Chapter-2
Survey of Literature

2.1 Introduction


2.2 Bhattacharya and Mitra (1990) examine the relative growth rates of commodity and services sectors. They further analyse the relationship between services growth rates by type of activities and income from commodity production and the rest of the economy, and then discuss some of the implications of the widening disparity between services and commodity sector growth rates. In doing so they compare the change in production structure in India with other developing and developed countries and show relative shares of agriculture (and allied), industry (and allied) and services in gross domestic product for selected developing and industrial countries in 1960 and 1981. They also show the relative shares of different sectors in labour force.


Bhattacharya & Mitra (1990) point out that the share of agriculture in India is relatively high and that of industry is relatively low in 1981 as compared to other
developing countries. The fall in the relative share of agriculture in other developing countries has been mostly accounted by a rise in relative share of industry. They further point out that in this way India is a special case, that is, the change in production structure in India has not resulted in corresponding change in occupational structure.

They further show that the income from services has grown faster than commodity sector in both pre and post-green revolution periods. Except in the case of the trade group, commodity output has a very poor relationship with services income. In general the growth rate of services income is independent of the growth rate of commodity sector income. Services sector has not only grown faster than commodity sector but its growth rate appears to be independent of the commodity sector.

Conventionally services sector is assumed to be demand rather than supply constrained. The demand for services is assumed to grow in relation to commodity output. Bhattacharya and Mitra’s (1990) results suggest that demand, as represented by commodity output, can explain only a minor proportion of growth of services income in India. It appears that there are strong exogenous factors governing the growth of services income.

The growth of services income would therefore increase only demand for commodities without any effect on the supply. So if there is a wide disparity between growth of income in services and commodity sector then the gap between demand and supply of consumer goods in the economy as a whole would further widen. This would result in either inflation and/or higher import demand for consumer goods.

The average annual growth rates of income from commodity and service sectors in the seventies were 2.8 and 4.0 per cent, respectively. In the eighties (1981-82 to 1987-88) relative growth rates were 4.0 and 6.1 per cent, respectively. So the gap between the growth rates of services and commodity sector has widened in the eighties as compared to the seventies. The average inflation rate (as measured from the consumer price index) in the eighties at 8.8 per cent per annum was higher than that in the seventies at 7.6 per cent per annum. The inflation rate may accelerate due to several reasons: In the seventies a significant proportion of consumer price rise was caused by severe shortfall of agricultural production and hike in import prices, particularly oil prices. In the eighties
there has been no major setback in agriculture. Even in the severe drought of 1987-88 agricultural production fell by only about three per cent. Nor there has been any big increase in the import prices in the eighties. On the contrary, the oil prices have declined for a number of years in the first half of the eighties. So, neither the domestic supply shocks nor the external shocks can be said to have accelerated the inflation rate in the eighties. The relatively faster growth of services over the commodity sector may have contributed to the acceleration of the inflation rate.

The import intensity of both production and consumption has gone up in the eighties, and among the factors that may have contributed to this is relatively faster growth of services income over the commodity production.

If there is a curb on imports to ease the balance of payments problem without any structural change in growth scenario then the disparity between growth of services and commodity production would result in higher inflation. The inflation rate is already quite high and any further increase in it may not only distort income distribution further but also produce fiscal and monetary instability which may adversely affect growth. On the other hand, if imports are liberalized further to contain domestic prices then it may lead to a serious balance of payments crisis. The ultimate solution, therefore, lies in narrowing the gap between commodity and services growth rates.

The relative disparity between the growth rates in services and the commodity sector has widened in the eighties as compared to the seventies.

The pattern of services income growth in India appears to be different from the general pattern observed elsewhere in two major respects. First, the services sector has become the predominant sector even before the economy could become a highly industrialized one. Second, the share of services in national income is much larger than its corresponding share in employment.

Whatever may be the cause, a wide disparity between the growth rates of income originating from services and commodity production would result in inflation and/or higher imports and adverse balance of trade. The inflation and the balance of trade position have worsened in the eighties as compared to the seventies. This is in line with
the increasing disparity between the commodity and the tertiary sector growth performance.

2.3 Bell and Rousseau (2000) examine whether financial intermediaries have played a leading role in influencing India’s economic performance. According to them analysis of India’s financial system can be viewed primarily as a case study of the “debt accumulation” hypothesis.

Their hypothesis is that investment, aggregate output and structural change (as measured by the share of the secondary sector in NDP) were “finance-enabled” as opposed to being driven by public spending.

They sketch the relevant features of India’s financial and economic development since 1951, paying attention to the economic strategy that has been pursued and to the institutional setting and climate in which the financial sector has emerged in its present form. They also present some evidence on the course of ‘total factor productivity’ (TFP) in organized manufacturing and on the efficiency of aggregate investment.

The measures of financial development that they use in the study are the domestic assets of deposit money banks (DMBDA), total domestic credit excluding credit to money banks (DCRED), and credit allocated to the private sector (PSCR), all expressed in per capita terms at 1981 prices. These aggregates are from the December 1997 release of International Financial Statistics, using the deflator for the new NDP series from the Government of India’s National Accounts Statistics. DMBDA reflects the size and possibly the sophistication of India’s most important formal intermediaries. The broader measured DCRED captures the throughput of the financial system generally and includes the lending activities of non-deposit money banks, insurance companies, development banks and credit cooperatives. Both DMBDA and DCRED measure the volume of credit allocated by the formal financial sector, but are flawed measures of efficiency in that they do not reflect how the sectoral distribution of loans affected the return to investment.

They also examine whether these measures of financial development are simply proxies for real per capita government expenditure (GOV). GOV is the sum of government final consumption expenditure, public sector gross fixed capital formation
and the change in the stocks held by the public sector. These data were taken from the 1997 edition of the EPW’s *National Accounts Statistics of India*.

They develop reduced forms for evaluating the strength and direction of timing relationships between individual macroeconomic indicators and measures of financial development. They include real M1 in the baseline specification. This isolates the role of medium and long-term lending in a set of credit aggregates that were influenced by short-term fluctuations in the specie base in the early years of the sample as well as the increasingly potent effects of monetary policy as the demand for checking transactions expanded rapidly after 1970. The resulting series of tri-variate VAR systems are the focus of their empirical investigation.

To determine the appropriate framework for investigating long-run relationships and statistical causality in their tri-variate systems, they first evaluate the stationarity properties of each series with Augmented Dickey-Fuller (ADF) and Phillips-Perron (1988) tests. The trending nature of the series suggests the inclusion of both a constant and trend in the test specifications, and they apply the log transformation prior to testing. Since the trajectories of the financial variables show a shift in slope in 1974, they also run the ADF tests in these cases, allowing for a single break in that year. The null hypothesis of a unit root cannot be rejected for any of their macroeconomic and financial development indicators in levels for all of the tests, and the null is rejected for first differences. They, therefore, choose to treat all series as difference stationary in their VAR models.

They thus compute a series of Johansen (1991) tests to evaluate the cointegration properties of each system and determine the number of cointegrating relationships. They begin the analysis of dynamics in the cointegrated systems with a series of tests for Granger non-causality in VARs.

They construct a set of vector autoregressive and vector error correction models to evaluate the strength and direction of the links between measures of formal intermediation and various economic aggregates.

They compute the cumulative responses of the macroeconomic indicators to single, one per cent shocks in the orthogonalized innovations to M1 and the financial
development measures. These impulse response functions order the variables according to their relative exogeneity, with the financial variable placed first, M1 second, and the macroeconomic indicator last.

Their results suggest that (i) the financial sector was instrumental not only in promoting aggregate investment and output, but also in the steady shift toward industry that has characterized India’s development; (ii) the operative channel was one of debt accumulation rather than improvements in TFP; and (iii) its contributions were beyond the passive support of fiscal policy. The main conclusion that they draw from their results is that financial development can promote economic growth and structural change even in an environment in which both industrial investment and financial activities are highly regulated.

2.4 Wang et al (2003) review international experiences, examine the factors behind the lagging service sector in China, and build a CGE model which may facilitate the process of designing a strategy for services sector trade and development.

A brief review of the previous literature has revealed the following characteristics:

The services sector has the ability to create jobs since many of the subsectors in services are labour-intensive.

Services sector is an engine of growth.

Liberalization in services trade will generate sizable gains.

They first examine the current issues in the development of China’s services sector, and discuss the potential benefits of services trade. One important cause for China’s lagging services sector development was the lack of competition and low levels of marketization. To develop this sector, it is crucial to open this sector for domestic and foreign competition, which will lead to deepened market-oriented reforms, structural transformation, and productivity gains. In other words, liberalizing services trade will create opportunities for a more rapid expansion of the services sector (including services export), which will facilitate growth and poverty reduction.

They then employ a CGE model designed specifically for it and simulate the potential impact of services sector liberalization on employment and output. Their
analysis based on simulations suggests that services sector liberalization could produce substantial benefits for China in terms of economic growth and consumer welfare. With a successful reform, services sector could become an important driving force of China's economic growth in the coming ten years.

However, the employment adjustment induced by services sector liberalization is smaller as compared to output adjustment. During the process of services liberalization, services sector experiences slight employment loss, mainly due to the productivity improvement in services sector. While the job loss could be offset by the expansion of labour demands in non-services sectors, and eventually, by the booming of aggregate demand in the long run, the structural adjustment would involve certain adjustment costs.

This highlights the importance of implementing complementary policy measures to reduce strains in labour market during the process of further liberalization. These complementary policy measures may include those aiming at increasing the flexibility of labour market, increasing labour mobility across sectors, increasing investment in human capital, as well as establishing a good social security system.

2.5 Gordon and Gupta (2004) place India’s growth experience in perspective by reviewing the existing literature and cross country evidence on sectoral transformation during growth. They identify the services activities where growth was particularly high in the 1990s. They analyze the various factors behind the dynamism of the recent growth of India’s Service Sector.

To identify the growth drivers within the services sector they compare the growth rates of various activities in the 1990s with their previous trend growth rates. The trend growth rates are estimated using the three years moving average of the growth rate, with the period 1954-90 used in estimating the trend. They use the input output matrix for India which was available for 1993-94 data. They use time series regressions. They empirically test for the significance for different factors in explaining growth. They estimate regression equation separately using time series data for each activity, and then pooled data for various activities. The right hand side variables in the regressions include measures of income, variations in input coefficients, trade in goods and services and a measure of policy changes.
They estimate separate regression equations using time series data to explain growth in each services activity. They use dummy variable for the 1990s to capture the influence of reforms. In another approach they use panel data for different service activities, where the observations are averaged over five year periods instead of a general dummy for the 1990s, they construct dummy variable which assigns a value 1 to activities that were liberalized in the periods 1986-90, 1991-95 and 1996-2000.

Gordon and Gupta (2004) show that in common with the experience of many other countries, services sector in India has grown faster than agriculture and industry. They point out that what is striking about India’s growth experience is that the service sector does not appear to have created many jobs and that Indian services sector has been experiencing increasing labour productivity. The acceleration in growth of the service sector in India in the 1990s was due to fast growth in communications, banking services, business services (IT), and community services (education and health).

Their findings suggest that there is considerable scope for further rapid growth in India’s service economy and that Indian service exports have strong future growth prospects.

2.6 Kalirajan (2004) examines the sources of output growth in manufacturing in the post reform periods, and identifies the crucial factors influencing manufacturing productivity. He further examines the characteristics of foreign direct investment in Indian manufacturing to determine the prospects for technical progress in manufacturing in India. Drawing on the poor growth performance of the Indian manufacturing sector in recent times, he tests the following hypothesis:

Indian manufacturing is still primarily geared to domestic consumption. Therefore, its growth is limited by domestic demand. For increasing production to meet export demand, there has to be substantial productivity improvement.

Indian manufacturing is not expanding because it is not changing either in terms of its composition of output, technology or technical efficiency improvement. These changes improve competitiveness in global markets. Changes are not taking place because of poor organization, manufacturing strategies and decision making at the firm level.

Manufacturing has been an engine of growth in India in the seventies and eighties. After the 1991 economic reforms, it appears that the speed of the engine has slowed down. While the manufacturing sector in China has achieved international recognition in terms of attracting foreign direct investment within a short period after the implementation of economic reforms, the experience of the Indian manufacturing appears to be different. The central focus of it is to examine why it is so. The analysis reveals that unlike in the Chinese case manufacturing output growth in the post reform period has been inputs driven rather than efficiency driven. The analysis indicates that on average about 15 per cent output growth can be achieved by improving firm’s efficiency without having to increase any inputs.

The responsibility for improving efficiency in the production process appears to be with the strategic decision making at the firm level. The national survey of manufacturing industries indicates that though firms do understand the importance of R&D to improving competitiveness, they seem to overlook this aspect. Policy measures should aim at encouraging firms to invest more in R&D, providing technical training programmes for working, and facilitating managers with more computer aided design and decision making processes. Identifying what exact policy measures should be implemented is beyond the scope of it. Though labour union militancy has been on the decline, it may be necessary to implement labour reforms, particularly with respect to hiring and firing to improve competitiveness. Also, greater opening up of the economy through further trade reforms in terms of bringing the tariff structure with the Asian tigers would provide more fuel to the engine of growth.

2.7 Banga (2005) identifies and discusses critical issues with respect to growth of India’s service sector and provides policy insights thereof. An assessment of performance of services at the aggregated as well as the disaggregated level is undertaken in terms of
their shares in GDP, employment, trade and FDI and accordingly different services have been categorized in order to identify crucial constraints on their growth.

The critical issues that have been identified are:

1. What is the pattern of growth in India’s service-sector, i.e., how do different services compare in terms of their growth rates and shares in GDP, employment, trade and FDI?
2. What explains growth in India’s service sector?
3. What explains the lack of employment growth in the services sector?
4. Can India’s service sector sustain its growth?
5. What are the important external and internal barriers to trade in different services in India?

In doing so, Banga (2005) examines the performance of aggregate service sector and disaggregated services in terms of growth rates, share in GDP, trade and GDI. She further reviews the studies that explain growth of services in India and discusses the issue of jobless growth in service sector. The issue of sustainability of growth of India’s services sector is also examined. She briefly reviews the literature on trade in services and discusses the external and domestic constraints to trade in different services. In the end she concludes the paper with highlights specific policy directions.

