This increased to 8.5 percent in 2010-11 (revised estimates (RE)).

It was now important that the process of fiscal consolidation be reinstated. This was a delicate process where the fiscal tightening had to be achieved without prematurely choking off the growth process. The Thirteenth Finance Commission (13th FC) in its report was keenly conscious of the need to return to the path of fiscal prudence and provided a road map charting a set of desired fiscal deficit targets. The budget of 2010-11 adopted a calibrated exit policy targeting a fiscal deficit of 5.5 percent of GDP in 2010-11 from a level of 6.5 percent (inclusive of bonds in lieu of securities) in 2009-10 (Ministry of Finance, 2011).

In course of 2010-11, the non-tax revenues from auction of telecom spectrum (3G and broadband) resulted in higher than anticipated receipts. A conscious decision was taken to increase allocation to priority sectors while adhering to the fiscal deficit target. Ultimately, the fiscal deficit for 2010-11 declined to a better than targeted 5.1 percent of GDP. This was also an improvement over the 13th FC roadmap target of 5.7 percent. The government's medium-term fiscal policy statement as mandated by the FRBMA for the annual Budget 2011-12 projected continuing on a path of gradual adjustment at a pace faster than that prescribed by the 13th FC. The 2011-12 fiscal deficit target was set at 4.6 percent of GDP as against the 13th FC target of 4.8 percent. The rationale for this was that reducing the debt to GDP ratio at an accelerated pace would unlock more resources for use in developmental programmes instead of debt servicing (Ministry of Finance, 2011).

By 2009-10, direct taxes were contributing around 48 percent of revenues while the indirect taxes share was about 32 percent. In the Budget of 2011-12, the share of direct taxes was about 47 percent of the central government's projected revenue while the indirect taxes contribution was around 37 percent. The move to increase the share of direct taxes as envisaged in 1991 had therefore been achieved.

In terms of tax policy, after the conscious slackening of the tax to GDP ratio in the wake of the crisis, a tightening was seen to be desirable. The Budget of 2011-12 aimed at dovetailing both direct and indirect tax policy with medium-term objectives of fiscal consolidation and the proposed adoption of major new tax legislations; the Direct Tax Code (DTC) for direct taxes and the Goods and Services Tax (GST) in case of indirect taxes. In indirect taxes, among major proposals, the central excise merit rate was increased from 4 percent to 5 percent, branded ready made garments were subjected to excise duty of 10 percent, and few additional services were brought in under the service tax net. In the case of direct taxes, the personal income tax exemption limit was increased, and the surcharge on corporate income tax for domestic companies was reduced from 7.5 percent to 5 percent resulting in the overall rate coming down from 33.2 percent to 32.4 percent. Certain changes

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were also made to the Minimum Alternate Tax (MAT) provisions to maintain revenue neutrality and preserve horizontal equity as far as possible.

The government's expenditure management initiatives also seemed to have gathered momentum with a focus on outcomes rather than allocations. For this, select departments are mandated to develop their Result Framework Document with an emphasis on tracking measurable outcomes. In 2009-10, defence expenditures made up around 10 percent, subsidies 16 percent and interest 23 percent of revenue expenditures. The situation remained more or less the same in the Budget of 2011-12, revealing once again the largely slow changing nature of the composition of government expenditures. Of the government's projected revenue expenditures for 2011-12, defence constitutes 9 percent, subsidies 13 percent and interest 24 percent.

It now appears that fiscal prudence and the desire to limit the public debt through better revenue and expenditure outcomes has been fairly institutionalized in the Indian policy matrix. This is probably partly attributable to the anchoring role played by the FRBMA and the deficit reduction roadmaps put forward by the 13th Finance Commission. Despite the temporary deviation from stringent fiscal consolidation targets necessitated by the global financial crisis, Indian fiscal policy is being steered rapidly back to the path of prudence. The determination displayed by policy makers to set for themselves strict deficit reduction targets, often exceeding those mandated by the 13th FC appear to demonstrate that fiscal discipline is here to stay.

Recent developments indicate that policy makers have come to accept strict budgetary constraints, while attempting to maximize resources for developmental activities. The Planning Commission abundantly reveals this in its preparatory reports for the 12th Five Year Plan (2012-17). The approach paper to the plan while projecting the centre's fiscal resources assiduously envisages an average fiscal deficit of 3.25 percent of GDP for the entire plan period with the fiscal deficit projected to come down from 4.1 percent in 2012-13 to 3.5 percent in 2013-14. It is then expected to remain at 3 percent of GDP for the next three financial years. The gross budgetary support for the plan is kept realistic. It is projected to increase from 4.92 percent of GDP in 2011-12 to 5.75 percent by the end of the 12th Plan. Similarly, revenue targets are projected at conservative levels. Net tax revenue for the centre is expected to increase from 7.4 percent of GDP in 2011-12 to 8.91 percent in 2016-17. The gross tax to GDP ratio is projected to be 10.36 percent of GDP in 2011-12 rising to 12.3 percent by 2016-17. This is somewhat optimistic given that this ratio previously peaked at 11.9 percent in 2007-08. It appears that the planners are relying on critical tax reforms, especially the GST to deliver the much-needed revenue boost. Since chances of large non-tax revenues like spectrum auctions are unlikely, such revenues are expected to fall from 1.4 percent of GDP in 2011-12 to 0.88 percent of GDP in 2016-17. Similarly, non-debt capital receipts (mainly proceeds from disinvestment) are expected to fall (Planning Commission, 2011).

Rather than rely on revenue performance alone, expenditure reforms with effective targeting of subsidies appears to be a major policy strategy. For the 12th Plan with regard to non-plan expenditure, defence expenditure is projected to fall from 1.83 percent of GDP in the base year (2011-12) to 1.56 percent in the final year (2016-17). Subsidies are forecast to decline from 1.6 percent of GDP in 2011-12 to 1.24 percent of GDP in 2016-17. They would still account for 18.8 percent of total projected non-plan expenditure during the 12th Plan. The ability to control subsidies would hinge critically on global oil prices and the success of planned measures to target subsidies through improved delivery mechanisms. While the

former is beyond the control of policy makers, the latter would then be a key focus area (Planning Commission, 2011). Looking ahead, the government would probably focus on reforms on both the tax and expenditure fronts. With regard to tax policy, changes can be expected in terms of legislation as well as administrative reforms to improve efficiency. The main legislative proposals are the DTC and the GST both of which are in various stages of legislative consultation. The DTC seeks to simplify the tax code, revamp the system of tax deductions and remove ambiguities of law. The GST aims at bringing a fairly unified system of input tax credits across the value chain and at an inter-state level. Currently, the central excise and service taxes have limited credit facilities up to the manufacturing stage. The state VAT is not geared to provide inter-state input tax credits. It is proposed to institute a dual GST structure with separate central and state GSTs. This would require a constitutional amendment to allow both the central and state governments to have concurrent jurisdiction over the entire value chain. Inter-state GST credit and full credit for the central GST is envisaged. This would also require an advanced information technology (IT) infrastructure (Empowered Committee, 2009). It is also likely to be further leveraged for improving the direct tax administration. Moves in this direction include increasing the number of Centralized Processing Centres (CPCs) that carry out bulk processing functions from one to four. The number of taxpayer help centres and web-based taxpayer interface facilities are also to be increased substantially (Ministry of Finance, 2011).

It also appears that there are moves to improve social expenditure outcomes and target subsidies in a better manner. With respect to energy related subsidies in particular, given the Integrated Energy Policy of 2009, the basic principle would be to equalize the prices of domestic energy with that of imported energy while targeting subsidies to the poor and needy (Planning Commission, 2011). Much of this would hinge on the adoption of new techniques and technologies including IT based identification systems as proposed by the Aadhar Unique Identification system.

Thus, to sum up, it is found that the major developments in India's fiscal policy from the early stages of planned development in the 1950s, through the country's balance of payments crisis of 1991, the subsequent economic liberalization and rapid growth phase, the response to the global financial crisis of 2008 and the recent post-crisis moves to return to a path of fiscal consolidation. India's fiscal policy in the phase of planned development commencing from the 1950s to economic liberalization in 1991 was largely characterized by a strategy of using the tax system to transfer private resources to the massive investments in the public sector industries and also achieve greater income equality. The result was high maximum marginal income tax rates and the consequent tendency of tax evasion. The public sector investments and social expenditures were also not efficient. Given these apparent inadequacies, there were limited attempts to reform the system in the 1980s. However, the path of debt-induced growth that was pursued partly contributed to the balance of payments crisis of 1991.

Following the crisis of 1991, the government charted out a path of economic liberalization. Tax reforms focussed on lowering of rates and broadening of the tax base. There were attempts to curb subsidies and disinvest the government holdings in the public sector industries. While initially the fiscal deficit and public debt were brought under control, the situation again started to deteriorate in the early 2000s. This induced the adoption of fiscal responsibility legislations at the central and state levels. There were also reforms in the state level tax system with the introduction of VAT. Consequently, there were major improvements in the public finances. This probably contributed to the benign macro-fiscal environment of high growth, low deficits and moderate inflation that prevailed around 2008.

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The global financial crisis brought an end to this phase as the government was forced to undertake sharp counter-cyclical measures to prop up growth in view of the global downturn. Measures included, excise duty cuts, fiscal support to selected export industries and ramping up public expenditure.