This study uses the United Nations’ International Standard Industrial Classification (ISIC). The broad categories of services in this classification include electricity, gas and water; construction; wholesale and retail trade; hotels and restaurants; transport, storage and warehousing; post and telecommunication; financial institution; insurance; real estate; business services; machinery and equipment rental and leasing; public administration and defence; sanitary and social services; social and related community services (including education, research and scientific institutions, medical, professional and labour associations, radio and television broadcasting, entertainment services); and personal and household services.

This study finds that the service sector in India witnessed a phenomenal growth in the decade of 1990s. During 1980s, its output grew at the rate of 6.6 per cent per annum,
while during 1990s the growth rate increased to 7.5 per cent per annum. During 1994-2004, the service sector has grown on an average by 7.9 per cent per annum, ahead of agriculture with growth of 3 per cent per annum and manufacturing sector with growth of 5.2 per cent per annum. In contrast to this, in the same period in countries like Thailand, Indonesia and China, agriculture sector has grown at an average rate of 1.5 per cent, 1.9 per cent and 3.8 per cent while manufacturing sector has grown at the rate of 7.2 per cent, 6.6 per cent and 12.2 per cent, respectively. Corresponding growth rates in services sector has been 3.9 per cent, 4.5 per cent and 8.9 per cent. Most of the developing countries witness a lower growth rate in the service sector as compared to the manufacturing sector. Higher growth rate in the service sector is, therefore, a unique feature witnessed by India.

A closer scrutiny of India’s service sector revealed that amongst services, business services has been one of the fastest growing services in the 1980s closely followed by banking and insurance. In the 1990s, a similar trend continued for business services, which grew by almost 20 per cent, but while the growth in banking increased, growth in insurance sector slowed down in the 1990s. The prime drivers of growth in services, apart from business services in the 1990s, are found to be communication services (with average growth of around 12.6 per cent) and hotels and restaurants (with average growth of around 9 per cent). However, there was a fall in the growth rates of railways, dwellings and real estate, legal services and public administration and defence in the 1990s.

Services sector has grown in importance as compared to other sectors in terms of its contribution to GDP and also its growth rates since 1990s. But this growth in share of GDP differs for different services. The most important service in terms of its share in GDP in the last decade has been wholesale and retail trade. But in terms of growth, business services and communications have experienced the maximum growth in the 1990s, but their share in GDP is still quite low. Community services (which include education and health), on the other hand, have improved their share in GDP and also their growth rates in the 1990s.
India’s exports of services displayed one of the fastest growth rates in the world, i.e., over 17 per cent per annum in the 1990s (the world average being 5.6 per cent). Correspondingly, both inward and outward foreign direct investment (FDI) in India’s services sector has also grown substantially in the same period. The share of services in total trade increased from 19.3 per cent in 1995 to 24.9 per cent in 1998.

The inflow of FDI into services sector has been biased towards few of the services sectors. Sectors that have received largest approvals are telecommunications and financial services. Within telecommunications, the largest recipient is cellular mobiles. One of the striking features of India’s FDI flows is the growing proportion of outward FDI from the services sector. The share of services in total FDI outflow increased to around 45 per cent in the period 1999-2003, in which non-financial services constitute around 36 per cent, trade is around five per cent and the rest was from financial and other services. The sectors that received higher FDI in services, i.e., telecommunications, financial and consultancy services are also the fastest growing services sectors in the economy.

On the whole, the above pattern of growth in services brings out an interesting picture. Service sector in India has been the fastest growing sector in the last decade. Within the service sector, the fastest growing services in the 1990s have been trade, communications, financial services, business services and community services like health and education. However, out of these services, it is only communication services that have witnessed growth in their share in exports and FDI during this period. The question that arises is what explains this lopsided growth in India’s services sector and can this growth be sustained?

Growth in the share of service sector in GDP is often followed by a corresponding growth in the share of service sector in total employment in the economy. However, in India she finds that though there has been a phenomenal growth in the service sector, this growth has not been followed by a corresponding high growth in employment in the 1990s. And this rise in the share of services in employment has been much slower than the decline in the share of agriculture and manufacturing in total employment. This shows that while output generation has shifted to services, employment generation in services
has lagged far behind. In the year 1999 services contributed around 28.5 per cent of total employment in contrast to 30 per cent in middle income countries, 70 per cent in Singapore and around 39 per cent in Indonesia.

While the share of service sector in total employment was around 28.5 per cent in the period 1999-2000, the share of employment differed for different services. In 1999-2000, the share of different services in total employment in the service sector was as follows: share of trade, hotels and restaurant was 34 per cent, followed by the community, social and personal services (around 31 per cent) and then by construction (16 per cent) and transport, storage and communication services (13 per cent).

The percentage growth of employment differs significantly across services in the period 1994-2000 as compared to the period 1983-1994. There is a fall in the growth of employment in community, social and personal services from 3.85 per cent annual growth rate in the period 1983-1994 to -2.08 per cent in the latter period. Fall in employment in this sector has important implications for employment potential of the entire services sector, as this sector witnessed a rise in its growth in this period (i.e. it grew by around 7.9 per cent on an average in the period 1994-2004).

The overall employment elasticity in the economy declined sharply from 0.41 in the 1980s to 0.15 in the 1990s. But it increased substantially in transport, storage and communication sector. However, there has been a fall in employment elasticity in sectors that are faster growing sectors amongst the services and have relatively higher contribution to GDP, e.g., community, social and personal services and financial services. Trade, which provided maximum employment in the service sector also, witnessed a fall in its employment elasticity.

This study classifies services in terms of their external trade barriers i.e., extent of liberalization, growth rates and share in exports of services. The period considered for extent of liberalization is post 1997, as many services were liberalized since then and average share in exports is estimated for the period 1997-2003.

The services that have witnessed substantial to moderate liberalisation do not necessarily experience high growth rates. Software services, telecommunication services and road transport have low external trade barriers but though software and
telecommunications have experienced high growth rates, road transport has low growth rate. Moderate liberalization has been experienced by services like banking, insurance, travel, health, education, construction and air transport services. But though many of them experienced high growth rates, construction and air transport services experienced low growth rates. However, services that face high trade barriers have mostly experienced low growth rates, especially professional services and rail transport that are still restricted services.

Services are also classified according to their share in total exports of services. Not all services that have low external trade barriers and high growth rates have high share in exports. In particular, health and education services have low external trade barriers and experience high growth rates but have low share in exports. This reflects high domestic constraints in these services. There exists high potential to trade in these services that are less than moderately liberalized or are restricted with high external trade barriers and low growth, e.g., professional services like legal, accountancy and rail transport. These services also have low share in exports, which reflect both domestic as well as external constraints to their trade. Construction services are also found to have low growth and low share in exports though external trade barriers have been somewhat lowered for them.

Growth in service sector has been lopsided and jobless. Some sectors have witnessed a double digit growth rate in the last decade, e.g., communication and business services, while some have experienced a fall in their growth rates, e.g., railways, real estate and dwellings. The sectors that have witnessed negative growth rates and those that have experienced slow growth rates are also the sectors that have large potential for generating employment, e.g., construction, transport and professional services. Rising labour productivity in the faster growing sectors has further reduced the scope for increasing employment in these sectors.

To resolve the problem of lack of employment growth in services, there is a need to achieve uniformity in the growth of different services.

The services that have maximum forward as well as backward linkages are trade, transport and construction. These sectors are found to have high domestic constraints and
therefore, require immediate policy reforms. Adequate infrastructure facilities will not only enhance the country’s attractiveness to foreign investment but will also improve competitiveness of domestic investment. Since these sectors have large potential for generating employment, growth in these sectors will also help in resolving the dilemma of jobless growth in the services sector.

Health and education sectors have high potential for trade since they have low external barriers and high growth rates. Given the low cost quality treatment available in India, there is a large scope for health tourism in India. India also has a competitive advantage in the practice of alternative medicine. These areas should be developed and exploited for trade opportunities.

2.8 Banga (2005a) undertakes a selective review of both theoretical and empirical studies with respect to some of the conceptual issues regarding the role of services in the growth process of developing countries in the context of rising share of services in total output and employment in the global economy. She identifies the factors that lead to higher use of services in the growth process of developing countries, viz. higher income elasticity of demand for services, structural changes and trade liberalisation along with other reforms and improved technology.

The relationship between service sector and manufacturing sector in the growth process is discussed. It is emphasized that the process of growth is accompanied by dual spill over effects, i.e., growth in manufacturing sector improves growth in service sector since it creates additional demand for services, which arises due to structural changes that makes contracting out cheaper and more efficient for manufacturing sector’s growth. Service sector, in turn, leads to higher growth in manufacturing sector since it to leads to higher demand for new products and brings about improvement in productivity of manufacturing sector.

Further, the issue of lower productivity in services as compared to goods is discussed in detail and the problems in measuring productivity of services are highlighted. She also discusses the issue of productivity paradox. She points out that the current literature is found to emphasise that ‘service economy’ is structurally different from the previous era of ‘mass industrial production’. Increased expenditure on producer
services also enhances the efficiency of production by allowing for higher level of specialisation in production. The literature, therefore, points out that service are becoming more and more crucial in the growth process of an economy.

She points out the following stylised facts that emerge from the literature about relationship of services with income growth:

a) The proportion of labour force employed in agriculture declines and that in manufacturing and services rises with per capita GDP;

b) prices of services and real per capita GDP are positively associated;

c) labour productivity in services relative to that in commodities is likely to be lower in rich countries than in poor countries; and

d) the share of services in expenditures rises with per capita income if the conversion is done at the exchange rate but remains constant across if conversion is done at the purchasing power parity.

Services follow and support manufacturing. Manufacturing is seen as flowing to those countries and areas where the service infrastructure is efficient and well developed.

One of the important policy implications that she drives from her review is that economic growth is closely linked to growth in service sector. An important aspect of services is the ability to generate sizable external economies or diseconomies that are not reflected in the price signals. Therefore, the price of services tends to differ substantially from social costs associated with them. Also, closely linked with the problem of externalities is the problem of linkages, both backward and forward, with the rest of the economy and with its growth rate. Inefficiencies in services tend to exert a multiplying effect on the economy as a whole and efficiency in providing services can make a considerable difference to the sectoral growth rates. It is, therefore, very important for an economy to provide services as efficiently as possible and this may require not only increasing investments in services but also continuously improving on them through improved technology and more knowledge.

Banga (2005a) finds that there is an ever-growing literature on trade in services, but studies on contribution of services to growth and productivity in services are limited.
A wide range of theoretical and empirical challenges exists in these areas. She identifies the following areas where future research is needed:

1. The extant literature does not provide a single encompassing definition of services but does highlight many characteristics that could form the basis for a universal definition.

2. In view of the technological advances that have taken place in the last few decades, there is now a need to take a fresh look at the characteristics of services highlighted in the literature. Further research is required to arrive at some economic-definition of services rather than frameworks for classifying services.

3. There is a dire need for further research on productivity in services. In particular, to develop improved methods of estimating outputs and inputs of services. A promising line of research could be to examine productivity differentials between service and non-service sectors and formulate theoretical and analytical frameworks to find possible explanations for the existing differentials and ways for making the convergence occur.

4. Low productivity in services indicates that with the growth in service sector the impact on employment can be substantial. However, research on implications of liberalisation of services on labour markets is almost non-existent.

5. Another direction of research can be to identify determinants of productivity and growth in services and estimate the implications on welfare and growth of the economy.

6. Limited empirical research exists in the area of services. What remains the biggest hurdle in future research in services is the lack of reliable, timely and easily interpretable data.

7. There is a need to formulate an Index of Services in order to have a coherent policy on services. Appropriate measures to estimate output in services need to be identified and by attaching suitable weights to disaggregated services, index for services can be formulated. Given the heterogeneity of services, formulation of separate indices can also be considered.
2.9 Chakravarty (2005) theorizes the evolution of agriculture and industrial growth, as also to the relationship between the two. A theoretical treatment of the services sector and its growth, in a macroeconomic context, on the contrary, is hard to find. However, it may be assumed that in a three-sector economy consisting of agriculture, industry and services, the demand for services in a closed economy is a function of the outputs generated in the commodity producing sectors of agriculture and industry. In an open economy, domestic services can expand either directly through external demand for specific services or indirectly through the boost in local incomes provided by remittances from emigrant labour. States within India are fully open with respect to other states in the country. Thus growth in incomes elsewhere, especially in neighboring regions can promote the expansion of services in any region under favourable demand and supply conditions.

The two variables she concentrates on are output and employment. She begins with sectoral outputs. National Accounts Statistics (NAS) provide time series sectoral output data for the country as a whole, as well as for the states. The output figures or the figures for gross state domestic products (GSDP) are given under the broad heads of the major nine industrial categories with some disaggregation. The period for analysis chosen in the study is 1980-81 to 2002-03.

She decided to do a cross section analysis of the output elasticities of services sector employment and productivity with respect to the outputs of the commodity producing sectors of the economy. The Census data for 2001 gives a four-fold classification where the fourth category consists of the non-household industry and the services sector employment together. For the analysis of employment she has considered the main workers only.

Their analysis does give a handle to enter into a vast and complex problem of the Indian economy. While services sector growth in the recent era is a common experience to all the Indian states, the nature and determinants are not exactly the same. The industrial sector turns out to be the most important determinant of the services sector growth in different states. However, the analysis suggests that it is necessary to have high
and stable rate of growth as well as diversification over time in the commodity-producing sector to foster growth in the services.

Under these conditions, agriculture is also likely to generate substantial demand for the services. Inter-regional divergences in the development experience thus become highly influential in this context. The rest of the Indian economy’s commodity producing sector may play an important role in determining the services sector performance of a specific state depending upon inter-regional disparities in labour cost, infrastructure facilities etc. that basically relate to the supply side issues. Incidentally, except for the services sector hardly any significant change can be identified in the growth performances in the other two sectors in the post reform period, including industry, when compared to the early reform era of the eighties. This is true for the output elasticities of the services output as well. If this is so, it is essential to take a hard look at the macro policies that promoted a more open and liberal economy particularly after the early 1990s.

2.10 Dasgupta and Singh (2005) discuss the role of manufacturing industry and the informal sector in Indian economic development in the light of the following facts: (a) a faster growth of services than that of manufacturing in many developing countries (DCs), (b) the emergence of “de-industrialization” in several DCs at low levels of per capita income, (c) jobless growth in the formal sector even in fast growing countries such as India, and (d) a large expansion of the informal sector in both fast growing and slow growing DCs.

In doing so they outline some empirical facts about manufacturing and services for the Indian economy and discuss the services versus manufacturing controversy in theoretical terms. They present econometric analysis of the main Kaldorian hypothesis and attempt to throw light on the question: to what extent, if any, the Kaldorian model which emphasized the pivotal role of manufacturing in economic development is still valid. Their empirical analysis is carried out at three levels: i) the comparative international level, ii) the interstate level within India and iii) the sectoral level. Thereafter, they briefly examine services in relation to the Indian balance of payments.
They provide basic empirical information about Indian experience regarding sectoral growth output, employment and productivity in a comparative global context. They point out that it is not only the IT sector in services which has experienced fast growth in the last decade, but almost all service sub-sectors have grown faster than GDP, the fastest growth being recorded in business services, communication, banking services, hotels and restaurants and community services. Other services such as public administration, defense, real estate, storage, transport and personal services did not register any acceleration in growth in the 1990s. Turning to the IT sector itself, they point out that although the sector has grown at a very faster rate, its quantitative significance in the overall picture of the economy is rather limited. The sector accounts for less than 1 Per cent of GDP; it employs:

i) Tests based on cross-sectional analysis of data from 30 developing countries over the period 1980-2000.

ii) Tests based on cross-sectional analysis of data for 29 Indian states during the 1990s.

iii) Tests based on data for un-organized and organized industrial sectors in the Indian states.

The tests of Kaldor’s laws have been performed in terms of the relationships between growth rates of the relevant variables as well as the relationships between log levels of variables. The testing of Kaldor’s laws is done at the cross-country level. The exercise is carried out in log levels for a cross-section of thirty developing countries for the years 1980, 1990 and 2000, respectively.


Their results support Kaldor’s first law and suggest that countries with above average manufacturing growth also have above average growth of total GDP. This leads to the hypothesis that productivity growth in the economy, as a whole, should vary
positively with the expansion of the manufacturing sector. It also suggests that an economy’s productivity growth should vary inversely with the growth of labour force not employed in manufacturing.

The analysis on Kaldor’s laws is carried out for a cross-section of Indian states for the period 1993-1994 to 1999-2000. This analysis is also presented separately for the organized and unorganized manufacturing sectors indicating high correlation between sectoral and overall growth. Agricultural growth rates are also highly correlated with GDP growth, but the correlation is not as high as that for manufacturing and GDP growth.

The analysis is carried out separately for data on the registered and unregistered manufacturing sectors. Both manufacturing sectors are highly positively related to state-GDP growth. There is a highly positive co-relation between unregistered manufacturing growth and state-GDP growth for both 1993-94 and 1999-2000.

There is a fast growth of international trade in services so that the advantages which manufacturing and agriculture have in this sphere is eroding and there are reasons to believe that it will erode further in the future. The latter expectation is due to two factors. First, the current and the next round of trade negotiations at the WTO will be concerned with services leading to their greater tradability. Secondly and importantly, technical progress including the IT revolution have made it possible for the services to be provided from far away as in the case of outsourcing, call-centers and the back-office business services. Ultimately, how important is the balance of payments argument on manufacturing versus services remains an empirical question?

India’s share of world manufacturing exports has not raised as much as India’s share of world IT exports. India’s software exports constitute almost 20 per cent of the country’s visible exports. By 2008 this contribution is expected to rise to 30 per cent. Therefore, from the perspective of the contribution to the balance of payments alone, it is not obvious if one should prefer manufacturing to services, since not only IT services provide a major contribution to the balance of payments, but also other credits, such as remittances which arise from the activities of migrants are also significant. However, whether or not the export of unskilled labour comprises a nation’s competitive advantage,
it certainly makes a more than proportionate contribution to GDP growth in a typical balance-of-payments constrained developing country. They further point out that India can hardly afford to ignore the contribution which manufacturing has to make to meet domestic demand and to support the balance of payments. Given India’s level of per capita income, the demand for manufactures is going to remain high for a long time. The country will have to do either efficient import substitution or export promotion or both for manufacturing as well as other sectors so as to be able to pay for the imports required at high rates of economic growth. For a big country like India, it needs to develop both, efficient manufacturing as well as service industry and agriculture, so that it can meet the demand of its people for fast economic growth at a sustainable level of trade surplus of deficit. In the Indian case, the unregistered manufacturing sector is subject to increasing returns.

Finally, in relation to manufacturing versus services their data indicate that both are closely related to the growth of GDP. The growth of services depends largely on the growth of manufacturing. However, this argument, although it may be applicable for certain services such as retailing and transportation, is not entirely obvious for many other services. Information technology, in particular, can be regarded more as causing the expansion of manufacturing rather than the other way round.

A policy implication of this evolution is that India should take advantage of its strength in IT and use it extensively in all areas of the economy in order to upgrade manufacturing, agriculture as well as services. The country must create the institutions and the means to effectively introduce this technology into the rest of the economy. This is certainly one of the real strategic tasks facing the Indian policy makers during the next ten years.

2.11 Jensen & Kletzer (2005) discribe a new empirical approach to identify, at a detailed level, services activities that are potentially exposed to international trade. They use the geographic concentration of services activities within the United States to identify which services activities are traded domestically. They classify activities that are traded domestically as potentially tradable internationally. Using the identified industries and occupations, they develop estimates of the number of workers who are in tradable
activities for all sectors of the economy. They compare the demographic characteristics of workers in tradable and nontradable activities and employment growth in traded and nontraded service activities. They also examine the risk of job loss and other employment outcomes for workers in tradable activities.

When they examine employment growth trends across traded and nontraded activities, tradable activities have lower growth rates, which is due primarily to employment losses in manufacturing. Within services, tradable and nontradable activities have similar growth rates except for at the lowest end of the skill distribution. Low-skill tradable industries and occupations have negative average employment growth compared with positive (though low) employment growth in nontraded, low-skill services.

They also examine worker displacement rates in tradable and nontradable services activities. They see some evidence that displacement rates are higher in tradable services industries than in nontraded. They also find higher displacement rates in tradable white-collar occupations than in nontraded. Consistent with the characteristics of employed workers, they find workers displaced from tradable services activities are more educated with higher earnings, than workers displaced from nontraded activities. Job loss from tradable and nontraded services activities is costly to workers in terms of earnings losses. Taken together, the results are consistent with the view that economic activity within the United States is moving toward US comparative advantage in services, similar to manufacturing.

They develop a new empirical approach to identify, at a detailed level for the entire economy, industries and occupations that are tradable. Using the methodology, they find substantial employment in tradable services industries and occupations. Workers in these industries and occupations are higher-skilled and have higher incomes than workers in the manufacturing sector and nontradable services activities. The higher incomes are not solely a result of higher skill levels in regressions controlling for observable characteristics, workers in selected tradable services activities earn 16 to 17 percent higher incomes than similar workers in nontradable activities in the same sector.

Examining employment growth across industries and occupations, there is little evidence that tradable services industries or occupations have lower employment growth
than nontradable industries or occupations overall, though at the low end of the skill distribution, employment growth is negative for tradable services. High-skill services activities have the highest employment growth rates.

There is job insecurity associated with employment in tradable activities, including services activities. They find a higher rate of job loss from tradable industries than from nontradable industries, with the greatest difference outside of manufacturing. Compared with an overall rate of job loss of .103 for 2001–03, tradable nonmanufacturing industries have a rate of job loss of .128 and nontradable industries, .073 (though they note the possibility that these differences are driven by the technology bubble). Also within occupations, workers in tradable jobs faced a higher rate of job loss than workers in nontradable jobs, with the greatest difference within white-collar occupations.

These results have several implications. First, it seems inappropriate to consider all services activities as inherently nontradable. The geographical concentration of some services activities within the United States is as great as in manufacturing and is consistent with the view that a number of services industries and occupations are tradable. The share of employment in tradable services is large enough that a better understanding of the forces shaping trade in services warrants their attention. At a minimum, more resources should be devoted to collecting and publishing considerably more detail on international services flows. Continuing to increase the amount of information collected on the use of intermediate services inputs within the United States would also increase our ability to track and understand developments in this large and growing sector.

Second, while the share of employment in tradable services is large, this does not suggest that all or even most of these jobs are likely to move offshore. Just because an activity is tradable does not necessarily mean that the job will move to a lower-cost location. Indeed, the results presented in the present study suggest that tradable services are largely consistent with US comparative advantage. While professional and business services are higher skilled and higher paying than manufacturing in general, tradable services within these sectors are even higher skilled and higher paying than nontradable
services activities. As technological and organizational change increases the potential for trade in services, economic activity within the United States will shift to activities consistent with US comparative advantage. Because these activities are consistent with US comparative advantage, it is possible that further liberalization in international services trade would directly benefit workers and firms in the United States. The policy community should devote more attention to understanding the impediments to services trade.

Third, while the employment growth results indicate that tradable services have relatively high employment growth rates overall, at the low end of the skill distribution, tradable services activities have negative employment growth. The potential for reallocation across activities in response to shifting trade patterns in services is real. Policymakers should prepare for additional reallocation among this group of workers.

The process of adjustment to job displacement might be eased by service worker characteristics. For the most part, workers displaced from tradable services are different, in terms of job tenure and educational attainment, from workers displaced from (tradable) manufacturing industries. Generalizing from what they know from studies of manufacturing worker job loss, lower levels of job tenure and higher levels of educational attainment may be advantageous in regard to reemployment outcomes.

The evidence they do have tells them that service worker job loss is costly. These costs underscore the need for a less-porous safety net (e.g., extending Trade Adjustment Assistance (TAA) to services workers, extending wage insurance beyond TAA). Lower levels of employment growth at the lower end of the skill distribution within tradable service activities may have implications for retraining strategies and opportunities for displaced low-skill workers from both manufacturing and services.

2.12 Rath & Raj (2006) examine to make an evaluation of performance of services at the aggregated as well as the disaggregated level in terms of their shares in GDP, employment, expenditure, tax, etc. They identify some of the critical issues in India’s services-led growth. Their hypothesis is that:

(i) Whether the robust growth of the services sector has added a dimension of stability to India's GDP growth;
(ii) Whether there has been a growing complementarity between services and industrial sectors of the economy;

(iii) Whether the services sector also experienced ‘jobless’ growth like other commodity-producing sectors;

(iv) Whether the imposition of services tax has boosted the Government’s effort at mobilising more resources;

(v) Whether high growth of services sector had any inflationary impact on the economy.

They found that the higher growth in services sector has added a measurement of stability to India's growth process. Growing complementarity between the industrial and services sectors augurs well for the medium-term growth performance of the Indian economy. Unlike other commodity-producing sectors, which have either seen a slow-moving growth or decline in employment, they found that the services sector has generated some employment opportunities. In the after effects of nearly one and a half decades of sustained growth, services sector has led to widening of not only the tax base but also the optimism of taxes. With regard to inflationary impact of services sector expansion, they find that growing service sector share in GDP has coexisted with low and stable inflation on account of inflation moderating forces operating, *inter alia* through the synergy between the two growth drivers.

2.13 *Sakthivel & Joddar (2006)* examine the growth and structure of formal and informal sector workforce by one-digit industry across major Indian states. They have examined the coverage of social security schemes among economically and socially vulnerable sections of the workforce, with particular reference to provident fund schemes in India. They have adopted two approaches for estimating unorganized workers in India. These are the residual and direct approaches.

The residual approach is the result of deducting estimates of organised employment [available from DGE and T (Directorate General of Employment and Training) source] from total employment figures derived from employment-unemployment surveys (EUS) of NSS. Absolute numbers of workforce figures are
arrived at by first obtaining worker-population ratios (of usual principal and subsidiary status) from the unit level records of EUS of each round. To understand the trends and patterns of both formal and informal segment of workers through residual approach, they have used four quinquennial rounds (38th round – 1983; 43rd round – 1987-88; 50th round – 1993-94; and 55th round – 1999-2000) of EUS of NSS along with the Employment Market Information (EMI) figures of DGE and T for the corresponding period.

Direct estimation involves arriving at organised/unorganized component of workers directly from EUS, based essentially on the following variables:

(a) employment status of workers: salaried/ regular labourers, casual wage workers and self-employed workers; (b) type of enterprise; (c) number of workers; (d) type of job: part-time/temporary, etc; and (e) coverage of provident fund.

India’s workforce comprises nearly 92 per cent of unorganized workers, with virtually the entire farm sector falling under the informal category, only one-fifth of the non-farm workers are found in the organised segment. Utilising both residual and direct approaches, the study uses the last four quinquennial rounds of employment-unemployment of national sample survey. The study examines the growth and structure of formal and informal sector workforce by one-digit industry across major Indian states. Estimates suggest that in the non-farm sectors, as they move up the ladder of income, the share of informal sector gradually declines. However, as far as the agricultural sector is concerned, irrespective of economic class, the share of the unorganized segment of the workforce remains flat. Further analysis reveals that the coverage of social security schemes has been largely against economically and socially vulnerable sections. While regular workers are largely covered by the provident fund regime, the ever increasing army of casual and contract workers, even in the organised sector appear to have been discriminated against, not to speak of the entire self-employed, which accounts for a significant proportion of India’s workforce. Although the statutory provisions of provident fund are supposed to be applicable universally among industries specified in schedule I, the evidence clearly points to a dismal state of affairs. Hence, there is a crying
need to enforce the same in the industries covered apart from revising the list (enhanced) of industries continuously.

It is in this context, constant skirmishes from the ruling class to “reform” provident fund must be resisted tooth and nail. The current interest regime of provident fund is being “liberalised” from the earlier administered regime. Efforts by the government in revising interest rate downward from 9.5 to 8.5 per cent to the fund subscribers must be seen in this context. This is a clear case of transfer of income from labour to capital (Fine 1999). The Pension Fund Regulatory and Development Authority (PFRDA), 2005 is only a prelude to the larger design of privatisation of pension and provident funds. Global pension fund managers find that the huge corpus fund that Indian ruling class is offering them on a platter irresistible.