The Indian economy weathered the global crisis rather well with growth going down to 5.8 percent in the second half of 2008-09 and then bouncing back to 8.5 percent in 2009-10. In view of the recovery, a slow exit from the fiscal stimulus was attempted in a manner whereby fiscal consolidation was achieved without hurting the recovery process. Recent policy documents like the 12th Plan Approach Paper and the government's Fiscal Policy Strategy Statement of 2011-12 appear to indicate that the fiscal consolidation mindset is fairly well institutionalized in the country's policy establishment (Planning Commission, 2011; Ministry of Finance, 2011). This is partly reinforced by institutional structures like fiscal responsibility legislations and the regular Finance Commissions that mandate the federal fiscal transfer regime. In the future, it appears that the government would focus on tax reforms and better targeting of social expenditures to achieve fiscal consolidation while maintaining the process of inclusive growth.

State of the Economy as Regards Fiscal Position

New government's strong mandate to implement various reform measures within first few months to restore confidence and revive economic sentiment has proved to be rewarding. Reinforced by a turnaround in mining, manufacturing, construction and a rise in government spending due to elections, growth numbers for the first quarter reflect that economy is gradually getting back on track. Going ahead, the economic situation is expected to improve. However, the government now needs to focus on implementation of the reform measures announced for a sustainable long-term solution.

Table 6.1: Fiscal Position of Indian Economy

Indicators	Budget Estimates 2014-15 (₹ Crore)	Actuals upto Aug. 2014 (₹ Crore)	% of Actual to Budget Estimates (Current %)	% of Actual to Budget Estimates (COPPY %)
Revenue Receipts	1189763	270455	22.7	23.9
Tax Revenue (Net)	977258	185459	19.0	20.9
Non-tax Revenue	212505	84996	40.0	39.9
Total Receipts	1263715	274789	21.7	23
Non-plan Expenditure	1219892	495095	40.6	43.2
Plan Expenditure	575000	177623	3.9	33.0
Total Expenditure	1794892	672718	37.5	39.8
Fiscal Deficit	531177	397929	74.9	74.6
Revenue Deficit	378348	324764	85.8	87.4

Source: Comptroller General of Accounts.

COPPY: Corresponding Period Previous Year

During the cumulative period from April-August 2014-15, 74.9 percent of the fiscal deficit target of ₹ 5.3 lakh crore has been exhausted. The fiscal deficit amount over the cumulative period April-August 2014 stood at ₹ 3.97 lakh crore. Total receipts during April-August 2014-15 were 6.4 percent higher as compared to the same period of the previous year. Of the total revenue receipts, net tax revenue was up by 1.0 percent and non-tax revenue rose

by 23.6 percent during the period from April-August 2014-15. There has been a decline in plan expenditure by 3.0 percent over the five-month period and it stood at ₹ 1.8 lakh crore. Non-plan expenditure, however, expanded by 3.2 percent to ₹ 4.9 lakh crore during April-August 2014-15. With regard to the revenue deficit, 85.8 percent of the budgetary estimated amount has been exhausted till August 2014.

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6.5 TAX

Taxation System in India

India has a well-developed tax structure with clearly demarcated authority between Central and State Governments and local bodies. Central Government levies taxes on income (except tax on agricultural income, which the State Governments can levy), customs duties, central excise and service tax. Value Added Tax (VAT), stamp duty, state excise, land revenue and profession tax are levied by the State Governments. Local bodies are empowered to levy tax on properties, octroi and for utilities like water supply, drainage etc. Indian taxation system has undergone tremendous reforms during the last decade. The tax rates have been rationalized and tax laws have been simplified resulting in better compliance, ease of tax payment and better enforcement. The process of rationalization of tax administration is ongoing in India.

Direct Taxes: In case of direct taxes (income tax, wealth tax, etc.), the burden directly falls on the taxpayer.

Income Tax: According to Income Tax Act 1961, every person, who is an assessee and whose total income exceeds the maximum exemption limit, shall be chargeable to the income tax at the rate or rates prescribed in the Finance Act. Such income tax shall be paid on the total income of the previous year in the relevant assessment year. Assessee means a person by whom (any tax) or any other sum of money is payable under the Income Tax Act, and includes:

- (a) Every person in respect of whom any proceeding under the Income Tax Act has been taken for the assessment of his income (or assessment of fringe benefits) or of the income of any other person in respect of which he is assessable or of the loss sustained by him or by such other person, or of the amount of refund due to him or to such other person;
- (b) Every person who is deemed to be an assessee under any provisions of the Income Tax Act;
- (c) Every person who is deemed to be an assessee in default under any provision of the Income Tax Act.

Where a person includes:

- (i) Individual
- (ii) Hindu Undivided Family (HUF)
- (iii) Association of persons (AOP)
- (iv) Body of individuals (BOI)
- (v) Company
- (vi) Firm
- (vii) A local authority and,

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(viii) Every artificial judicial person not falling within any of the preceding categories.

Income tax is an annual tax imposed separately for each assessment year (also called the tax year). Assessment year commences from 1st April and ends on the next 31st March. The total income of an individual is determined on the basis of his residential status in India. For tax purposes, an individual may be resident, nonresident or not ordinarily resident.

Resident: An individual is treated as resident in a year if present in India:

1. For 182 days during the year or
 2. For 60 days during the year and 365 days during the preceding four years.
- Individuals fulfilling neither of these conditions are nonresidents. (The rules are slightly more liberal for Indian citizens residing abroad or leaving India for employment abroad.)

Resident but Not Ordinarily Resident: A resident who was not present in India for 730 days during the preceding seven years or who was non-resident in nine out of ten preceding years is treated as not ordinarily resident.

Non-residents: Non-residents are taxed only on income that is received in India or arises or is deemed to arise in India. A person not ordinarily resident is taxed like a non-resident but is also liable to tax on income accruing abroad if it is from a business controlled in or a profession set up in India. Non-resident Indians (NRIs) are not required to file a tax return if their income consists of only interest and dividends, provided taxes due on such income are deducted at source. It is possible for non-resident Indians to avail of these special provisions even after becoming residents by following certain procedures laid down by the Income Tax Act.

Table 6.2: Taxation Status

Status	Indian Income	Foreign Income
Resident and ordinarily resident	Taxable	Taxable
Resident but not ordinarily resident	Taxable	Non-taxable
Non-resident	Taxable	Non-taxable

Personal Income Tax: Personal income tax is levied by Central Government and is administered by Central Board of Direct taxes under Ministry of Finance in accordance with the provisions of the Income Tax Act.

Rates of Withholding Tax: Withholding Tax is an obligation on the payer to withhold tax at the time of making payment under specified head such as rent, commission, salary, professional services, contract etc. at the rates specified in tax regime. The Withholding Tax provisions are in the nature of machinery provisions applicable to the payer of the income to enable easy collection and recovery of tax and are independent of the charging provisions which are applicable to the recipient of the company.

Direct Tax Provision: Where any payment is to be made to a non-resident, the payer is obliged to deduct at source. As per Section 195 of the Income Tax Act, an obligation on the person responsible for payment to deduct tax at source at the time of payment or at the time of the credit of the income to the account of the non-resident. If the payment would not be taxable, the person responsible for making such payment may make an application to the assessing officer to determine appropriate proportion which shall be chargeable to tax. The tax is required to be deducted only on the chargeable proportion. The tax is to be deducted at the rate prescribed in the Act or rate specified in Double Taxation Avoidance Agreement

whichever is beneficial to the assessee. Any person making a payment to any non-resident shall be liable to deduct tax at the rates specified.

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Rates of Withholding Tax: Current rates for withholding tax for payment to non-residents are:

1. Interest: 20 percent
2. Dividends paid by domestic companies: Nil
3. Royalties: 10 percent
4. Technical Services: 10 percent
5. Any other services:
 - Individuals: 30 percent of the income
 - Companies: 40 percent of the net income.

The above rates are general and are applicable in respect of countries with which India does not have a Double Taxation Avoidance Agreement (DTAA).

Tax upon Capital Gains

Corporate Tax

Definition of a Company: A company has been defined as a juristic person having an independent and separate legal entity from its shareholders. Income of the company is computed and assessed separately in the hands of the company. However, the income of the company, which is distributed to its shareholders as dividend, is assessed in their individual hands. Such distribution of income is not treated as expenditure in the hands of company; the income so distributed is an appropriation of the profits of the company.

Residence of a Company

A company is said to be a resident in India during the relevant previous year if:

1. It is an Indian company.
2. If it is not an Indian company but, the control and the management of its affairs is situated wholly in India.
3. A company is said to be non-resident in India if it is not an Indian company and some part of the control and management of its affairs is situated outside India.

Corporate Sector Tax: The taxability of a company's income depends on its domicile. Indian companies are taxable in India on their worldwide income. Foreign companies are taxable on income that arises out of their Indian operations or in certain cases, income that is deemed to arise in India. Royalty, interest, gains from sale of capital assets located in India (including gains from sale of shares in an Indian company), dividends from Indian companies and fees for technical services are all treated as income arising in India.

Different Kinds of Taxes Relating to a Company

Minimum Alternative Tax (MAT): Normally, a company is liable to pay tax on the income computed in accordance with the provisions of the Income Tax Act, but the Profit and Loss Account of the company is prepared as per provisions of the Companies Act. There were large number of companies who had book profits as per their Profit and Loss Account but were not paying any tax because income computed as per provisions of the Income Tax Act was either nil or negative or insignificant. In such case, although the companies were showing book profits and declaring dividends to the shareholders, they were not paying any

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income tax. These companies are popularly known as Zero Tax companies. In order to bring such companies under the Income Tax Act net, Section 115JA was introduced w.e.f. assessment year 1997-98.

A new tax credit scheme is introduced by which MAT paid can be carried forward for set-off against regular tax payable during the subsequent five year period subject to certain conditions, as under:

1. When a company pays tax under MAT, the tax credit earned by it shall be an amount, which is the difference between the amount payable under MAT and the regular tax. Regular tax, in this case, means the tax payable on the basis of normal computation of total income of the company.
2. MAT credit will be allowed carry forward facility for a period of five assessment years immediately succeeding the assessment year in which MAT is paid. Unabsorbed MAT credit will be allowed to be accumulated subject to the five-year carry forward limit.
3. In the assessment year when regular tax becomes payable, the difference between the regular tax and the tax computed under MAT for that year will be set-off against the MAT credit available.
4. The credit allowed will not bear any interest.

Fringe Benefit Tax (FBT): The Finance Act, 2005 introduced a new levy, namely Fringe Benefit Tax (FBT) contained in Chapter XIIIH (Sections 115W to 115WL) of the Income Tax Act, 1961.

Fringe Benefit Tax (FBT) is an additional income tax payable by the employers on value of fringe benefits provided or deemed to have been provided to the employees. The FBT is payable by an employer who is a company; a firm; an association of persons excluding trusts or a body of individuals; a local authority; a sole trader, or an artificial juridical person. This tax is payable even where employer does not otherwise have taxable income. Fringe Benefits are defined as any privilege, service, facility or amenity directly or indirectly provided by an employer to his employees (including former employees) by reason of their employment and includes expenses or payments on certain specified heads.

The benefit does not have to be provided directly in order to attract FBT. It may still be applied if the benefit is provided by a third party or an associate of employer or by under an agreement with the employer.

The value of fringe benefits is computed as per provisions under Section 115WC. FBT is payable at prescribed percentage on the taxable value of fringe benefits. Besides, surcharge in case of both domestic and foreign companies shall be leviable on the amount of FBT. On these amounts, education cess shall also be payable.

Every company shall file return of fringe benefits to the Assessing Officer in the prescribed form by 31st October of the assessment year as per provisions of Section 115WD. If the employer fails to file return within specified time limit specified under the said section, he will have to bear penalty as per Section 271FB.

The scope of Fringe Benefit Tax is being widened by including the employees stock option as fringe benefit liable for tax. The fair market value of the share on the date of the vesting of the option by the employee as reduced by the amount actually paid by him or recovered from him shall be considered to be the fringe benefit. The fair market value shall be determined in accordance with the method to be prescribed by the CBDT.

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Dividend Distribution Tax (DDT): Under Section 115-O of the Income Tax Act, any amount declared, distributed or paid by a domestic company by way of dividend shall be chargeable to dividend tax. Only a domestic company (not a foreign company) is liable for the tax. Tax on distributed profit is in addition to income tax chargeable in respect of total income. It is applicable whether the dividend is interim or otherwise. Also, it is applicable whether such dividend is paid out of current profits or accumulated profits.

The tax shall be deposited within 14 days from the date of declaration, distribution or payment of dividend, whichever is earliest. Failing to this deposition will require payment of stipulated interest for every month of delay under Section 115-P of the Act.

Rate of dividend distribution tax to be raised from 12.5 percent to 15 percent on dividends distributed by companies; and to 25 percent on dividends paid by money market mutual funds and liquid mutual funds to all investors.

Banking Cash Transaction Tax (BCTT): The Finance Act 2005 introduced the Banking Cash Transaction Tax (BCTT) w.e.f. June 1, 2005 and applies to the whole of India except in the state of Jammu and Kashmir. BCTT continues to be an extremely useful tool to track unaccounted monies and trace their source and destination. It has led the Income Tax Department to many money laundering and hawala transactions.

BCTT is levied at the rate of 0.1 percent of the value of following 'taxable banking transactions' entered with any scheduled bank on any single day:

1. Withdrawal of cash from any bank account other than a saving bank account; and
2. Receipt of cash on encashment of term deposit(s).

However, Banking Cash Transaction Tax (BCTT) has been withdrawn with effect from April 1, 2009.

Securities Transaction Tax (STT): Securities Transaction Tax or turnover tax, as is generally known, is a tax that is leviable on taxable securities transaction. STT is leviable on the taxable securities transactions with effect from 1st October, 2004 as per the notification issued by the Central Government. The surcharge is not leviable on the STT.

Wealth Tax: Wealth tax, in India, is levied under Wealth Tax Act, 1957. Wealth tax is a tax on the benefits derived from property ownership. The tax is to be paid year after year on the same property on its market value, whether or not such property yields any income. Under the Act, the tax is charged in respect of the wealth held during the assessment year by the following persons:

1. Individual
2. Hindu Undivided Family (HUF)
3. Company

Chargeability to tax also depends upon the residential status of the assessee same as the residential status for the purpose of the Income Tax Act.

Wealth tax is not levied on productive assets; hence, investments in shares, debentures, UTI, mutual funds, etc. are exempt from it. The assets chargeable to wealth tax are guest house, residential house, commercial building, motor car, jewellery, bullion, utensils of gold, silver, yachts, boats and aircrafts, urban land and cash in hand (in excess of ₹ 50,000 for Individual and HUF only). However, following will not be included in assets:

1. Assets held as stock in trade.
2. A house held for business or profession.

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3. Any property in nature of commercial complex.
4. A house let out for more than 300 days in a year.
5. Gold deposit bond.
6. A residential house allotted by a company to an Employee, or an Officer, or a Whole-time Director (gross salary, i.e., excluding perquisites and before Standard Deduction of such Employee, Officer or Director should be less than ₹ 5,00,000).

The assets exempt from Wealth Tax are 'Property held under a trust', Interest of the assessee in the coparcenary property of a HUF of which he is a member, 'Residential building of a former ruler', 'Assets belonging to Indian repatriates', one house or a part of house or a plot of land not exceeding 500 sq. mts. (for individual and HUF assessee)

Wealth tax is chargeable in respect of Net wealth corresponding to valuation date where Net wealth is all assets less loans taken to acquire those assets and valuation date is 31st March of immediately preceding the assessment year. In other words, the value of the taxable assets on the valuation date is clubbed together and is reduced by the amount of debt owed by the assessee. The net wealth so arrived at is charged to tax at the specified rates. Wealth tax is charged @ 1 percent of the amount by which the net wealth exceeds ₹ 15 lakhs.

Tax Rebates for Corporate Tax: The classical system of corporate taxation is followed in India. Domestic companies are permitted to deduct dividends received from other domestic companies in certain cases. Inter-company transactions are honoured if negotiated at arm's length. Special provisions apply to venture funds and venture capital companies. Long-term capital gains have lower tax incidence. There is no concept of thin capitalization. Liberal deductions are allowed for exports and the setting up on new industrial undertakings under certain circumstances. There are liberal deductions for setting up enterprises engaged in developing, maintaining and operating new infrastructure facilities and power-generating units. Business losses can be carried forward for eight years, and unabsorbed depreciation can be carried indefinitely. No carry back is allowed. Dividends, interest and long-term capital gain income earned by an infrastructure fund or company from investments in shares or long-term finance in enterprises carrying on the business of developing, monitoring and operating specified infrastructure facilities or in units of mutual funds involved with the infrastructure of power sector is proposed to be tax exempt.

Capital Gains Tax: A capital gain is income derived from the sale of an investment. A capital investment can be a home, a farm, a ranch, a family business, work of art etc. In most years, slightly less than half of taxable capital gains are realized on the sale of corporate stock. The capital gain is the difference between the money received from selling the asset and the price paid for it. Capital gain also includes gain that arises on 'transfer' (includes sale, exchange) of a capital asset and is categorized into short-term gains and long-term gains. The capital gains tax is different from almost all other forms of taxation in that it is a voluntary tax. Since the tax is paid only when an asset is sold, taxpayers can legally avoid payment by holding on to their assets—a phenomenon known as the lock-in effect. The scope of capital asset is being widened by including certain items held as personal effects such as archaeological collections, drawings, paintings, sculptures or any work of art. Presently, no capital gain tax is payable in respect of transfer of personal effects as it does not fall in the definition of the capital asset. To restrict the misuse of this provision, the definition of capital asset is being widened to include those personal effects such as archaeological collections, drawings, paintings, sculptures or any work of art. Transfer of above items shall now attract capital gain tax the way jewellery attracts despite being personal effect as on date.

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Short-term and Long-term Capital Gains: Gains arising on transfer of a capital asset held for not more than 36 months (12 months in the case of a share held in a company or other security listed on recognized stock exchange in India or a unit of a mutual fund) prior to its transfer are “short term”. Capital gains arising on transfer of capital asset held for a period exceeding the aforesaid period are “long term”. Section 112 of the Income Tax Act provides for the tax on long-term capital gains, at 20 percent of the gain computed with the benefit of indexation and 10 percent of the gain computed (in case of listed securities or units) without the benefit of indexation.

Double Taxation Relief: Double Taxation means taxation of the same income of a person in more than one country. This results due to countries following different rules for income taxation. There are two main rules of income taxation, i.e., (a) Source of income rule and (b) Residence rule.

As per source of income rule, the income may be subject to tax in the country where the source of such income exists (i.e., where the business establishment is situated or where the asset/property is located) whether the income earner is a resident in that country or not. On the other hand, the income earner may be taxed on the basis of the residential status in that country. For instance, if a person is resident of a country, he may have to pay tax on any income earned outside that country as well. Further, some countries may follow a mixture of the above two rules. Therefore, problem of double taxation arises if a person is taxed in respect of any income on the basis of source of income rule in one country and on the basis of residence in another country or on the basis of mixture of above two rules.