Moving away from defined benefit schemes to defined contributory schemes is fraught with danger. The exposure to risks of shifting to contributory schemes arising from future adverse investment return, etc. will have a serious bearing on the workers’ fragile savings. As far the larger issue of extending social security measures to the unorganised sector is concerned, they argue that given the poor affordability and lack of institutional mechanism, any design of social security that relies heavily on contributory basis is bound to fail dismally.

2.14 Singh (2006) reviews the recent growth experience of India, identifies the major contributing factors to its pattern of development, and examines the prospects for further “services-led” industrialization in India. The analysis draws on theoretical models as well as case studies of the Indian experience. In doing so, he provides a conceptual framework for the examination of the Indian experience. In particular, he discusses the nature of services, their distinction from products, and their categorization. He argues that the precise nature of the services being considered is important for any analysis of growth impacts, and that one, therefore, has to go beyond broad national income accounts categories to understand the role of services in industrialization. He provides a detailed examination of the contribution of the service sector to growth, and the relative performance of manufacturing and agriculture. He further examines the potential for
spillovers from IT, ITES and other service sectors such as financial services, to the rest of the economy, both in terms of sectors and regions.

He draws on econometric work on productivity growth, as well as, on input-output analysis of linkages to understand these possible spillovers. It is possible, based on this evidence, to hypothesize that India’s manufacturing sector development may have been constrained, at least in part, by weaknesses in key service sectors such as transportation and electricity. In fact, other evidence suggests that telecommunications reforms were critical for the rapid growth in IT and ITES.

He considers the particular role of international trade in services. This deserves special treatment because of its growing importance, and because balance of payments constraints have often been major barriers to stable growth for developing countries. He discusses the consequences for employment of different growth paths, and the challenges of education and manpower training to support and sustain India’s development path. He then briefly considers the social and environmental issues associated with “services-led” or alternative development paths. The focus is on impacts that do not necessarily manifest themselves in the national income accounts and growth statistics.

Singh (2006) points out that India’s more rapid growth in the 1980s and, especially, in the 1990s has been the result of policy changes as well as initial conditions. The pattern of growth has been skewed toward the service sector, as well as toward skill-intensive activities. India’s service sector was responsible for over 60 per cent of its GDP growth in the 1990s, well above the sector’s contribution in previous decades. A small number of service sub-sectors seek to have led the overall contribution of services to GDP growth. In fact, the four fast growing sub-sectors in the 1990s accounted for effectively all of the more rapid services growth of the 1990s.

He begins with the empirical question of what factors can explain observed service sector and sub-sector growth in India. One possible answer is increased specialization, or splintering, which, if it occurs across sectors, would alter the aggregate accounting. More precisely, if services components of manufacturing activity such as accounting, research and development, or logistics are splintered off and outsourced to
other firms, they will be accounted for as service sector contributions to GDP, rather than being subsumed in manufacturing value added.

India’s pattern of development, with relatively slow growth of manufacturing, and a more rapid increase in the size of the service sector than would be typical, has received considerable attention. The contribution of this study has been to attempt an integrated appraisal of India’s experience and future potential along this growth path. It is straightforward to argue that manufacturing, services and agriculture are all important, and broad policy steps to improve growth and employment across the economy are desirable. Specific policy suggestions with respect to improving the tradability and productivity of particular services also emerge from various analyses. Analyses of linkages suggest that certain service sub-sectors of the economy, such as trade, transportation and communications, may be particularly important.

Several less obvious implications do emerge from this study. First, some of the dichotomy between services and manufacturing may be overdrawn, as certain kinds of services can be organized in ways that are closer to modern manufacturing. Nevertheless, there are some differences in education requirements, and employment and social impacts, particularly in the skill-intensity required by some of the services that have seen the highest growth in India in the last decade or two. Indeed, the constraints on appropriate skill acquisition that face the majority of the population in India represent the greatest barrier to any kind of sustained growth, and a major policy challenge in the politically charged arena of education. Tackling the education bottleneck, and adding some labour market reform, may go a long way to allowing Indian industry and its services sector to draw on the large numbers of underemployed, poorly productive people in India’s rural heartland.

2.15 Banga and Goldar (2007) point out that in recent years, there has been some appreciation of the need for taking services as a separate input in the production function for carrying out productivity analysis. The Organisation for Economic Cooperation and Development (OECD) productivity manual, for instance, generalizes at the conceptual level, the KLEM model to a capital-labour-energy-materials-services (KLEMS) model by including services as an input. However, there are very few actual empirical studies on
production functions or productivity in which services have been taken as a separate input. Their study aims at filling this gap in the literature. To this end, a study of the contribution of services to output growth and productivity in Indian manufacturing industries is undertaken using the KLEMS production function framework.

To indicate the importance of this issue, they point out that there has been a rapid growth in the services sector in India, especially in the 1990s – a decade of major trade and industrial reforms in India. During 1981-90, services sector output grew at a rate of 6.6 per cent per annum. During 1991-2000, the growth rate was 7.5 per cent per annum, ahead of the growth rate of industry at 5.8 per cent per annum and that of agriculture at 3.1 per cent per annum. Business services have been the fastest growing sector in the 1990s, attaining a growth rate of about 20 per cent per annum. Some of the other services sectors, which have grown relatively fast in the 1990s are communication (14 per cent per annum) and banking (13 per cent per annum), both of which are extensively used by industries. Against this back-drop, they address the following three questions:

(i) What has been the contribution of services to the growth in Indian manufacturing industries? Has the relative contribution of services to industrial growth increased in the post-reforms period?

(ii) Has the growing use of services as input contributed to increases in productivity in Indian manufacturing industries?

(iii) To what extent is the fast growth in the use of services in Indian industries a consequence of the economic reforms, particularly trade reforms undertaken in the 1990s?

In the course of their study, they briefly discuss the data sources used in the study and the measurement of output and input of manufacturing industries. They then present estimates of a KLEMS production function for Indian manufacturing, using which a supply-side analysis of sources of growth in manufacturing is carried out for the period 1980-81 to 1999-2000 and separately for the 1980s and 1990s, based on the growth accounting framework with the principal aim to assess the contribution of services to industrial growth. Thereafter, an analysis of the effect of services input on industrial productivity is undertaken. For this purpose, a multilateral total factor productivity index
is constructed for 41 major industry groups (comprising the manufacturing sector) for the period 1980-81 to 1999-2000, with and without services. To assess the effect of services input on productivity, the total factor productivity index is regressed on a set of explanatory variables including technology acquisition intensity and the ratio of services input to employment. Finally, they present the results of a multiple regression analysis undertaken to explain inter-industrial and inter-temporal variations in the intensity of use of services in manufacturing industries. The purpose is to ascertain if the growing use of services in Indian industries in the 1990s had something to do with the economic reforms, particularly trade reforms.

The study uses two data sets. One is at a more aggregated level, i.e., for 41 major industry groups (comprising the organised manufacturing sector) for the period 1980-81 to 1999-2000. The other data set is at a more disaggregated level, covering 148 three-digit level industries for the period 1980-81 to 1997-98.

The regression analysis uses variables representing technology acquisition and foreign direct investment as determinants of productivity along with export intensity of industries and the ratio of services input to output. Data on export intensity of industries, foreign direct investment and technology acquisition intensity have been taken from the Prowess database of the Centre for Monitoring Indian economy (CMIE), Mumbai. Export intensity is measured by the ratio of exports to sales. The share of foreign companies in total sales of the industries has been taken as the indicator of the level of foreign direct investment. An index of technology acquisition intensity inflow has been constructed using data on research and development (R&D) expenditure, payment of royalty and technical fees for technology imports, and capital goods imports. The construction of the index has been done in two steps. First, the relevant ratios (e.g., R&D expenditure on sales) have been constructed for the 41 major industry groups from firm level data taken from the Prowess database of the CMIE. Next, applying the principal component analysis and taking the first principal component, the index has been formed. The index combines the three technology related variable using factor loadings as weights.

For the regression analysis, industry-wise tariff rates and non-tariff barriers are used as explanatory variables.
The analysis of supply-side sources of growth of Indian manufacturing is based on a KLEMS production function estimated from panel data. To keep the analysis simple, a Cobb-Douglas functional form has been chosen.

The data set on output and input for 148 three-digit-level industries for 18 years, 1980-81 to 1997-98, has been used for estimating the production function. Estimation has been done by both the fixed-effects model and the random-effects model.

Separate analyses have been carried out for the periods 1980-81 to 1989-90, and for the entire period 1980-81 to 1999-2000. The estimated coefficients of the KLEMS production function obtained by the random-effects model have been used for the decomposition of output growth. The estimates of parameters give the elasticity of output with respect to labour, capital, materials, energy and services, respectively. The contribution of each input to output growth is computed by multiplying the trend growth rate of the input with the elasticity of output with respect to that input. Adding together the contributions of inputs, the growth rate of total input is obtained. The gap between the growth rate of output and the growth rate of total input gives the growth rate of total factor productivity.

To study the effect of the increased use of services on manufacturing productivity, a multilateral TFP index has been constructed.

The multilateral total factor productivity index (MTFPI) has been computed for 41 industry groups for 20 years, 1980-81 to 1999-2000, from the aggregate level panel data set. Based on the MTFPI, it presents the trend growth rate in TFP in Indian manufacturing for the periods 1980-81 to 1989-90 and 1990-91 to 1999-2000, and for the entire period 1980-81 to 1999-2000. To arrive at a summary estimate of TFP for the manufacturing sector, a weighted average of MTFPI across industries has been taken for each year, using value-added weights.

In order to examine the reasons for higher use of services in the manufacturing sector in the post reforms period, the impact of higher competition, higher relative cost of using in-house services and development of the services sector in the post reforms period is estimated.
Since panel data are used for the analysis, panel data estimation techniques have been applied.

For measuring output and input, data have been drawn mainly from the *Annual Survey of Industries* (ASI), published by the Central Statistical Organisation (CSO), government of India and from the *Economic and Political Weekly* electronic database for the period 1973-74 to 1997-98. Concordance has been worked out between the industrial classifications used till 1988-89 and that used thereafter (NIC-1970 and NIC-1987), and comparable series for various three- and two-digit industries have been prepared. ASI data at three-digit industry level according to NIC-1987 could be obtained for 1998-99 and 1999-2000 from a special tabulation of ASI results, which was done by the CSO. The time series on value of output and input at nominal prices at the level of three-digit industries have been aggregated to obtain the series for the 41 industry groups. The series at nominal prices have been deflated to obtain real output and input series.

For the purpose of deflating output and input, wholesale price indices have been used, taken from the official series on *Index Number of Wholesale Prices in India*. Construction of materials and energy price indices require input-use weights, for which the input-output matrix for 1993-94 prepared by the CSO has been used. A similar approach has been taken for constructing a deflator for services.

The EPW database has been used to obtain data on output and input for 148 three-digit industries for the period 1980-81 to 1997-98. The time span for the disaggregated data set has not been extended beyond 1997-98 because ASI changed its industrial classification after 1997-98. The measurement of output and for this data set has been done more or less in the same manner as for the data-set for 41 industry groups.

Real value of services used in manufacturing grew at the rate of about 0.4 per cent per annum in the 1980s and the growth rate increased sharply to about 16 per cent per annum in the 1990s. The contribution of services to output growth was a meager 0.06 per cent per annum during the 1980s, which increased substantially to 2.07 per cent per annum during the 1990s. The relative contribution of services to output growth was about one per cent in the 1980s and it increased to about 25 per cent in the 1990s. Thus, the
results indicate that the increased use of services in industrial firms made a significant contribution to industrial growth in India in the 1990s.

The growing use of services in manufacturing in the post-reforms period might have contributed to better productivity performance. In the post-reform period, there was a marked acceleration in the growth rate of services used in Indian manufacturing.

The results of the multiple regression analysis are based on panel data for 41 industry groups for 20 years, 1980-81 to 1999-2000.

While answering the question on how trade reforms caused increased use of services in manufacturing the study shows that the lowering of tariff and non-tariff barriers had a favourable effect on the use of services in Indian manufacturing. In other words, the observed acceleration in the use of services in manufacturing in the 1990s is attributable in a significant measure to the trade reforms. The coefficients of the wage rate variable for the 1990s are found to be positive. Accordingly, it may be inferred that the economic policy changes made in the 1990s and other developments in this decade created a condition favourable for the increased use of services in manufacturing.

The results brought out that the importance of services as an input to production in the manufacturing sector increased considerably in the 1990s as compared to the 1980s. Use of services in manufacturing grew at an accelerated pace in the 1990s. The growth rate was about 16 per cent per annum. The contribution of services to the growth of manufacturing output went up considerably, from about 1 per cent in the 1980s to about 25 per cent in the 1990s. The trade liberalization undertaken in the 1990s, which increased competition in the domestic market, was found to be responsible, to a certain extent, for the increase in the intensity of use of services in the manufacturing sector. It appears from the empirical results that the increasing use of services in manufacturing in the post-reforms period had a favourable effect on the industrial productivity.

The findings of their study suggest that the use of services is growing rapidly in the industrial sector and the increased use of services is contributing to both output and productivity growth in the industrial sector. This points to the possibility that the Indian services sector might not only succeed in sustaining its own growth but might also help in improving the growth rate of industrial sector in the near future.
2.16 Basu & Maertens (2007) present the broad macro parameters of growth of the Indian economy since independence and also a cross-country evaluation of where India stands. It then goes on to discuss the broad patterns that can be discerned in these aggregative statistics pertaining to India, including the sectoral statistics, and give a brief overview of the on-going debate on the components of Indian growth and the relative importance of the different policies in the 1980s and 1990s.

They conclude that if India wants to sustain and raise even higher its current growth, the main bottlenecks in the Indian economy will need to be addressed. These are infrastructure (roads, expensive freight rates, power supply, ports, and airports), labour and bankruptcy regulations, and the high level of corruption in the government bureaucracy. In addition, the current erratic and low growth pattern of the agricultural sector and the rising inequality between states, between rural and urban areas, and within urban and within rural areas mainly since the 1990s are a concern.

Of these numerous factors, they have addressed only a few in it. Each of these factors deserves inquiry, research, and policy initiative, but in concluding they remark briefly on just one of them the subject of inequality.