In India, the liability under the Income Tax Act arises on the basis of the residential status of the assessee during the previous year. In case the assessee is resident in India, he also has to pay tax on the income, which accrues or arises outside India, and also received outside India. The position in many other countries being also broadly similar. It frequently happens that a person may be found to be a resident in more than one country or that the same item of his income may be treated as accruing, arising or received in more than one country with the result that the same item becomes liable to tax in more than one country. Relief against such hardship can be provided mainly in two ways: (a) Bilateral relief, and (b) Unilateral relief.

- (a) **Bilateral Relief:** The Governments of two countries can enter into Double Taxation Avoidance Agreement (DTAA) to provide relief against such Double Taxation, worked out on the basis of mutual agreement between the two concerned sovereign states. This may be called a scheme of ‘bilateral relief’ as both concerned powers agree as to the basis of the relief to be granted by either of them.
- (b) **Unilateral Relief:** The above procedure for granting relief will not be sufficient to meet all cases. No country will be in a position to arrive at such agreement with all the countries of the world for all time. The hardship of the taxpayer, however, is a crippling one in all such cases. Some relief can be provided even in such cases by home country irrespective of whether the other country concerned has any agreement with India or has otherwise provided for any relief at all in respect of such double taxation. This relief is known as unilateral relief.

Double Taxation Avoidance Agreement (DTAA)

Following are the list of grounds with which India has signed Double Taxation Avoidance Agreement:

- (i) DTAA Comprehensive Agreements with respect to taxes on income.

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- (ii) DTAA Limited Agreement with respect to income of airlines or merchant shipping.
- (iii) Limited Multilateral Agreement
- (iv) DTAA Other Agreements or Double Taxation Relief Rules.
- (v) Specified Associations Agreement
- (vi) Tax Information Exchange Agreement (TIEA)

Indirect Taxation**Sales Tax**

Central Sales Tax (CST): Central Sales tax is generally payable on the sale of all goods by a dealer in the course of inter-state trade or commerce or, outside a state or, in the course of import into or, export from India. The ceiling rate on central sales tax (CST), a tax on inter-state sale of goods, has been reduced from 4 percent to 3 percent in the current year.

Value Added Tax (VAT): VAT is a multi-stage tax on goods that is levied across various stages of production and supply with credit given for tax paid at each stage of value addition. Introduction of state level VAT is the most significant tax reform measure at state level. The state level VAT has replaced the existing State Sales Tax. The decision to implement state level VAT was taken in the meeting of the Empowered Committee (EC) of State Finance Ministers held on June 18, 2004, where a broad consensus was arrived at to introduce VAT from April 1, 2005. Accordingly, all states/UTs have implemented VAT.

The Empowered Committee, through its deliberations over the years, finalized a design of VAT to be adopted by the States, which seeks to retain the essential features of VAT, while at the same time, providing a measure of flexibility to the States, to enable them to meet their local requirements. Some salient features of the VAT design finalized by the Empowered Committee are as follows:

The rates of VAT on various commodities shall be uniform for all the States/UTs. There are 2 basic rates of 4 percent and 12.5 percent, besides an exempt category and a special rate of 1 percent for a few selected items. The items of basic necessities have been put in the zero rate bracket or the exempted schedule. Gold, silver and precious stones have been put in the 1 percent schedule. There is also a category with 20 percent floor rate of tax, but the commodities listed in this schedule are not eligible for input tax rebate/set-off. This category covers items like motor spirit (petrol), diesel, aviation turbine fuel, and liquor.

There is provision for eliminating the multiplicity of taxes. In fact, all the State taxes on purchase or sale of goods (excluding Entry Tax in lieu of Octroi) are required to be subsumed in VAT or made VATable.

Provision has been made for allowing 'Input Tax Credit (ITC)', which is the basic feature of VAT. However, since the VAT being implemented is intra-state VAT only and does not cover inter-state sale transactions, ITC will not be available on inter-state purchases. Exports will be zero-rated, with credit given for all taxes on inputs/purchases related to such exports. There are provisions to make the system more business-friendly. For instance, there is provision for self-assessment by the dealers. Likewise, there is provision of a threshold limit for registration of dealers in terms of annual turnover of ₹ 5 lakh. Dealers with turnover lower than this threshold limit are not required to obtain registration under VAT and are exempt from payment of VAT. There is also provision for composition of tax liability up to annual turnover limit of ₹ 50 lakh. Regarding the industrial incentives, the States have been

allowed to continue with the existing incentives, without breaking the VAT chain. However, no fresh sales tax/VAT based incentives are permitted.

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Roadmap towards GST: The Empowered Committee of State Finance Ministers has been entrusted with the task of preparing a roadmap for the introduction of national level goods and services tax with effect from 01 April 2007. The move is towards the reduction of CST to 2 percent in 2008, 1 percent in 2009 and 0 percent in 2010 to pave way for the introduction of GST (Goods and Services Tax).

Excise Duty: Central Excise duty is an indirect tax levied on goods manufactured in India. Excisable goods have been defined as those, which have been specified in the Central Excise Tariff Act as being subjected to the duty of excise.

There are three types of Central Excise duties collected in India, viz.,

1. **Basic Excise Duty:** This is the duty charged under Section 3 of the Central Excises and Salt Act, 1944 on all excisable goods other than salt which are produced or manufactured in India at the rates set forth in the schedule to the Central Excise Tariff Act, 1985.
2. **Additional Duty of Excise:** Section 3 of the Additional duties of Excise (Goods of Special Importance) Act, 1957 authorizes the levy and collection in respect of the goods described in the Schedule to this Act. This is levied in lieu of Sales Tax and shared between Central and State Governments. These are levied under different enactments like medicinal and toilet preparations, sugar etc. and other industries development etc.
3. **Special Excise Duty:** As per the Section 37 of the Finance Act, 1978, Special Excise Duty was attracted on all excisable goods on which there is a levy of Basic Excise Duty under the Central Excises and Salt Act, 1944. Since then, each year, the relevant provisions of the Finance Act specifies that the Special Excise Duty shall be or shall not be levied and collected during the relevant financial year.

Customs Duty: Custom or import duties are levied by the Central Government of India on the goods imported into India. The rate at which customs duty is leviable on the goods depends on the classification of the goods determined under the Customs Tariff. The Customs Tariff is generally aligned with the Harmonized System of Nomenclature (HSL). In line with aligning the customs duty and bringing it at par with the ASEAN level, government has reduced the peak customs duty from 12.5 percent to 10 percent for all goods other than agriculture products. However, the Central Government has the power to generally exempt goods of any specified description from the whole or any part of duties of customs leviable thereon. In addition, preferential/concessional rates of duty are also available under the various Trade Agreements.

Service Tax: Service tax was introduced in India way back in 1994 and started with mere three basic services, viz., general insurance, stock broking and telephone. Today, the counter services subject to tax have reached over 100. There has been a steady increase in the rate of service tax. From a mere 5 percent, service tax is now levied on specified taxable services at the rate of 12 percent of the gross value of taxable services. However, on account of the imposition of education cess of 3 percent, the effective rate of service tax is at 12.36 percent.

Union Budget 2013-14: Latest Union Budget for the year 2013-14 has been announced by the Finance Minister on 28th of February 2013. Here are the highlights of the key features of Direct and Indirect Tax Proposals:

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Tax Proposals

Direct Taxes: According to the Finance Minister, there is a little room to give away tax revenues or raise tax rates in a constrained economy. Even a moderate increase in the threshold exemption will put hundreds of thousands of taxpayers outside Tax Net. However, relief for taxpayers in the first bracket of USD 0.004 million to USD 0.009 million. A tax credit of USD 36.78 to every person with total income upto USD 0.009 million. Surcharge of 10 percent on persons (other than companies) whose taxable income exceed USD 0.18 million to augment revenues. Increase surcharge from 5 percent to 10 percent on domestic companies whose taxable income exceed USD 1.84 million. In case of foreign companies who pay a higher rate of corporate tax, surcharge to increase from 2 to 5 percent, if the taxable income exceeds USD 1.84 million. In all other cases such as dividend distribution tax or tax on distributed income, current surcharge increased from 5 to 10 percent. Additional surcharges to be in force for only one year. Education cess to continue at 3 percent. Permissible premium rate increased from 10 percent to 15 percent of the sum assured by relaxing eligibility conditions of life insurance policies for persons suffering from disability and certain ailments. Contributions made to schemes of Central and State Governments similar to Central Government Health Scheme, eligible for Section 80D of the Income Tax Act. Donations made to National Children Fund eligible for 100 percent deduction. Investment allowance at the rate of 15 percent to manufacturing companies that invest more than USD 1.84 million in plant and machinery during the period 1st April 2013 to 31st March 2015. Eligible date for projects in the power sector to avail benefit under Section 80-IA extended from 31st March, 2013 to 31st March, 2014. Concessional rate of tax of 15 percent on dividend received by an Indian company from its foreign subsidiary proposed to continue for one more year. Securitization Trust to be exempted from Income Tax. Tax to be levied at specified rates only at the time of distribution of income for companies, individual, HUF etc. No further tax on income received by investors from the Trust. Investor Protection Fund of depositories exempt from income tax in some cases. Parity in taxation between IDF-Mutual Fund and IDF-NBFC. A Category IAIF set up as Venture capital fund allowed pass through status under Income Tax Act. TDS at the rate of 1 percent on the value of the transfer of immovable properties where consideration exceeds USD 0.092 million. Agricultural land to be exempted. A final withholding tax at the rate of 20 percent on profits distributed by unlisted companies to shareholders through buyback of shares. Proposal to increase the rate of tax on payments by way of royalty and fees for technical services to non-residents from 10 percent to 25 percent. Reductions made in rates of Securities Transaction Tax in respect of certain transaction. Proposal to introduce Commodity Transaction Tax (CTT) in a limited way. Agricultural commodities will be exempted. Modified provisions of GAAR will come into effect from 1st April, 2016. Rules on Safe Harbour will be issued after examining the reports of the Rangachary Committee appointed to look into tax matters relating to Development Centres and IT sector and Safe Harbour rules for a number of sectors. Fifth large taxpayer unit to open at Kolkata shortly. A number of administrative measures such as extension of refund banker system to refund more than USD 918.86, technology based processing, extension of e-payment through more banks and expansion in the scope of annual information returns by Income Tax Department.

Indirect Taxes

1. No change in the normal rates of 12 percent for excise duty and service tax.
2. No change in the peak rate of basic customs duty of 10 percent for non-agricultural products.

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Customs: Period of concession available for specified part of electric and hybrid vehicles extended upto 31st March, 2015. Duty on specified machinery for manufacture of leather and leather goods including footwear reduced from 7.5 to 5 percent. Duty on pre-forms precious and semi-precious stones reduced from 10 to 2 percent. Export duty on de-oiled rice bran oil cake withdrawn. Duty of 10 percent on export of unprocessed ilmenite and 5 percent on export on ungraded ilmenite. Concessions to aircraft maintenance, repair and overhaul (MRO) industry. Duty on Set Top Boxes increased from 5 to 10 percent. Duty on raw silk increased from 5 to 15 percent. Duties on Steam Coal and Bituminous Coal equalized and 2 percent custom duty and 2 percent CVD levied on both kinds coal. Duty on imported luxury goods such as high-end motor vehicles, motor cycles, yachts and similar vessels increased. Duty free gold limit increased to USD 918.86 in case of male passenger and USD 1,837.47 in case of a female passenger subject to conditions.

Excise Duty: Central Excise duty is an indirect tax levied on those goods which are manufactured in India and are meant for home consumption. The taxable event is 'manufacture' and the liability of central excise duty arises as soon as the goods are manufactured. It is a tax on manufacturing, which is paid by a manufacturer, who passes its incidence on to the customers.

The term "excisable goods" means the goods which are specified in the First Schedule and the Second Schedule to the Central Excise Tariff Act, 1985, as being subject to a duty of excise and includes salt.

The term "manufacture" includes any process, incidental or ancillary to the completion of a manufactured product and which is specified in relation to any goods in the section or chapter notes of the First Schedule to the Central Excise Tariff Act, 1985 as amounting to manufacture or which, in relation to the goods specified in the Third Schedule, involves packing or repacking of such goods in a unit container or labelling or re-labelling of containers including the declaration or alteration of retail sale price on it or adoption of any other treatment on the goods to render the product marketable to the consumer.

As incidence of excise duty arises on production or manufacture of goods, the law does not require the sale of goods from place of manufacture, as a mandatory requirement. Normally, duty is payable on 'removal' of goods. The Central Excise Rules provide that every person who produces or manufactures any 'excisable goods', or who stores such goods in a warehouse, shall pay the duty leviable on such goods in the manner provided in rules or under any other law. No excisable goods, on which any duty is payable, shall be 'removed' without payment of duty from any place, where they are produced or manufactured, or from a warehouse, unless otherwise provided. The word 'removal' cannot be necessarily equated with sale. Here, the removal may be for Sale, Transfer to depot etc., Captive consumption, Transfer to another unit, Free distribution. Thus, it can be seen that duty becomes payable irrespective of whether the removal is for sale or for some other purpose.

Service Tax

1. Maintain stability in tax regime. Vocational courses offered by institutes affiliated to the State Council of Vocational Training and testing activities in relation to agricultural produce also included in the negative list for service tax. Exemption of Service Tax on copyright on cinematography limited to films exhibited in cinema halls. Proposals to levy Service Tax on all air conditioned restaurant.

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2. For homes and flats with a carpet area of 2,000 sq.ft. or more or of a value of USD 0.18 million or more, which are high-end constructions, where the component of services is greater, rate of abatement reduced from 75 to 70 percent.
3. Out of nearly 1.7 million registered assesses under Service Tax only 0.7 million file returns regularly. Need to motivate them to file returns and pay tax dues. A one-time scheme called 'Voluntary Compliance Encouragement Scheme' proposed to be introduced. Defaulter may avail of the scheme on condition that he files truthful declaration of Service Tax dues since 1st October, 2007.
4. Tax proposals on Direct Taxes side estimated to yield to USD 2,444.32 million and on the Indirect Tax side USD 863.68 million.

Good and Services Tax: A sum of USD 1,653.78 million towards the first installment of the balance of CST compensation provided in the budget. Work on draft GST Constitutional Amendment Bill and GST Law expected to be taken forward.

6.6 TRANSFER PROGRAMMES (INTERNATIONAL TECHNOLOGY TRANSFER PROGRAMME)

Objectives and Nature of Activities

The objective of International Technology Transfer Programme (ITTP) is to promote international technology transfer and trade with India as focus. Activities under the programme are focused in the following three areas.

Documentation of Technology Export Performance and Capabilities: Readily available and updated documentation on technology related export performance and capabilities of our industrial units, R&D organizations and other export promotion agencies helps in policy formulation, technology related business promotion, keeping track of past performances, course correction and setting targets for the future. Documents and publications serve as the basic form of visible output of any activity. The programme supports activities towards preparation of such documentation.

Showcasing and Demonstration of Technology Export Capabilities: It is essential to widely publicize our technological capabilities for promotion of business ventures abroad and formulation of technology transfer projects involving foreign agencies. Sensitization of trade promotion bodies and industry associations towards enhanced thrust on technology and value added technology intensive products is important in view of the rapidly growing global competition. The programme supports organization of technology based trade fairs, participation of technology intensive organizations in such fairs, setting up of Technology Trade Facilitation Centres, organization of Training-cum-Awareness Programmes for overseas participants, etc.

Facilitation of Technology Transfer and Trade at the Firm Level: Besides broad-based support provided under the above two categories, it is essential to provide hand-holding and support at the firm level in order to facilitate technology transfer negotiations, draft/finalize MOUs/Agreements and materialize business deals and contracts. The programme supports organization of area-specific buyer-seller meets in India and abroad which provide a platform for one-to-one interactions between interested business partners.

Projects/Activities

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Compendium on Technology Exports – An Illustrative Compilation of Exported and Exportable Technologies from India: The publication brought out in collaboration with Indian Institute of Foreign Trade (IIFT), New Delhi, contains information on technologies actually exported as well as technologies having potential for exports. Out of the 377 organizations covered in the recent publication, 248 organizations have reported technology intensive exports of ₹ 156,849 million during 2001-02 and the remaining organizations have claimed to be in possession of exportable technologies/projects. According to the findings of the publication, growth rate of high technology exports is higher, compared to medium and low technology exports and average exports of high technology exporting organizations are also higher than medium and low technology exporting organizations. The organizations engaged in high technology exports also have a high R&D intensity. Among the 248 exporting organizations covered in the publication, 94 organizations entered into foreign collaborations.

Newsletter on Technology Exports: Publication of a quarterly Newsletter on Technology Exports, initiated by IIFT during the year 1998-99 with the support of DSIR was continued during the year. The newsletter is being compiled by Indian Institute of Foreign Trade, New Delhi under the guidance of an Editorial Board, comprising of representatives from DSIR, IIFT, Exim Bank, Ministry of External Affairs and ITPO. The contents of newsletter include details on technology export related policies, technology developments – globally as well as within the country, joint-ventures abroad, India's achievements in technology related exports, technology offers and requests etc. and thereby appreciated by industry, embassies/missions, export promotion councils and other international bodies.

Technology Trade Pavilion at India International Trade Fair, New Delhi: The objective of setting up a Technology Trade Pavilion is to promote display and dissemination of information related to technological capabilities, high value added products and technologies of companies and organizations including R&D laboratories, academic institutions, product design institutions, consultants etc. The Technology Trade Pavilion was setup jointly by DSIR and India Trade Promotion Organization (ITPO) for the eighth time in succession since 1997. Awards for Technology Innovation and Best Display were also announced. In order of merit, technology innovation awards were bagged by CSIR, IIT-Bombay and Dip Craft Industries and best display awards were bagged by Coral Industries, National Productivity Council and National Research Development Corporation. The Technology Trade Pavilion helped in promoting one-to-one interactions and business negotiations between the participating organizations displaying their technology intensive products, technologies, machinery, services, etc. and potential customers of Indian technology and services.

Technology Export Development Organization: The main objective of the Technology Export Development Organization (TEDO) – a Cell jointly setup by DSIR and CII in April 2000, is to promote and support technology and technology intensive exports through collaborative efforts of government, industry, research and academic institutions, financial institutions and other export promotion agencies. TEDO focuses on four areas, namely Agro/Food Processing, Light Engineering, Indian Systems of Medicine and Homeopathy and Chemicals and Pharmaceuticals. Nature of TEDO activities range from studies, training and awareness programmes to missions, fairs, seminars and technology demonstrations.