Comparing the ratio of the income shares of the richest 10 per cent over the poorest 10 per cent in India with other countries, one may be tempted to conclude that inequality in India is not abnormally high. According to the World Bank’s World Development Indicators 2006, this ratio was 7.2 in India (in 2000), compared to 18.36 in China (in 2001), 48 in Guatemala (in 2002), and 15.9 in the USA (in 2000). As such, India’s current inequality seems to be low and comparable to some of the Western European nations. But one has to remember that a poor country will have a natural tendency for greater equality, since people cannot survive below a certain level of income. To take an extreme case, a country that has a per capita income equal to the subsistence income will, by definition, have no income inequality. Hence, despite the seemingly encouraging inequality ratio, inequality, especially when it results in higher poverty, is a serious problem for India. This could lead to political tensions and could destabilize the otherwise optimistic growth scenario. But, even if it does not dampen the country’s growth prospects, it seems to them that greater equity and the reduction of
poverty are valuable ends in themselves. Indeed, it is arguable that growth is valuable precisely because it enables a country to banish poverty and achieve greater equality.

2.17 Giri, Roy, and Mukhopadhyay (2007) examine how the estimate of labour input and value added per unit of labour input for an economic activity or a group of economic activities are obtained in the NAS. They point out that there are some limitations in estimating the count of jobs from the data available according to the current activity status approach due to the procedures adopted for recording the status-cum-industry of each individual in EUSs of the NSSO. In the current daily activity status approach, “full” intensity of work is recorded corresponding to the status-cum-industry for regular wage/salaried employees, whatever other jobs they perform on a particular day, and thus, their secondary work, if any, makes no contribution to the job counts.

They further point out that for NAS purposes, it is essential that the labour inputs are estimated for the compilation categories of the activities. This is not directly possible from the daily activity status data. The data in respect of daily activity status are collected at the two digit level of the NIC and hence, the distribution of jobs at the compilation categories of the activities cannot be directly obtained. On the other hand, based on the daily activity status-cum-industry, a five digit industry of activity is ultimately assigned to the working persons in the current weekly status based on priority-cum-major-time criteria. As a crude measure, the labour input ratio at the two digit level of industry obtained from daily activity data may be applied to the distribution of workers (according to current weekly status approach) for compilation categories – assuming that the labour input ratio at the two digit level of industry holds good for all the groups, classes and sub-classes under that industry division.

They address the following problems that are encountered in estimating the labour inputs using current activity status data:

“First, the data in respect of daily activity status may be collected at the five digit level of NIC also, as is done in the usual or current weekly statuses, but change in the status-cum-industry may be restricted to status-cum-two-digit-level of NIC as is done now in EUSs. This is only to facilitate the estimation of labour inputs at the compilation categories of the activities required for NAS compilation. In fact, this is not done, in
general, in deciding the current weekly status and industry of activity for those who perform a single activity throughout the week. In the case of those who perform multiple jobs in the week, five digit industry of activity is recorded against one of the work activities based on priority-cum-major-time criteria.

“Second, although there are problems in estimating the multiple jobs performed by the regular wage/salaries persons in the reference week, we still prefer to retain the same procedure of recording “full” intensity for each day of the reference week for the regular wage/salaried persons. The reason is that the total number of mandays worked by them in the reference week is needed for wage calculation. They prefer to borrow the adjustment factor using the usual principal status cross-classified by usual subsidiary status for the regular wage/salaried employees.

“Third, they suggest that at least two jobs in a day be recorded in terms of status-cum-industry, if two or more jobs are performed – one for four hours or more and the others for one to four hours, with “half” intensity each by using priority-cum-major time criteria. This procedure will enhance the scope of recording multiple jobs, at the most two, performed in a day and thereby, estimating the labour inputs more precisely.”

2.18 Kumar, Kar & Sanjay (2007) are mainly concerned with the question of classification of manufacturing services. Though the question of classification does not have a direct bearing on measurement of domestic product as such, the inclusion of manufacturing services in manufacturing has obvious implications that deserve a closer look for estimating sectoral distribution of domestic product. It is precisely the ambiguity inherent in the definitions that is addressed in this paper. They present a profile of the manufacturing services providing (MSP) segment of the unregistered manufacturing sector and seek to illustrate its importance in terms of prevalence. The estimates presented in this study are derived from the unit level data of the survey on unorganized manufacturing conducted in the 56th round (2000-02) of the National Sample Survey Organisation (NSSO). Since some of the confusing issues arise from the ambiguities inherent in the accepted definitions, a brief review of the definitions of ‘manufacturing’ activities and ‘services’ is also presented, followed by a discussion on the implications of
including “manufacturing services” in the manufacturing sector in estimating the sectoral distribution of domestic product.

They point out that identification of units engaged in the production of manufacturing services does not form an objective of the enterprise surveys on unorganized manufacturing. But, from the detailed data on input and output collected in the survey, it is possible to identify the establishments reporting no material (goods) output are taken to be establishments engaged solely in the production of manufacturing services.

They further point out that over 64 per cent of the establishments in the unorganized manufacturing sector were solely engaged in the production of manufacturing services. Moreover, the MSP establishments had a share of 50 per cent in the gross value added (GVA) in unorganised (unregistered) manufacturing, which, in turn, accounts for about 34 per cent of the gross value added in the entire manufacturing sector. Thus, leaving aside the prevalence of the activity in registered manufacturing, manufacturing services account for at least 17 per cent of the total GVA in the manufacturing sector. These figures in questionably establish the need for closer examination of the associated measurement problems.

The system of national accounts 1993 (SNA, 1993) provides an exhaustive definition of services which serve a wide range of applications. It defined services which serve a wide range of applications. It defined services as heterogeneous outputs produced to order and typically consists of changes in the conditions of the consuming units realized by the activities of producers at the demand of the consumers. The following are the distinguishing characteristics of services laid down in SNA 1993:

1. Services are intangible while goods are tangible.
2. Services are produced and consumed simultaneously and thus they cannot be stored.
3. Services are not separate entities over which ownership rights can be established (but for those embodied in goods).
4. Service outputs are produced to order and cannot be traded or transported or transferred separately from the production.

5. The production of services must be confined to activities that are capable of being carried out by one unit for the benefit of another.

However, there is a group of activities, generally classified as service industries, some of whose outputs have characteristics of goods. These are those industries concerned with the provision, storage, communication and dissemination of information, advice and entertainment in the broadest sense of those terms. The products of these industries, where ownership rights can be established, may be classified either as goods or services depending on the medium by which these outputs are supplied.

On the other hand, the activity of manufacturing service production, though classified in manufacturing, satisfied all the above criteria to be regarded as service production. Besides, the MSP units earn mainly service charges and do not have tangible output of their own. These economic activities do not produce an output that they can themselves own and thus should ideally be classified as “services”.

What is more important to note in this context is that the client production units for whom the MSP units undertake transformation of materials under contract are also classified in the manufacturing sector, whether or not the clients themselves carry out any “transformation of materials”. This is essential for accounting purposes, since the quantity and value of production of tangible products can be arrived at only if the client units are treated as goods producing units. It is indeed a departure from the general principle of industrial classification that lays more stress on the process of production employed by a production unit than the type of product it markets.

Since “industry technology” is adopted for derivation of the CxC I-O table, the input structure of MSP units is assumed to be the same as that of other manufacturing I-O sectors.

The “industry technology” assumption used for derivation of the CxC I-O table causes an undesirable upward shift in the GVO-GVA ratio of the “other services”, in which manufacturing services have a major share. This indicates that the assumption is
not appropriate for transferring manufacturing services from manufacturing to “other services”. Given the prevalence of MSP units in the Indian economy, this is likely to affect the estimate of sectoral distribution by product group seriously. This being an exercise carried out with the data on only one part (unregistered) of the manufacturing sector, it is not possible to provide an estimate of the magnitude of its effect considering all MSP units.

2.19 Saluja and Yadav (2007) discuss the data sources and the methodology of estimation of gross value added (GVA) along with the problems encountered especially with the unorganised segment. They estimate of number of enterprises and workers based on different ESs and EUSs. They discuss the methodology and data sources for broad services sectors.

The annual estimates of the public and private corporate sectors were based on the current data (with limitations in the case of the private corporate sector) while for the unorganised sector the benchmark estimates were carried forward by using a specially constructed gross index of trading income (GTI). This index has a number of problems: (1) The market share ratios are based on very old data. (2) These shares relate to the entire trading activity and not only the unorganised part.

They point out that as far as national accounts are concerned, the only sources of information relating to the unorganised segment of the service sector, and in fact the unregistered manufacturing sector also, are the enterprise surveys. However, much of the information obtained from the surveys still needs improvement. In the trade sector, it is for the first time, with 1999-2000 as base, that the results of the survey covering the entire informal sector have been considered for estimating GVA per worker. In the previous surveys the GVA per worker of own account enterprises (OAEs) was much less than that from non-directory trade establishments (NDTEs), e.g., for the 1996-97 survey the GVA per worker from OAEs was about 40 per cent of the corresponding estimate from NDTEs. The estimates of GVA for the trade sector based on the workforce from employment and unemployment survey (EUS) 1999-2000 and GVA per worker from enterprise survey (ES) 1999-2000 for moving the GVA to other years are not satisfactory. Also the details of the index of trading activity in the series with 1993-94 and 1999-2000
are not available in the write-ups for these two series. However, this index used for the 1980-81 series does not seem satisfactory. Some thought has to be given to searching for new indices for this purpose.

The result of the different enterprise surveys conducted by the NSSO and CSO vary widely in many cases. There may thus be errors in the workforce estimates prepared for the year 1999-2000 based on the employment and unemployment survey for 1999-2000 and the population census 2001. In fact the estimates used by the CSO for estimating GVA from various sectors are different from those from the above mentioned source. There are problems in the estimates of GVA per worker, as the results vary over different surveys.

Saluja and Yadav (2007) have not analysed the details of GVA per worker. In this respect it can only be said that moving the GVA per worker to other years by making use of consumer price index numbers may not be satisfactory. Actually in some services change in value addition may exist in real terms also. In fact the change in productivity is not being taken into account. Even when there is no change in productivity, using the consumer price index is not satisfactory, as it covers only a part of the value added.

There are problems with the use of physical indicators for estimation of workforce for future years. For some services the growth rates of employment between employment and unemployment survey (EUS) 1993-94 and EUS 1999-2000 are used to get the workforce estimates for different years. If the estimates are not reliable, the growth rates also cannot be reliable. Also, in expanding services the past growth in workforce may not be a reliable indicator. For the series with 1993-94 as base, in the case of unrecognized institutions, the workforce estimates are also based on the enterprise surveys and are carried forward to 1993-94 by making use of the growth rate between enterprise surveys (ES) 1983-84 and 1991-92. Fortunately for the new series, the base year and years of the EUS are same. In the document released by the CSO in March 2006, the physical indicators for moving the GDP estimates to subsequent years have been mentioned. In addition to the growth between two EUSs, in a number of cases like research and development the indicator is growth in population, which is not appropriate. The indicators show no effect of the increased efforts towards reducing unemployment. Of
course, there is no alternative to the enterprise surveys and employment-unemployment surveys; their periodicity can be reduced.

2.20 Sharma et al (2007) point out that in the national accounts, the service sector activities include: (1) trade; (2) hotels and restaurants; (3) railways; (4) other transport including tourist assistance activities as well as activities of travel agencies and tour operators; (5) storage; (6) communication; (7) banking and insurance; (8) real estate and ownership of dwellings; (9) business services including accounting, software development, data processing services, business and management consultancy, architectural, engineering and other technical consultancy, and advertising and other business services; (10) public administration and defence; (11) other services including education, medical and health, religious and other community services, legal services, recreation and entertainment services, and (12) personal services and activities of extra-territorial organisations and bodies.

They point out that the present weaknesses in the GDP estimates are on account of lack of current data on the private corporate sector, as well as on the unorganised sector. In the case of the former, there is no agency in the country which provides global estimates of the private corporate sector, on either quarterly or annual basis. The only source at present in the RBI’s company finance studies. However, due to its sample size being small, it is difficult to get reliable estimates at the economic activity level or at the state level. In the case of the unorganised sector, the surveys are conducted only once in about five years, by the NSSO. This, however, excludes trading activity, which is one of the major sectors of the economy. There is no other source giving data on the performance of the unorganised sector.

Another weak area in the estimation of GDP is the absence of suitable price deflators of the service sectors. The recommended procedure for constant price estimates is the double deflation procedure, which means the value of output and value of inputs are to be deflated separately by their appropriate price indices and the gross value added is to be arrived at as the difference between output and inputs. It is well known that we do not have a service sector price index in the country, leave along appropriate price indices.
separately for inputs and outputs or various components of gross value added (GVA), such as salaries and wages and operating surplus.

It is necessary to introduce the annual survey of enterprises (ASE) some time in the future. The strengthening of corporate sector statistics, introduction of ASE and the service sector price indices are the key to further improving the quality of GDP estimates in the country. These would also enable the country to have an index of service production (ISP) on the pattern of the index of industrial production (IIP).

2.21 Shetty (2007) examines the issues relating to estimation, the issues concerning the quality of the data base and the nature and the extent of data gaps embedded in the estimation of various components of the services sector. He points out that of the seven major industrial categories for which the CSO regularly publishes the GDP series, four comprise the services sector, namely, (1) trade, hotels and restaurants; (2) transport, storage and communication; (3) financing, insurance, real estate and business services; and (4) community, social and personal services. Under each of these categories, there are very many sub-categories such as, “trade”, on the one hand and “hotels and restaurants”, on the other, or “financing”, “real estate” and “business services”, or in transport, “railways”, “road transport” and “transport by other means”.

He finds out that the quality of the database is weak in respect of: (1) the private corporate sector; and (2) the unorganised part of each of the services sector activities. In respect of the second category, questions have been raised on two crucial components involved in the end results: workforce estimates and estimates of value added per worker based on enterprise surveys as follow-up of the quinquennial economic censuses, which are used to work out the benchmark estimates. There is also the third component, namely, the chosen sectoral indicators used to carry the benchmark estimates forward for the recent years.

He concludes that the entire methodology of estimating GDP originating in different segments of the services sector requires a close look. “It is necessary to seek answers to the following issues:
First, the method of workforce estimates, applying the worker population ratio (WPR) of NSS to the population projections made by the registrar general of India (RGI), may have to be given a fresh look.