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Strategic Approach to Strengthening the International Competitiveness of Knowledge-based Industries: Objectives of the research study carried out by Research and Information Systems for the Non-aligned and Other Developing Countries were to examine: India's export structure in terms of its knowledge intensity compared to some of the South-East Asian countries; emerging patterns of FDI inflows and the participation of MNCs in knowledge-based industries; outward investments by Indian enterprises in knowledge-based industries; and export oriented manufacture by MNCs and draw up strategies for strengthening the international competitiveness of knowledge-based industries in the country.

Centre for International Trade in Technology (CITT): The main objective of the Centre is to conduct research on the emerging issues relating to technology trade agreements of WTO and other international arrangements such as, TRIPs, TBT, GATS, etc. and to identify specific technology related export opportunities for India and to develop training expertise in the area of technology export management. An agreement on the Centre between DSIR and IIFT was signed on June 4, 2001.

International Programme on Design as Strategy for Development and Quality of Living: The above programme was organized by National Institute of Design (NID), Ahmedabad during January 17-21, 2005 with the support of DSIR. The objective was to project India as the outsourcing destination for industrial and product design services. The faculty for the programme was drawn from National Institute of Design (NID) and practicing design entrepreneurs, experts and consultants. The programme was attended by around 25 participants, who were drawn from South Africa, Iran, Tanzania, Sri Lanka etc. The participants were given a glimpse of industrial design capabilities and achievements of our design institutions, which unfolded opportunities for design collaborations between Indian agencies and foreign participants.

National Awareness-cum-Training Programme on Competitive Advantage through Design: The above programme was organized by National Institute of Design (NID), Ahmedabad with the support of DSIR. The objective was to demonstrate the potential of industrial design in achieving competitive advantage. The programme included lecture sessions by expert faculty drawn from NID and professional design organizations and field visits to industrial units which have successfully demonstrated the potential of industrial and product design in fetching rich dividends.

Technology Trade Facilitation Centre at National Research Development Corporation (NRDC): A Technology Trade Facilitation Centre was set up at NRDC in July 2003 with the support of DSIR. Technology Trade Facilitation Centre is a proactive approach to catalyze technology intensive and high value added exports from Indian industry/R&D establishments and is expected to provide an exposure to small and medium enterprises (willing to export their hi-tech products and processes) to look at international customers and foreign markets requirements. The following criteria is used for selection of companies in Technology Trade Facilitation Centre.:

- (i) Any company that is manufacturing a hi-tech product/equipment/machinery which is being exported or has export potential.
- (ii) Any company that has commercialized a technology and is willing to license/transfer it, within the country or abroad.
- (iii) Any organization which can offer a complete technology package or a technology project on a turnkey basis.

During the year, 10 new companies were selected for participation in the Technology Trade Facilitation Centre. These companies were: Sahajanand Laser Technology, Ahmedabad; International Tractors Ltd., Hoshiarpur; etc.

Profiles of Exportable Technologies from SMEs in the Delhi Region: National Foundation of Indian Engineers (NAFEN), New Delhi carried out a project on Compilation of Profiles of Exportable Technologies from SMEs in and around Delhi including Faridabad, Gurgaon, Noida and Ghaziabad with the support of DSIR. A report containing 22 profiles of exportable technologies/projects from SMEs in the targeted region was brought out. The Profiles contain information such as brief technology description, profile of the company including details such as installed capacity, production, turnover, exports, manpower, usage of raw material, etc. and a profile of project based on exportable technology, including details such as estimated project cost, land, machinery, manpower and raw material requirements, etc.

Study on Exploring Commercialization of Patents Taken Abroad by Indians – WITT: The study was conducted by Waterfalls Institute of Technology Transfer (WITT), New Delhi with the support of DSIR. It aimed at collecting and analyzing data relating to patents filed abroad by Indians, with a view to study their potential for early commercialization and suggest measures for more effective patent commercialization. The target population for the study was around 200 R&D organizations, institutions, in-house R&D units of export oriented industries and individuals.

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6.7 FISCAL RESPONSES OF POWER LEVEL GOVERNMENTS

Contagion from the global crisis necessitated use of fiscal stimulus measures in India during 2008-10 in order to contain a major slowdown in economic growth. Given the usual downward inflexibility of fiscal deficit once it reaches a high level, as has been experienced by India in the past, there could be medium-term implications for the future Inflation path, which must be recognized while designing the timing and speed of fiscal exit. Inflation, at times, may become effectively a fiscal phenomenon, since the fiscal stance could influence significantly the overall monetary conditions. Fiscal deficit could be seen to influence the Inflation process either through growth of base money created by the RBI (i.e., net RBI credit to the Government) or through higher aggregate demand associated with an expansionary fiscal stance (which could increase growth in broad money). The potential Inflation risk should work as an important motivating factor to ensure a faster return to the fiscal consolidation path in India, driven by quality of adjustment with appropriate rationalization of expenditure, rather than waiting for revenue buoyancy associated with sustained robust growth to do the job automatically. The importance of fiscal space in the India specific context needs to be seen in terms of not only the usual output stabilization role of fiscal policy but also the occasional need for use of fiscal measures to contain such Inflationary pressures that may arise from temporary but large supply shocks.

Fiscal stimulus emerged as the key universal instrument of hope in almost every country around the world, when the financial crisis in the advanced economies snowballed into a synchronized global recession.

In India, the fiscal response to the global crisis was swift and significant, even though India clearly avoided a financial crisis at home and also continued to be one of the fastest growing economies in the world in a phase of deep global recession. Despite the absence of any need to bailout the financial system, it is the necessity to partly offset the impact of deceleration in private consumption and investment demand on economic growth, which

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warranted adoption of an expansionary fiscal stance. One important consequence of this, though, was the significant deviation from the fiscal consolidation path and the resultant increase in the fiscal deficit levels over two consecutive years (2008-10).

The immediate impact of the higher levels of fiscal deficit on Inflation in India could be seen as almost negligible, since: (a) the expansionary fiscal stance was only a partial offset for the deceleration in private consumption and investment demand, as the output gap largely remained negative, indicating no risk to Inflation in the near term; and (b) despite large increase in the borrowing programme of the Government to finance the deficit, there was no corresponding large expansion in money growth, since demand for credit from the private sector remained depressed. Thus, neither aggregate demand nor monetary expansion associated with larger fiscal deficits posed any immediate concern on the Inflation front.

The future risks to Inflation in India from fiscal stimulus, thus, could arise from the downward inflexibility of the deficit levels and with revival in demand for credit from the private sector and consolidation of growth around the potential, the fiscal constraint could be manifested in the form of pressures on both aggregate demand and money supply. Surges in capital flows could complicate the situation further. Macroeconomic variables are generally interrelated in a complex manner. Therefore, a deeper understanding of Inflation dynamics would involve analyzing its relationship with macroeconomic variables such as deficit, money supply, public debt, external balance, exchange rate, output gap, global inflation and commodity prices, and interest rates. In the literature, particularly in the developing country context, simple models are, however, often used to analyze the Inflationary impact of fiscal deficit. This largely reflects the role of fiscal dominance, which has often been a phenomenon in many developing countries. Thus, fiscal-based theories of Inflation are more common in the literature of developing countries. On the other hand, for developed countries, fiscal policy is often considered to be unimportant for inflation determination, at least on theoretical grounds, as the desire to obtain seigniorage revenue plays no obvious role in the choice of monetary policy.

In the Indian context also, there are several studies analyzing the nexus between government deficits, money supply and Inflation. The findings of these studies generally point to a self-perpetuating process of deficit-induced inflation and inflation-induced deficit, besides the overall indication that government deficits represent an important determinant of Inflation. However, extending the period of analysis further beyond the automatic monetization phase, Ashra *et al.* found no long relationship between fiscal deficit and net RBI credit to the Government and the latter with broad money supply. Thus, they concluded that there is no more any rationale for targeting fiscal deficit as a tool for stabilization. On the other hand, according to Khundrakpam and Goyal, recent data and ARDL approach in analysis, it is found that government deficit continues to be a key factor causing incremental reserve money creation and overall expansion in money supply, which lead to Inflation.

The Challenge of Fiscal Exit – What is Important for India?

The unprecedented stimulus that was used across countries to avert another Great Depression is widely believed to have shown the seeds of the next crisis. Public debt levels in the advanced economies are projected to explode to levels never seen during peacetime, leaving almost no fiscal space for managing other shocks to the economies in future, besides significantly constraining normalization of overall macroeconomic conditions. Some of the projected debt figures look uncomfortably high – revealing in true sense the trade-offs involved in policy options. A better today ensured through policy interventions could enhance risks for the future. In the case of sub-prime crisis, the impact on the world economy will be

permanent and is expected to persist over several decades through the channel of high public debt.

What then is the dimension of the challenge we are facing today? IMF projections indicate that in the G-20 advanced economies, Government debt would reach 118 percent of GDP in 2014, which will be 40 percent higher than the pre-crisis levels. Consolidating the level to about 60 percent of GDP by 2030 would require raising the average structural primary balance by 8 percent of GDP, which is not easy, though not impossible. But this order of adjustment will involve other costs. One could first see why the adjustment options may not be easy and then what other costs could result from sustained high levels of public debt.