Second, are there methods of validating the results of the various enterprise surveys in regard to estimates of value added per worker? Such critical evaluation of these results, separately for trade and other segments of the services sector, will alone bring out their usefulness for national income purposes.

Third, what about the representative character of the follow-up (enterprise) surveys, the results of which are constantly found wanting in so far as the national income estimates are concerned? An examination of their inherent sampling and non-sampling errors needs to be carried out.

Fourth, there are a series of secondary indicators, which are employed for carrying the benchmark estimates forward, which may also be critically evaluated.

Fifth, a critical review is required of the method of estimation of the private corporate sector’s contribution to the GDP of the services sector. This has very often raised the question of the representative character of the sample and the variable chosen for blowing-up purposes. Has there been any progress in resolving this long-standing issue?

Sixth, financial services are a special category and the coverage of the unorganised segment in them appears weak even as this segment is said to be growing. A comprehension study of the financial services sector is called for.

Seventh, there is the most complex question of deflating the services sector output, obviously separately for each of the segment. Is there scope for revising the existing methods in this respect?

Finally, there may be other incidental issues, the examination of which may help in understanding the dynamics of the various estimation procedures.”

2.22 Verma (2007) explains the rapid growth of value added in the services sector in India, and, examines the factors driving this services led growth in the economy. A sectoral growth accounting exercise for the period 1980-2003 shows that changes in total
factor productivity (TFP) were the largest source of service sector value added growth in India. Measured service sector TFP growth is also much higher than measured TFP growth in agriculture and industry, and increased substantially following the inception of market based liberalization policies from 1991. In contrast, measures of service sector productivity growth in the advanced economies are low, and the service sector is widely considered to be the ‘unproductive’ sector of the economy. However, in India’s case, it is the services sector which is the most productive sector of the economy, as measured in terms of the growth rate of the total factor productivity in this sector.

He develops a three sector neoclassical growth model to evaluate the quantitative performance of differential TFP growth across sectors in accounting for the structural transformation of India. In the model, agents are assumed to view consumption of agricultural, industrial and services sector goods as gross substitutes, but their preferences over goods are homothetic. The model displays ‘unbalanced growth’ in which the aggregate output, the aggregate consumption and the aggregate capital-labour ratio grow at different rates. A version of the model that is carefully calibrated to Indian data, and in which average rates of TFP growth by sector from India are the primary inputs, performs well in accounting for the evolution of value added shares of the three major sectors of economic activity over the period 1980-2003. It also accounts well for the growth rates of the GDP shares of all three major sectors of economic activity over this period for the structural transformation of GDP. It cannot match the evolution of employment shares. The performance of the model improves significantly when the post 1991 increase in services sector TFP growth is accounted for. He finds that the liberalization policies adopted by India from 1991, and especially the deregulation and privatization of business and communications services, explain the improvement in service sector TFP, and hence the dominance of services sector activities in India’s recent GDP growth.

It accounts for the rapid growth of the services sector in one of today’s low income, rapid growing countries, India. The motivation for studying the Indian economy as a representative of low income, fast growing services sector driven economies, results from an empirical exercise. Of forty-two countries identified by the World Bank as being low income in 1980, eleven have witnessed average annual growth rates of GDP per capita in excess of 2 percent for the 1980-2004 period. Of these fast growing, low income
countries, five have experienced GDP growth that is dominated by growth of value added in the services sector, rather than by growth in the industrial sector as typifies historical evidence on structural transformation from industrialized countries. This group consists of a set of South Asian economies, namely, Bangladesh, India, Nepal, Pakistan and Sri Lanka. Of these, India had witnessed highest growth in GDP and in GDP per capita over the whole time period.

He discusses the trends of sectoral output shares, sectoral employment shares and sectoral TFPs observed in the Indian data, and conducts a sectoral growth accounting exercise for India covering during the period 1980-2003. The results from this exercise show that changes in total factor productivity (TFP) were the largest source of services sector value added growth in India. For the same period, measured services sector TFP growth was also much higher than measured TFP growth in agriculture and industry. It increased substantially following the inception of market based liberalization policies from 1991.

He develops a three sector neoclassical growth model to evaluate the quantitative performance of differential TFP growth across sectors in accounting for the structural transformation of India. In the model, agents are assumed to view consumption of agricultural, industrial and services sector goods as gross substitutes, but their preferences over goods are homothetic. For the period 1980-2003, the model is calibrated to Indian data in which average rates of TFP growth by sector from India are the primary inputs. This model performs well in accounting for the evolution of value added shares of the three major sectors of economic activity over the period 1980-2003. It also accounts well for the growth rates of the GDP shares of all three major sectors of economic activity over this period for the structural transformation of GDP. However, the model cannot match the evolution of employment shares, primarily because of the large differences between the shares of sectoral value added and the shares of sectoral employment observed in the Indian data.

He conducts an experiment to highlight the importance of the post 1991 increase in services sector TFP. The performance of the model improves significantly when the post 1991 increase in services sector TFP growth is accounted for. He argues that the
increase in services sector TFP is a result of the liberalization policies adopted by India. The economic liberalization that India initiated in 1991, involved a myriad of policy changes consisting of tariff reductions, reduction in export controls, removal of quotas, entry of FDI in some sectors, and deregulation and privatization in the service and industrial sectors. Among all these reforms, He finds that the deregulation and privatization of business and communications services explain the rapid growth in services sector TFP, and hence the dominance of services sector activity in India’s GDP growth.

2.23 Fernandes & Paunov (2008) discuss the effects of FDI in services on productivity growth of manufacturing plants in Chile between 1992 and 2004. Chile is an interesting economy to study as its services sector has been open to FDI since the late 1980s and received large FDI inflows during the 1990s. Furthermore, the long duration of their manufacturing plant-level panel dataset makes it a particularly appropriate set-up to detect the presence of effects from services FDI on plant productivity growth. Their empirical framework estimates an extended production function where plant output growth depends on input growth (including the growth in services inputs) and on a measure of services FDI penetration weighted by plant intensity of services usage. Their analysis relies on the following central and intuitive argument: if FDI into services sectors has productivity growth effects, then one should expect plants that use services more intensively to benefit more. In order to identify a causal effect of services FDI on manufacturing plant total factor productivity (TFP) growth, they use two-period lagged measures of services FDI penetration weighted by plant-level services usage. Moreover, they control for unobserved fixed differences in productivity growth across plants, observable plant characteristics, industry-level time-varying heterogeneity, region-level time-varying heterogeneity, and year fixed effects.

They find evidence of a positive and significant effect of FDI in services on productivity growth of Chilean manufacturing plants that use those services more intensively. The estimates from their preferred specification suggest that an increase in the services FDI linkage variable of the same magnitude of that which occurred between 1992 and 2004 would add 1.1 percentage points to annual plant productivity growth in Chile, all else constant. The economic impact of this estimate is that backward linkages
from FDI in services to downstream manufacturing users account for about 4.7 per cent of the observed increase in manufacturing productivity growth in Chile (24 per cent) during the sample period. This economic impact is quite meaningful in light of the finding by Haskel et al. (2007) that spillovers from manufacturing FDI explain a roughly similar share (5 per cent) of manufacturing TFP growth in the U.K. over the 1973-1992 period. Given that a large fraction of FDI inflows into the services sector in Chile consisted in the acquisition of incumbent firms - many of which privatized since the late 1980s – their estimated impact is likely to be an under-estimate relative to the potential impacts in countries where services FDI inflows are directed at the privatization of services providers or at the creation of new firms.

They obtain qualitatively similar findings using a measure of plant TFP growth based on production function estimations following Levinsohn and Petrin (2003). Their results are robust to variations in the definition of services FDI penetration, to the use of three-period lagged measures of services FDI penetration, to the elimination of potential outliers, and to the control for measures of domestic competition. Their findings are robust to the use of alternative measures of TFP growth based on production function estimation following Olley and Pakes (1996) or Ackerberg et al. (2007), and on simpler growth accounting plant TFP growth indices. Their results are not driven by any specific industry. Finally, they find suggestive evidence of a stronger effect of services FDI for plants in differentiated product industries but no evidence of different effects across small and large plants. These significant benefits of services FDI for productivity growth of manufacturing plants may capture to some extent an unmeasured decline in quality-adjusted services prices as well as the spillover of managerial and organizational knowledge or technical skills from foreign services providers to manufacturing plants.

They suggest that researchers may need to focus on the services sector to find strong positive spillovers effects from FDI. They also suggest that reducing the barriers that still protect foreign investment in services sectors in many emerging and developing economies can accelerate productivity growth in manufacturing sectors.
2.24 **Goldar & Mitra (2008)** address two sets of issues. The first set is concerned with productivity growth in the services sector and how this has contributed to an accelerated economic growth in India. This part of the analysis is undertaken in the growth accountancy framework. The second set of issues addressed in the study is concerned with growth linkages – how growth in one sector of the economy promotes growth in other sectors. For them a critical question is: which sectors of the economy are playing a lead role and contributing to the growth of other sectors. They try to identify the lead sector which primarily takes on the role of engine of growth.

The estimates of capital stock have been taken from the National Accounts Statistics. Trends in capital productivity are depicted graphically. A graphic presentation of the inter-temporal changes in labour productivity is also given.

Total factor productivity indices have been constructed with the assumption of a two-input Cobb-Douglas production function and constant return to scale. The factor shares are assumed to be fixed and equal to the coefficients of labour and capital. Trends in TFP in the services sector and the four sub-sectors are depicted graphically.

To check for a structural break in TFP series for the services sector, the CUSUM and CUSUM squared tests have been carried out. This is based on the regression of logarithm of TFP index on time.

The growth rate in each of the five sectors has been taken separately as the determinant of the growth in the rest of the economy.

In order to understand the relationship among sectors, the vector-regression model (VAR) has been estimated on the basis of sectoral growth rates with two lags. The coefficients obtained from estimation of the VAR model cannot be interpreted directly. In order to overcome this problem, following Litterman's (1979) Innovation Accounting Techniques, a Variance Decomposition analysis has been carried out.

In this study it is pointed out that faster total factor productivity (TFP) growth in the services sector in the post-1980 period has been an important contributor to accelerated economic growth. Within the services sector, the post-1980 hike in the
growth rate of productivity is found to relatively higher in the trade, hotels and restaurants group and the public administration and other community, social and personal services group.

For each of the broad sectors, agriculture, industry and services, acceleration in the growth rates of output, output per worker and TFP in the post-1980 period is presented in the study. It is relatively more marked in the case of services. Output and TFP growth rates of the services sector went up in the post-1980 period by about 2.5 percentage points and the growth rate of labour productivity by about 2 percentage points.

The hike in the TFP growth at the economy level in the post-1980 period is mainly traceable to the increase that took place in the growth rate of TFP in the service sector. Further, they make it clear that the acceleration in India's economic growth in the post-1980 period is attributable in a large measure to the hike in TFP growth in the service sector in this period. Of the 2.4 percentage point increase in the rate of economic growth that took place in India in the post-1980 period, about 40 percent is attributable to a faster growth in TFP in services. Given the importance of TFP growth in services in explaining acceleration in India's economic growth, it is pointed out that a study of productivity performance of different sub-sectors of services will be instructive.

It is shown clearly that there was a step up in the growth rate of output in the post-1980 period in the four sub-sectors of services considered. The increase was relatively modest in the case of public administration and other community, social and personal services. It was relatively more marked in the case of financing, insurance, real estate and business services – an increase from 3.8 per cent per annum in the pre – 1980 period to 9 per cent per annum in the post – 1980 period.

Similarly, there was an increase in the growth rate of labour productivity (output per worker) in the post-1980 period. For the services sector as a whole, the increase in the growth rate was from 1.9 per cent per annum during the pre-1980 period to 3.6 per cent per annum in the post-1980 period. In all the four sub-sectors, there was an increase in the growth rate of labour productivity in the post-1980 period. This was most marked in the case of public administration and other community, social and personal services. It is
also pointed out that it is interesting to note that in this group of services, there was only a modest increase in the growth rate of output. But a marked acceleration in the growth rate of output per worker.

Labour productivity in financing, insurance, real estate and business services is much higher than that in the other three sub-sectors. The share of financing, insurance, real estate and business services has increased over time and this has contributed to an increase in the overall level of labour productivity in the services sector through reallocation of resources.

A sharp downward trend in capital productivity in trade, hotels and restaurants is found visible for the period 1960-61 to 1980-81. Subsequently, there was an upward trend in capital productivity in this group of services. In the transport, storage and communication group and the financing, insurance, real estate and business services group, there was an upward trend in capital productivity, especially in the post-1980 period.

The growth rates in TFP in the pre-and post 1980 periods are reported to show that there was a marked increase in the growth rate of TFP in the services sector and the four sub-sectors. For the services sector as a whole, the growth rate of TFP increased from 1.3 per cent per annum in the pre-1980 period to 3.0 per cent per annum in the post-1980 period.

The study shows that about 40 per cent of the increase in the growth rate of aggregate GDP in the post-1980 period is attributable to a hike in the growth rate of TFP in the services sector. It is shown further that the hike in TFP growth in the services sector in the post-1980 period is traceable primarily to a faster growth in TFP in the trade, hotels and restaurants group and in the public administration and other community, social and personal services group.

In terms of the adjusted $R^2$ the trade and transport sector turns out to be the most significant one though secondary sector (inclusive of manufacturing) growth is also an important determinant of the growth in the rest of the economy. Even in terms of the responsiveness of growth in the rest of the economy to sectoral growth, the trade-transport sector dominates the secondary sector. A one percent increase in the trade-
transport sector growth rate raises the overall growth rate by 0.76 per cent while the secondary sector raises it by only 0.46 per cent.

As regards state-level evidence they point out that the relative size of the tertiary sector value added grew considerably, over the period 1980-81 through 1997-98. By 2003-04, it accounted for nearly half or more of the state domestic product in the states of Andhra Pradesh, Assam, Karnataka, Kerala, Maharashtra, Tamil Nadu and West Bengal. Between 1999-2000 and 2003-04 the share of tertiary sector increased in almost every state except Gujarat. However, the inter-state variations in the share of the tertiary sector remained more or less same over the years, suggesting the possibility of growth of this sector across all the states without being confined to only a few regions.

The regression of secondary sector growth (GRSEC) on the trade-transport sector growth (GRTRT), primary sector growth (GRPR) and growth in real estate and financial services (GRFIN), based on time series data at the all India level, show that the trade transport sector growth is the only significant determinant of industrialization.

2.25 Singh and Khokhar (2008) investigate whether there is any causation flowing between gross domestic product (GDP) and services. The main purpose of their study is to look into this aspect of GDP and services on the basis of the Hsiao’s (1981) version of Granger causality test.

In order to know the relative importance of the service sector, they look at the growth rates of various sectors. They point out that during 1995-05, Indian GDP growth rate was 5.94, while that of agriculture 3 per cent, manufacturing sector 5.28 per cent and service sector 7.94 per cent. Thus, the growth rate of the service sector in relation to that of GDP has been phenomenal in the last decade. As regards the growth pattern of services during the period 1950-51 to 2004-05, the linear trend explains 79 per cent of the variations in the amount of services over the period under consideration.

They use 55 pairs’ annual observations on GDP and services at constant prices for the period 1950-51 to 2004-05. These observations are taken from the various publications of the Reserve Bank of India. They consider the growth rate of GDP as the index of economic growth, and investigate the direction of causality between the growth
rates of GDP and services. The growth rates of GDP and services are represented by RGDP and RS variables, respectively.

For the purpose of applying the Granger-causality test to the series of RGDP and RS variables, they make it sure that these series are stationary. A stationary series does not have a unit root.

They have applied Dickey-Fuller test to both the series of RGDP and RS variables separately to check whether these series have a unit root at their original or first-difference level.

In order to detect the causality between gross domestic product and services in India, they apply the Hsiao’s (1981) version of Granger causality test to the stationary series of RGDP and RS variables.

The first finding of this study is that an addition to the growth rate of services will cause the growth rate of gross domestic product to rise. The second finding is that no causality flows from gross domestic product to services. Both these findings indicate that the causality flows only from services to gross domestic product.

In order to know whether the joint impact of the lagged values of RS variable on RGDP variable is statistically significant they carry out the F-test for the lagged values of RS as explanatory variables for RGDP variable. The lagged values of RS variable do not affect RGDP variable significantly. Hence, a rise in the growth rate of services will not significantly cause the growth rate of gross domestic product to change.

2.26 Wolfmayr (2008) points out the role of service inputs in shaping the international competitiveness of the manufacturing sector. He focuses on the interaction between manufacturing industries and the service sector in determining competitiveness. A market share function for a sample of 18 disaggregated manufacturing industries for 16 OECD countries for the period 1995 to 2000 is estimated. Distinguishing between domestically sourced service inputs and imports, the analysis finds a clear positive impact of growing international service linkages on export market share dynamics in manufacturing, while it does not find a significant effect of growth in domestic linkages. Thus, growing international service linkages are more important than national linkages in promoting
competitiveness. This result clearly points to the importance of further services liberalization also in favour for manufactured goods trade. Interestingly, he does not find any important difference in the effects between linkages of manufacturing to the KIBS sectors and other services sectors, except that the coefficient for total service linkages (domestic and international) turns significant and the coefficient on the domestic linkage variable turns positive, but is still insignificant with respect to KIBS outsourcing. This seems to highlight the "product-supporting" role of services with respect to export market shares, over their function as carriers, transmitters and producers of information and knowledge, when services are used as inputs in the production process itself and likely to increase labour productivity.

However, he discovers that the magnitude and significance of the international service linkage effect highly differs across the manufacturing industries. Sample split regressions show that a positive and significant impact of imported service inputs is prevalent only in the technology driven, high-skilled labour intensive industries within the manufacturing sectors, explaining about 40 percent of the overall increase in the export market share in this sector, while there is no impact in the rest of the industries. This resembles findings by Francois - Wörz (2007) showing a positive and significant impact of increased business service openness on exports of technology intensive industries. Finally, the results on the impact of relative unit labour costs and patenting activity are very much in line with expectations on the relative importance of the different factors of competitiveness in different sectors. Export market shares in technology driven industries are thus most effectively affected by the sectors’ own innovative activities, while international competitiveness in low-tech, low-skilled industries is driven mostly by relative costs.

Alessandrini (2009) discusses the evolution of labour demand in Indian organized manufacturing by introducing the Kaldorian idea of the intersectoral linkages between agriculture and manufacturing among the possible economic explanations of jobless growth. On the one hand, he concentrates his attention on organized industry in order to investigate whether the sustained path of growth of Indian economy has positively affected the demand of those workers who receive higher wages, formal contracts and benefits in a sector, manufacturing, considered by Kaldor as the engine of
growth. On the other hand, he wants to study the role of effective demand coming from agriculture, the sector where most of Indians live and work, in influencing and sustaining industrial production and, therefore, labour demand. In the Kaldorian theory, in fact, manufacturing growth, and thus industrial employment, depend on the purchasing power of agriculture not only at the early stages of industrialization, but also in the long-run, through demand linkages for simple consumer goods and manufactured inputs. Since a strong productivity growth could generate job losses when aggregate demand is insufficient, a decline in rural purchasing power could contribute substantially to weaken industrial expansion and reduce employment.

The 2008 Global Hunger Index of developing and transitional countries (Von Grebmer et al. 2008) ranks India at 66th position out of 88 countries. The survey says that not one of the 17 states of the Union under study is in the low or moderate hunger category and concludes that the entire sample is in the alarming or extremely alarming group. Furthermore, despite the notable economic performance of Indian industry in the last two and a half decades with an annual growth of 5.3 per cent, organized manufacturing employment growth was less than 0.5 per cent. Rural poverty and jobless growth in manufacturing may be strictly related if analyzed through a Kaldorian framework. The development of the purchasing power of agriculture, in fact, is essential to stimulate the effective demand for industrial goods and to sustain industrial production in the long run. Since a strong productivity growth could generate job loss when aggregate demand is insufficient, rising rural incomes unleash a multiplier effect, increasing demand for farm and non-farm products and services, thereby stimulating rapid growth of employment opportunities in other sectors.

Taking into consideration this causal relation, he has investigated the role of agricultural surplus in influencing labour demand in Indian organized manufacturing. Using a panel dataset on the 15 largest states of the Union for the period 1980 to 2004, our System-GMM estimates confirm the positive linkage between a rise in agricultural purchasing power and the growth in manufacturing employment. He finds that where the increase in agricultural prices relative to manufacturing prices has been wider, the employment in organised manufacturing has been higher. Furthermore, labour demand growth seems to be more elastic to aggregate output growth rather than to increments in
registered manufacturing production. Given that the recent pattern of growth of Indian economy has been accompanied by increasing inequality across states as testified by numerous researches, such result could be a further element of growing divergence between rich and poor states of the Union. In addition, since more than two-thirds of the Indian industrial workers are employed in informal manufacturing, he explores the effect of an increase of the weight of unorganized activities on determining formal employment. His results show that in those states where the share of the unregistered manufacturing has risen over time, the jobless growth problem has worsened.

However, the change in the agricultural purchasing power has been modest in the last two decades and the majorities of Indian labourers still lack a steady income flow and fall outside the social safety net system guaranteed by a formal occupation. As a consequence, India's potential manufacturing renaissance, especially in terms of employment, is still in its early stages. This appears quite surprising for a country whose supply of arable land is second only to the United States and which has successfully developed a process of tertiarisation of its economy. But modernization cannot only rely upon a strong IT sector and labour productivity growth could not be sufficient to solve problems of acute poverty or under-employment. India should look to establish and reinforce forward and backward linkages between agriculture and manufacturing if it wants to transform a jobless growth pattern into an inclusive growth process. After more than thirty years since the Green Revolution, the agrarian question is still open for India.

2.28 Das et al (2009) identify the labour intensive industries in the organized manufacturing sector in India in order to understand their employment generation potential. The source of their data is the Annual Survey of Industries (Government of India, various issues). The labour intensity for 97 industries at the 4-digit disaggregate level was computed for the period 1990-91 to 2003-04. They identify 31 industries as ‘labor intensive industries’ within India’s organized manufacturing sector.

They analyzed whether industrial deregulation and trade liberalization has led to a shift in India’s industrial structure towards more labour intensive industries. Contrary to what the advocates of reforms and trade openness had suggested, the experience of one and a half decades starting from the early 1990s shows that the relative importance of
labour intensive industries in output has gone down. They find a continuous decline in labour intensity across all labour intensive industries. Labour-intensity ratio for the selected industries declined from 0.72 in 1990-91 to 0.30 in 2003-04; and the labour-intensity ratio declined not only for capital intensive industries but for labour intensive industries as well in the post-reforms period. The possible explanation for the observed decline in labour intensity (L/K ratio) across all industries specifically the labour intensive industries in organized manufacturing could be that with import liberalization in the early 1990s, access to capital and new technologies became easier and cheaper for developing countries like India. And these new technologies, which have been adopted from developed countries, are by nature labour saving. With increasing competition, both in domestic and international markets, Indian manufacturers have installed new sophisticated technologies in their production processes to compete in terms of prices as well as in scale. However, in the absence of a skilled workforce, increasing capital intensity has shown a decline in capital productivity. This can have serious implications for employment since capital is substituting only labour. This seems very plausible when they take into account the fact that manufacturers in a developing country like India always face resource constraints in terms of production cost allocations for different factor inputs.

Their analysis of the performance of labour intensive industries shows that during the study period the selected labour intensive industries registered positive output growth. However, this growth could not commensurate with employment growth, thereby, resulting in low employment elasticity of labour intensive industries. Even labour productivity, which increased consistently till 2000, observed a fall in the third sub-period possibly due to decline in capital productivity during this period across all the industries.

The income share of labour in total value added expressed as the ratio of real wages upon labour productivity also shows a declining trend. Thus, labour intensive industries despite performing well in the first phase of reforms could not sustain their performance and presented a dismal picture in the third phase.
Overall, the organized manufacturing sector in India despite respectable growth following the reforms initiated in the 1990s has not been able to pull out workers from agriculture and allied activities to the labour intensive sectors. This calls not only for an examination of the possible deterrents in realizing the employment potential of labour intensive industries at the industry level but also at the enterprise level. Thus, for a policy prescription, it is also important to understand the issue of declining labour intensity in organized manufacturing and its consequences for the potential of employment generation through a primary survey of some of these labour intensive enterprises.

2.29 Eichengreen & Gupta (2009) examine how the relative size of the service sector evolves over the growth process. They establish three facts:

First, there are two waves of services sector growth. The services sector share of output already begins to rise at relatively modest incomes but at a decelerating rate as growth proceeds, until it levels out at roughly US $1800 per capita income (in year 2000 US purchasing-power-parity dollars); this is the first wave. At roughly US $4000 per capita income the share of the services sector then begins to rise again in a second wave, before eventually leveling off a second time.

Second, there was an upward shift in the second wave of service-sector growth after 1990. That is to say, the second wave starts at lower levels of income after 1990 than before.

Third, this two-wave pattern and specifically the greater importance of the second wave in medium-to-high-income countries is most evident in democracies, in countries that are close to major financial centers, and in economies that are relatively open to trade (both in general and in services in particular). Intuitively, the increase in the services sector share at all levels of income, especially the second wave at higher income levels, reflects increased scope for producing and exporting modern (financial, communications, computing, legal, technical and business) services in which medium-to high-income countries specialize. It appears that democracies, perhaps because they have a lesser tendency to suppress the diffusion of information and communications technologies; countries close to major financial centers, which have a comparative advantage in the provision of financial services, and countries open to trade, which are in a position to
specialize and export those services in which they have a comparative advantage, are in
the best position to capitalize on the opportunities afforded by these subsectors.

They have provided new evidence and analysis of the share of services in GDP in
the course of economic development. They identify two waves of service sector growth, a
first wave in countries with relatively low levels of per capita GDP and a second wave in
countries with higher per capita incomes. The first wave appears to be made up primarily
of traditional services, the second wave of modern (financial, communication, computer,
technical, legal, advertising and business) services that are receptive to the application of
new information technology and increasingly tradable across borders.

There is evidence of an increase in the share of services in GDP at all levels of
income after 1970 and, in addition, of a further increase in the share of services in
countries with relatively high per capita incomes, in other words, of the second wave
occurring at lower income levels than before. But this change in the second wave is not
equally evident in all countries: it is most apparent in countries that are open to trade, that
are democratic, and that are relatively close to the major global financial centers. These
points to both political and economic conditions that can help countries capitalize on the
opportunities afforded by an increasingly globalized post-industrial economy.

2.30 Hull (2009) aims to bridge some of the gaps between an intuitive understanding
that jobs are crucial for poverty reduction and a lack of empirical research to
demonstrate the nature of this relationship. His objective is to contribute to the
understanding of the relationship between employment and poverty reduction. Its goals
have been to provide tools to assess the impact of employment-intensive and
productivity-intensive growth under segmented labour market conditions, and to enable
a transition from research to policy outcomes. Specifically, it has sought to help analysts
and policy-makers address three questions.

First, how does the sectoral pattern of growth affect its poverty impact? This
question is of particular relevance under the segmented labour market conditions
commonly found in developing countries. Growth in one sector of the economy will not
automatically translate into benefits for the poor: much will depend on the profile of
growth (its employment- or productivity-intensity), the sectoral location of the poor, and the extent of mobility across sectors.

Second, is employment-intensive or productivity-intensive growth more important for poverty reduction? This will depend on the quality (or productivity) of jobs in the sector in which growth occurs. Put simply, for employment-intensive growth to translate into poverty reduction it must occur in a “more productive” sector, while “less productive” sectors may require productivity-intensive growth to ensure a decline in headcount poverty.

The framework provides three stages of analysis. First, it decomposes economic growth into changes in both the quantity and quality of jobs. Second, it ascertains whether improvements in employment or productivity are most readily associated with poverty reduction, and whether this pattern changes by sector. Third, it highlights the broader policy and institutional environment which is associated with a poverty reducing pattern of growth.