The Costs of Sustained High Levels of Public Debt: A critical part of the policy challenge associated with high public debt is to recognize upfront the costs for the economy, without being too alarmist. Some of the costs seem obvious, even though because of the non-linearity in the relationships between key evolving macroeconomic variables, it may not be easy to quantify them. Some of these obvious costs could be:

- (a) Lack of fiscal space to deal with future shocks, including future downturns in business cycles.
- (b) Pressure on interest rates and crowding-out of resources from the private sector. This effect is not visible as yet because of weak private demand and expansionary monetary policies. As private demand recovers and monetary policy cycles turn around, potential risks will materialize. Three specific channels could exert pressure on the interest rate: (i) larger fiscal imbalances would imply lower domestic savings, (ii) increase in risk premia, as market would differentiate between debt levels and expect a premium in relation to the perceived risk, which is already evident after the experience of Dubai World and Greece, and (iii) higher inflation expectations that would invariably result from high levels of debt, which will be reflected in the nominal interest rates.
- (c) Pressure on central banks to dilute their commitment to and focus on price stability. In this context, one may see the Inflation tolerance levels of central banks rising. The IMF's argument that raising the Inflation target in advanced economies from 2 percent to 4 percent may not add significant distortions to the economies should also be carefully examined by central banks. One must recognize why some feel that return to pre-crisis levels of central bank independence with focus on price stability would be critical to improve the future macroeconomic conditions, given the large debt overhang. Price stability will be critical to ensure high growth, which in turn can effectively contribute to debt consolidation without imposing costs of adjustments through other options. The extent of dilution of central bank independence may also increase if financial stability is made an explicit mandate of central banks.

Fiscal Exit in India: India was on a sustained path of fiscal consolidation prior to the global crisis, conditioned by the discipline embodied in the Fiscal Responsibility and Budget Management (FRBM) Act, 2003. The FRBM rules required phased reduction in fiscal deficit to 3 percent of GDP by end-March 2009, with commitment to also eliminate revenue deficit by that time. The progress on fiscal consolidation turned out to be faster than initially expected, as high growth during the five year period 2003-08 ensured better revenue buoyancy. Fiscal deficit as percentage of GDP fell from 4.5 percent in 2003-04 to 2.6 percent in 2007-08, leading to attainment of the target one year before what was initially set under the

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FRBM rules in 2004. Revenue deficit also declined from 3.6 percent of GDP to 1.1 percent of GDP during the corresponding period. The FRBM, thus, had created considerable fiscal space, led by revenue buoyancy, when the impact of the global recession on domestic activities warranted introduction of anti-crisis fiscal response. Some have viewed the fiscal consolidation as a favourable macroeconomic condition that contributed to India's shift to the higher growth trajectory, even though it is a fact that fiscal consolidation resulted primarily because of high growth.

When the global crisis started to spread, despite perceptions of decoupling and a sound financial system at home, there was a clear risk of slowdown in Indian growth, which had to be arrested through the appropriate policy response. Because of the heightened uncertainty and the black swan nature of the series of adverse developments that unfolded after the bankruptcy of Lehman Brothers, the Indian policy response had to be swift and significant, with a heavy accent on adequate precaution. Two major fiscal decisions that were taken earlier, i.e., the farm debt waiver scheme and the Sixth Pay Commission award, worked like expansionary stimulus, where the decision lag was almost zero, since the decisions had been taken and partly implemented even before the crisis-led need for fiscal stimulus was recognized. The subsequent crisis related fiscal stimulus was delivered in the form of tax cuts as well as higher expenditure, dominated by revenue expenditure, as the deceleration in private consumption expenditure turned out to be significant, which needed to be partly offset by higher government expenditure. Reflecting the expansionary fiscal stance – involving a deliberate deviation from the fiscal consolidation path – the fiscal deficit of the Central Government rose from 2.6 percent of GDP in 2007-08 to 5.9 percent in 2008-09 and further to 6.7 percent in 2009-10. Even the State Governments, which were progressing well on fiscal consolidation – driven partly by the incentives from the Twelfth Finance Commission – experienced a setback to the process, resulting primarily from pressures on revenues and central transfers associated with the economic slowdown as well as the compelling demand to match the pay revision already announced for Central Government employees. Gross fiscal deficit of the states, which had improved to 1.5 percent of GDP by 2007-08, expanded to 3.2 percent of GDP in 2009-10.

The role of the expansionary fiscal stance adopted by both the Central and the State Governments has to be seen in the context of the fact that private consumption demand, which accounts for close to 60 percent of aggregate demand, exhibited sharp deceleration in growth, from 9.8 percent in 2007-08 to 6.8 percent and 4.1 percent in the subsequent two years. Government consumption expenditure, which accounts for just about 10 percent of aggregate demand, had to be stepped up significantly to partially offset the impact of the sharp deceleration in the growth of private consumption demand. Reflecting the fiscal stimulus, growth in government consumption expenditure was as high as 16.7 percent in 2008-09, as a result of which the contribution of government expenditure to the overall growth in aggregate demand rose almost threefold – from 10.4 percent in 2007-08 to 33.6 percent in 2008-09. The fiscal stance, thus, had a clear role in arresting sharper slowdown in economic growth.

Given the possibility of a weak fiscal position operating as a drag on economic growth in the medium-run – through crowding-out pressures, besides the scope for causing higher Inflation – the need for faster return to fiscal consolidation path was recognized quite early in India, which was articulated and emphasized by the Reserve Bank in its policy statements, as signs of stronger recovery in growth started to emerge. By the time the Budget for 2010-11 was announced in February 2010, better evidence on broad-based momentum in recovery

created the space for gradual roll back of some of the fiscal measures that were taken in response to the crisis. At the macro level, while gross fiscal deficit has been budgeted lower at 5.5 percent of GDP, net market borrowing programme has also been scaled down by more than 10 percent. In terms of specific measures, some of the stimulus-led tax cuts have been rolled back, greater non-tax revenue from disinvestments and auction of 3-G/BWA spectrum has been realized and growth in non-plan expenditure has been significantly curtailed to 4.1 percent in 2010-11 from 26.0 percent in the previous year, much of which will result from rationalization of subsidies. More importantly, indicating the resolve to return to the fiscal consolidation process, a Medium Term Fiscal Policy Statement (MTFPS) has been issued along with plans for tax reforms, both direct and indirect. As per the MTFPS, there will be annual rolling targets for revenue deficit and gross fiscal deficit so as to reach 2.7 percent and 4.1 percent of GDP, respectively, by 2012-13. Goods and Services Tax (GST) and Direct Tax Code (DTC), to be implemented in 2011-12, will be critical components of the fiscal consolidation, which could help in improving the tax to GDP ratio from 10.8 percent in 2010-11 to 11.8 percent in 2012-13. Reflecting the planned fiscal consolidation, total debt liabilities of the Central Government could also be expected to moderate from 51.5 percent of GDP in 2009-10 to 48.2 percent of GDP in 2012-13. The Indian approach to fiscal exit – in terms of both adoption of specific fiscal consolidation measures in sync with the recovery and announcement of medium-term targets for phased consolidation – reflects the recognition in the sphere of policy-making of the importance of a disciplined fiscal environment for sustainable high growth.

The quality of fiscal adjustment, however, must receive greater attention, given the medium-term double digit growth objective. Like the previous phase of fiscal consolidation during 2004-08, stronger recovery in growth will improve revenue buoyancy. Moreover, given the fact that a large part of the government borrowing (excluding the part invested by FIIs) is financed domestically, the sovereign risk concerns would also remain contained. These favourable aspects, however, should not dilute the focus on consolidation from the expenditure side. Even if gross fiscal deficit for 2010-11 has been budgeted to decline to 5.5 percent of GDP from 6.7 percent in the previous year, that may not signal any major move in the direction of structural consolidation, if one removes the one-off components from the revenue and expenditure sides. Adjusted for disinvestment and 3-G/BWA auction proceeds on the revenue side, and farm debt waiver and Sixth Pay Commission arrears on the expenditure side, the reduction in gross fiscal deficit as percent of GDP would be much less, i.e., by 0.3 percent as against 1.2 percent envisaged in the Budget. The magnitude and quality of fiscal adjustment could have a significant conditioning influence on India's medium-term growth prospects.

In the absence of faster and better quality fiscal adjustment, at least four major risks to macroeconomic conditions could be envisaged: (a) the decline in domestic savings, led by the fall in public sector savings, which will lower the potential output path, (b) higher overall interest rates, when the revival in demand for credit from the private sector starts competing with the borrowing programme of the government, (c) limit the capacity to manage the exchange rate and the domestic liquidity impact of possible surges in capital flows, since the use of sterilization options like the MSS could exert further pressures on the interest rates, and thereby lead to even higher inflows, and (d) may even force reversal of reforms, such as use of higher SLR requirements for banks or even introduction of SLR for non-banking entities in the financial system to create a captive market for the government borrowing programme. These possible potential implications signify why fiscal discipline is so critical in a market based economy. Often, in the search for easy solutions, direct or indirect

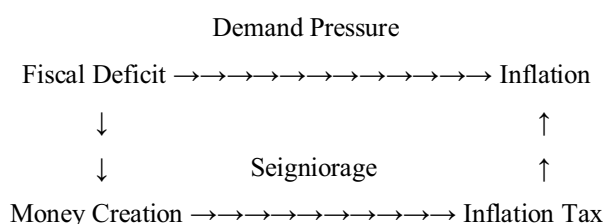
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monetization could be preferred, which in turn could give rise to higher Inflation. This paper primarily highlights the Inflation risks to India from the fiscal imbalance, and argues that fiscal space is as critical for managing Inflation as for stabilizing the output path.

The Analytical Framework: A popular method for analyzing the Inflationary potential of fiscal deficit in India is through its direct impact on reserve money, which via the money multiplier leads to increase in money supply, that in turn leads to Inflation. In this part, while analyzing the Inflationary potential of fiscal deficit by hypothesizing that either: (i) there can be a direct impact on inflation through increase in aggregate demand; or (ii) through money creation or seigniorage; or (iii) a combination of both. The causality is described in the following flow chart. In essence, though, one has to recognize that the increase in demand financed by fiscal deficit would automatically lead to higher money supply through higher demand for money. In a Liquidity Adjustment Facility (LAF) framework, increase in money demand associated with higher government demand has to be accommodated, in order to keep the short-term interest rates in the system, in particular the overnight call rate, within the LAF (repo – reverse repo) corridor of interest rates. In a LAF based operating procedure of monetary policy, thus, money supply is demand driven, and hence endogenous. To the extent that fiscal deficit leads to expansion in money supply, associated inflation risk must be seen as a fiscal, rather than a monetary phenomenon.

Flowchart (6.1): Liquidity Adjustment Facility (LAF) Framework



Here, as shown in flowchart (6.1) fiscal deficit (D) is defined as total expenditure of the central government less the revenue receipts (including grants) less other non-debt capital receipts. In the literature, primary deficit, which is fiscal deficit less interest payments, is also often considered in analyzing the Inflationary impact of government deficit in order to remove any possible endogeneity bias resulting from the reverse impact of Inflation on nominal interest rate.

Seigniorage, which is often referred to as the Inflation tax, could be defined for simple empirical analysis as the change in reserve money scaled by the price level. The price level is measured by the wholesale price index. Thus, seigniorage 'S' is defined as,

$$S = \{RM - RM_{(-1)}\}/P$$

where, RM is the reserve money or base money and P is the index of price level.

So, we essentially empirically test the following:

- (i) $P = f(D)$
- (ii) $P = f(S)$
- (iii) $S = f(D)$
- (iv) $P = f(D, S)$

It is important to note here that ΔRM could be driven by increase in net foreign assets (NFA) of the RBI as well as net RBI credit to the government. Under fiscal dominance, much of the increase in RM could be because of increase in net RBI credit to the government.

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Under an exchange rate policy that aims at avoiding excessive volatility, surges in capital flows and the associated increase in NFA of the RBI could drive the growth in RM from the sources side. As a result, inflation may still exhibit a stronger relationship with money growth, but the underlying driving factors behind money growth could be the fiscal stance and the exchange rate policy.

The fiscal response in India to the severe contagion from the global crisis was conditioned by the need to minimize the adverse impact on the domestic economy. In the process, however, India's fiscal deficit expanded again to the pre-FRBM level. Given India's past experience, in terms of fiscal consolidation resulting only over a number of years, downward inflexibility of the post-crisis high fiscal deficit level could emerge as a potential source of risk to India's future path of Inflation.

6.8 REGIONAL ORIENTATION TO POLICY PROGRAMMES AND CENTRAL RESPONSIBILITY

The concept of regional development is based on the development of specific regions. It is generally undertaken where regional differences exist and where a particular is to be developed. Regional Development is carried through the regional planning which is a technique to evaluate the potential of sub-natural areas and to develop them to the best advantages of the nation as a whole.

Like the national planning, the regional planning also has the objective of accelerating the process of social advancement of the community through the technique of economic and social planning, though it is restricted to the given region area of the country. The major objective of the regional development is to remove regional disparities in respect of economic and social development and bring out the region at par with other regions of the country.

It is a significant means to remove regional backwardness, meet regional aspirations and demands, make optimum and judicious use of regional resources, solve regional problem and involve local people in plan formulation and implementation. It may also help in conserving the environment and cultural heritage of a particular region.

The planning for regional development involves identifying the regionalism present, demarcating the region, determining the need of the region, formulating the plan, implementing the plan within the framework of government setup and reviewing the implementation of the plan.

Such planning should also take into account the problems to be tackled, objectives of the planning, availability of the resources, policy alternatives and their impacts, type of investment needed, cost of planning, planning priorities, design and layout, policy decision and the implementing authority.

Regional development has two dimensions, i.e., (i) conceptual base, and (ii) implementation of development plans and policies. The need for regional development was felt since the beginning of the planning era in the country.

That is why during the first and second five-year plans, special attention was given to develop backward areas. A number of new industrial centers were located in backward areas to provide boost up to the regional economy and create employment opportunities for local people. During the Third Five Year Plan, it was decided to accelerate the industrial and agricultural activities on the regional basis to achieve the goal of balanced regional

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development. But at the end of the plan, it was realized that there has not been considerable progress in realizing the objective of balanced regional development.

The Fourth Five Year Plan marks a watershed in Indian planning, as it spelt out, for the first time, some distinct regional policies and took certain concrete steps towards balanced regional development. Since the Fourth Plan, it was realized that in order to reach the social and economic goals of development, a greater diffusion and growth of activity and employment at local levels would be needed. Hence, some attempts were made to decentralize the planning process to the sub-national and sub-state levels.

This change may be seen as a shift towards more enlightened approach to the understanding of regional problems, assessment of local and regional needs and initiation programmes that may benefit local areas or ergot.

Another compulsion which stimulated regional thinking at this time was the great concern the widening inter-regional disparities in the country. For instance, during the decade between 1960 and 1970, the difference in per capita net domestic product among states had also increased. But such wide regional disparities in the country had their political repercussions in some areas, which brought the problem of backward areas into sharp focus.

Among the backward areas, the need to accelerate development of areas inhabited by certain social groups like the tribals, who had been bypassed during the development process, had become a priority issue. Simultaneously, the need was felt for directing effort towards building elements of special assistance to small and marginal farmers and agricultural labourers in the area development programmers.

These considerations led to the evolution of a definite target area and target group approach in planning, which must be seen as important developments since the Fourth Plan. Therefore, in the Fourth Plan, measures were initiated: (i) to consider backward regions in the allocation of financial assistance to the states, (ii) to install central projects in the backward areas, (iii) to make provision of financial support to medium and small industries in the backward areas and (iv) to provide special financial assistance to small and marginal farmers and agricultural labourers in rural areas.

The measures introduced during the Fourth Plan have been continued and even enlarged during the Fifth Plan. During the Sixth Plan, programmes of technology upgradation and technology transfer were initiated to strengthen the resource base of the region. Presently, the concept is to develop the backward regions as an integral part of the overall planning process.

The salient features of the policy or programme which are guiding regional development include: (1) An inter-regional allocation policy tilted in favour of backward States, (2) An incentive policy designed to attract investments in industrially backward regions and areas, (3) A sub-plan approach for some special problem areas to ensure that investments from the State and Central sectors flow to such areas in a coordinated manner to undertake programme and schemes specially designed to their interests and needs, and (4) A social justice approach towards provision of minimum needs so that the disadvantaged areas may achieve parity in items of social consumption.

6.9 SUMMARY

1. India has taken substantive measures to narrow external and fiscal imbalances, tighten monetary policy, move forward on structural reforms and address market volatility. This has reduced its vulnerability to shocks.

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2. The IMF in its report commended the authorities' resolve to meet the budget deficit target despite slowing growth, but highlighted the need to improve the quality of fiscal consolidation and make it more growth friendly.
3. Growth, stability and distribution are the three principal concerns of economics.
4. The average growth rate in these countries during the last about 40 years (1964-1997) has fluctuated between the low of 2.3 percent in UK and the high of 9.2 percent in China, with the standard deviations of 2.2 percent and 6.7 percent, respectively.
5. India was on a sustained path of fiscal consolidation prior to the global crisis, conditioned by the discipline embodied in the Fiscal Responsibility and Budget Management (FRBM) Act, 2003.

6.10 SELF ASSESSMENT QUESTIONS

I. Fill in the Blanks

1. _____, _____ and the _____ provide the necessary tools in the hands of the policymakers to tame economic fluctuations.
2. Stabilizing policies suffered the set back during the _____, as they operate basically through aggregate demand.

II. True and False

1. The built-in (automatic) stabilizers, viz., progressive direct taxes and social security system, are never enough to counter business cycles.
2. The fiscal policy is more effective in a closed economy than in an open economy with floating forex rate and free movements of capital.

III. Multiple Choice Questions

1. The forex rate policy suffers from the limitations like _____.
 - (a) Low price elasticities of exports and imports
 - (b) Counter reactions from other countries, as devaluation and revaluation are components of "beggar-thy-neighbour" tools
 - (c) Considerations, which suggest the adoption of the fixed exchange rate system/currency board/currency union or the dollarization (US \$), which prohibit the use of the exchange rate policy
 - (d) All of the above
2. Any stabilization policies suffer from following limitations _____.
 - (a) Policy lags, inside and outside, which are long and variable
 - (b) Errors in forecasting the exact magnitude of the recession or recovery
 - (c) Changing structure, causing the multipliers to be dynamic and not quite known
 - (d) All of the above

Short Answer Questions

1. Define the term Fiscal Policy?
2. Write a brief note on "Value Added Tax" (VAT).

NOTES**Long Answer Questions**

1. Critically analyze the Concept “Fiscal Responses of Power Level Governments”.
2. Explain in detail about the taxation policy of Government in India.

6.11 KEY TERMS

- Synchronized
- Hyperinflation
- Heterodox
- Stagflation

6.12 KEY TO CHECK YOUR ANSWER

- I. 1. Fiscal policy, monetary policy and the foreign exchange rate system, 2. stagflation.
- II. 1. True, 2. True.
- III. 1. (d), 2. (d).