Finally, what policies will facilitate the poor’s participation in growth? Step three of the framework suggests that a range of policies pertaining to both the labour market directly and the policy and institutional environment more broadly can promote a poverty-reducing sectoral pattern of growth. Country-specific quantitative and qualitative analysis is required to identify constraints to job creation, productivity and mobility. Depending on the sector in question, policy makers may wish to boost employment and/or productivity, while ensuring that the poor are able to participate in more and better job opportunities.

Analysis to date suggests a range of policy interventions to help dismantle such obstacles to mobility. They suggest that remnants of the household registration system be phased out and highlights the necessity of reforms of urban social policies that currently limit rural migrants’ access to benefits. Analysis for Poland underscores the importance of policies to reduce rigidities in the housing market, alongside the provision of targeted mobility grants to enable individuals to overcome financial constraints on their mobility. In rural economies, educational improvements have been shown to
increase returns to small-scale farmers because educated farmers are readier to absorb new production techniques and innovate. Education levels are also positively associated with ability to adapt agricultural activities effectively to climate change-induced risks in sub-Saharan Africa. The experience of East Asian countries demonstrates the potential role played by the expansion of employment services and search assistance, and in particular E-systems, in overcoming informational barriers in the labour market. In Nepal, improved transportation and communication has facilitated the convergence of agricultural and nonagricultural wages across regions in recent decades. Infrastructure reforms can even be addressed to enhance labour market participation of specific groups. As noted in a Gender Assessment for Pakistan, investment in time saving infrastructure is critical to encouraging women’s participation in work activities.

Overcoming discrimination, violence and exploitation investments in education and training should be accompanied by other interventions to break a web of socio-cultural practices which prevent full-capacity participation in the labour market. Trade Unions, which in some countries have made efforts to mobilize members outside their traditional constituencies, can play an important role in strengthening the voice of marginalized groups while donors can provide capacity-building programmes to strengthen organizations that provide workplace empowerment for discriminated groups. Governments may also need to revisit laws and affirmative action policies regarding the fundamental rights and educational and labour market opportunities of minorities.

2.31 Siggel & Agrawal (2009) examine how the reforms were perceived and coped with by manufacturing enterprises, especially smaller ones, and to compare their perceptions with what has been found on the basis of industry-level data. For that purpose a small-sample interview survey was conducted in the first three months of 2006. Fifty manufacturing firms were contacted and their managers were interviewed using a questionnaire, which was adjusted for some specific aspects of the sub-sectors. They report the answers received and discusses them in the light of other findings, in particular
their earlier findings from an analysis of industry competitiveness under the reforms (Siggel, 2007).

Interview-based sample surveys often reveal a wide variety of views, depending on the size of the firm and the industry to which it belongs, and the present one is no exception. Nevertheless, there are a number of perceptions that dominated the responses in the present survey and they form their conclusions.

First, the inquiry confirmed their former observation that the manufacturing sector as a whole did not decline as a result of the country opening its borders to freer trade and foreign investments. The main benefits occurred to industries through the access to new products, technologies and skills, as well as lower costs of intermediate inputs. In some industries the increased competitive pressure led to shrinking profit margins, but others managed to increase profits by adjusting to the new environment.

Second, the relative success of the reforms can be attributed to its timing and sequencing, as well as to the fact that they also included internal reforms amounting to reduced regulation. The timing of the trade liberalization was gradual over the 1990s and it was preceded by macro stabilization including currency realignment.

Third, although the majority of firms in the sample was small firms and not affected directly by the existing labour laws, the need for further reforms in this area was frequently stated.

Finally, most firms said that the manufacturing sector faces serious constraints in the form of infrastructure deficiencies in electricity supply, domestic transportation, sea ports, etc. and the government needs to improve the infrastructure to ensure continued future growth of the manufacturing sector.

Thus they suggest that economic reforms of 1991 were helpful to most industries by increasing access to foreign technology and cheaper capital goods & raw materials. Most firms felt that improvement in infrastructure and more flexible labour laws will further aid the growth of India’s manufacturing sector. The conclusions from their study tend to confirm the assessments of several earlier studies, especially Ahluwalia (2002), Goldar (2003, 2004 and 2005) and Panagarya (2004).
Virmani and Hashim (2009) evaluate the manufacturing sector in India is crucial for two main reasons: It has significant potential to provide modern employment to a growing labour force, especially that of less skilled type; and, second, by its own healthy growth stimulate and provide a foundation for organic growth in other sectors of the economy. On both these counts, however, the manufacturing sector has so far not performed to its potential. They make an attempt:

(i) to find out the determinants of employment

(ii) to determine the sources of output growth including productivity, and

(iii) to econometrically examine whether the high growth in output of manufacturing sector is sustainable.

The manufacturing sector is thought to hold a place of unique importance mainly for two reasons: It can provide large scale employment to labour force increasingly being displaced from shrinking agriculture sector; and secondly, it can help in accelerating the GDP growth by virtue of its forward and backward linkages with other sectors of the economy. They attempt to identify the factors which can help in unlocking the employment potential of the manufacturing sector. An attempt is then made to identify the various sources of output growth. Since productivity is one of the most important factors, they attempt to examine if economic reforms unleashed from 1991 had any impact on it. And lastly, they study attempt to analyse whether the growth in output in manufacturing sector is sustainable in the face of ever increasing capital labour ratio. Analyses are based on CES production function, utilising the ASI data for a period from 1973-74 to 2001-02. They examine the impact of various economic policies over the years. Their study also analyses variables across the following three sub-periods: 1973-74 to 1979-80 (first sub-period), 1980-81 to 1991-92 (second sub-period), and 1992-93 to 2001-02 (third sub-period). Justification for applying CES production function is provided by the findings of the value of elasticity of substitution and technical change. Neither the elasticity of substitution between labour and capital was found to be 1 nor was the technical change ‘Hicks neutral,’ thus ruling out the applicability of Cobb-Douglas production function for Indian manufacturing.
With a view to investigate the issue of employment of factors further, they attempt to see whether factors have been paid according to marginal products. Interestingly, it was found that both labour and capital have been paid lower than their marginal product. The difference was sharper for labour, indicating that firms stopped employing labour before reaching the profit maximising situation. Thus, the deviation between marginal productivity of labour and its price could be the reason for the slow employment in the organised manufacturing sector. If this is the state of affairs of this sector then it also indicates that wages paid to labourers in the unorganized sector would be even lower than its marginal productivity. Hence, if the labour welfare promotion is important objective of the development process, then it becomes necessary to remove impediments for larger number of manufacturing industries to increase in size and remove the incentive for large employment intensive organised industries to fragment into smaller units.

Across-the-sub-period, the analysis shows that deviation of marginal productivity of labour (MPL) from wages was statistically significant during the first and third periods. During the second sub-period (what is termed as jobless growth period), the gap between marginal productivity and wage rate was insignificant, implying that employment was close to optimum. Job security regulations apparently had minimum influence on jobless growth of the 1980s; rather, it was due to sharp rise in wages. For if job security regulations caused jobless growth, marginal productivity of labour would have been higher than the wage rate. Even if job security regulations had not become stringent during the 1980s, firms would have never paid labour more than their marginal product when wages were rapidly moving upward. For capital, the deviation between marginal product and its price was statistically significant only during the third sub-period, which would mean that capital in post-reforms had been underemployed slightly. There were indications that this correction might be taking place already as investments have risen sharply. It is interesting to observe that the marginal productivity of capital and its prices moved in close sync with each other.

As far as the sources of output growth was concerned, it was found that much of the growth in output had come from capital (82 per cent), followed by labour (12 per cent), and productivity (6 per cent). The share of labour, despite having improved from
the 1980s, continued to be low at 9 per cent during 1992–2001. In a labour surplus country like India, this is not a welcome sign. Most importantly, the contribution of productivity had shown a consistent decline from 17 per cent in the first period to 9 per cent in the second, and to -5 per cent in the third period. The negative contribution of productivity can be attributed mainly to the heavy decline in capacity utilization in the post-reforms period because of the presence of a time lag between investment and output growth. However, pure productivity, devoid of the effects of capacity utilization, must have improved in post-reforms. This is consistent with and supports the “J curve of liberalisation and Productivity” hypothesis proposed by Virmani (2005).

The findings on sustainability of output growth with rising capital–labour ratio indicate that the growth in capital–labour ratio itself may not be sustainable in the long run if both elasticity of substitution and degree of biased technical change continue to decline, as they have been during the 1990s. With the continuing decline in these two values, marginal productivity of capital would tend to zero, thus limiting the growth in capital–labour ratio and output. Output growth then would not be sustainable with suppression of labour demand. But if stringent labour laws did force firms to do so, firms may continue to suppress demand for labour and sacrifice the growth in output. The J curve of liberalisation and productivity and the growth of manufacturing since 2003-04 suggest that semi-skilled labour intensive growth is still possible. Labour reforms are however essential if we want labour intensive growth on scale large enough to draw labour out of the low productivity agriculture sector.

2.33 Banga & Kumar (2010) examine the role played by demand side factors and supply side factors in growth of exports of services. To estimate the impact of demand side factors on exports of these services, income demand elasticities of US (which has a share of 60 per cent in India’s exports of ITeS-BPO services) have been estimated. To assess the impact of supply side factors contributing to growth of services, they estimate total factor productivity growth (TFPG) in software services. A detailed firm-level analysis using Data Envelopment Approach (DEA) has been undertaken of IT firms to examine the sources of productivity growth in these firms. It further discusses the factors that may have affected productivity growth in services sector, including government
policies and provides future policy directions for supporting productivity growth in this sector.

Start of global economic crisis has posed many new challenges to Indian economy and has also initiated a re-look at the growth strategies that the economy had been following. Cautious, calibrated but steady approach to liberalization of key sectors has improved the economy’s resilience towards external shocks. The impact of global economic crisis on Indian economy was relatively less severe due to lower dependence on exports and the fact that sizeable contribution to GDP came from services sectors which continued to grow at a steady rate contributing more than 80 per cent to India’s growth rate of 6.7 per cent in 2008-09.

They attempt to expose the services-led growth of India in the face of falling external demand. They examine the contribution of disaggregated services to total GDP, and decomposes growth of GDP with respect to the disaggregated sectors of the economy. Software services have been identified as making an important contribution to India’s export of services. It is found that though external demand played an important role in growth of exports of software services, at the time of crisis, the fall in external demand for these services was not as high as for other services. A probable reason for this is that the nature of the services is such that to lower production costs, countries may demand more of these services, especially off-shoring services. Further, there has been diversification in destination of exports which has helped in sustaining the external demand for India’s software services.

To assess the impact of supply side factors in the growth of software services, total factor productivity growth (TFPG) has been estimated for Indian IT services firms using Data Envelopment Analysis. It is found that average annual growth rate in TFPG increased substantially in the post 2000 period. Most of this can be explained due to technology change, indicating that technology played an important role in growth of software services in India. Efforts need to be made for further boosting productivity growth in this sector. Higher productivity in this sector will enhance productivity growth in other sectors of the economy as well, particularly manufacturing sector and has the potential to lead to a sectorally-linked productivity spiral.
2.34 Das et al (2010) examine India’s long term growth experience at the level of industry and understand the proximate sources of growth. The debate on “Growth and Reforms” especially the “pro-business versus pro-market” and impact on long term growth is yet unsettled as the empirics of growth has been addressed using aggregate economy data. The transition to a higher sustainable growth path, calls for an assessment of the channels through which policy reforms can sustain high growth path by observing the economy at detailed sectoral level. They specifically address this issue by examining the growth performance of the 31 industrial sectors of the Indian economy for the period 1980-2004 subdivided into four sub-periods-1980-85, 1986-90, 1992-96 and 1997-2004. These sub-periods reflect policy orientation of the Indian economy during the decades of 1980s and 1990s. Further, given the growing optimism about India’s long term growth prospects since the advent of an open economy regime, they sought to examine whether productivity growth or factor accumulation drives the observed growth performance of Indian economy by computing industry level total factor productivity growth and factor contributions.

It makes important contribution to the literature on the empirics of India’s economic growth. First, it provides the most comprehensive and detailed sectoral analysis comprising the entire Indian economy. Second, the measures of labour and capital inputs incorporate the heterogeneity of different types of employees and capital assets. Finally, an attempt is made to distinguish between organized and unorganized manufacturing sectors in accounting for productivity growth performance.

They attempt to examine the sources of growth in Indian economy for the period 1980-2005 using a newly developed India KLEMS database. In particular, they examine the relative contributions of factor accumulation and productivity growth in various sectors of the Indian economy. A sector perspective gains significance in the context of major reforms in economic policies witnessed across all the major sectors in the past two decades. The introduction of market friendly policies in the early 1990s was expected to make the economy more efficient and competitive. In addition, there has been significant structural transformation in the economy during the past decade. Evidences suggest a high and increasing share of service sectors’ GDP. In order to decompose output growth
into contributions of inputs and factor productivity, they developed an India KLEMS database, in line of EU KLEMS using statistical information available with the Central Statistical Organization (CSO), India. This new dataset includes labour and capital accounts, measured using Jorgenson’s methodology. Labour input is measured as total hours worked and labour composition, where the latter is measured after weighting different types of employment by their wage shares. Similarly, capital input is measured as capital services, taking account of heterogeneity in various assets, such as ICT and non-ICT. In constructing this database they exploited various data sources, such as national accounts, input-output tables, and household employment surveys. The India KLEMS database was created keeping in mind consistency with the national accounts database of CSO. This data set enabled us to construct measures of value added, capital input, labour input and total factor productivity growth for broad sectors of Indian economy and 31 sector India KLEMS industrial classification. Further, the productivity performance of the manufacturing sector also documents separately the performance of the organized and unorganized manufacturing.

With the creation of the large India KLEMS dataset, it was possible to get a detailed account of India’s growth and its sources. Their findings are preliminary estimates, yet offer important insights into the Indian economy at the disaggregate level. There are three major observations: 1. They find that the productivity performance of the Indian economy is moderate with sharp fluctuations. 2. The economy wide productivity growth is service sector driven. 3. The source of growth analysis shows that factor accumulation and not productivity drives the output growth.

Their results are in line with some of the past studies on India’s economic growth. Their study makes important contribution to the literature on growth empirics in India. It is the most detailed industry perspective of Indian economy comprising 31sectors. The labour input reflects both quantity and quality aspects. The capital service contribution is categorized in terms of non-ICT and ICT capital. The productivity performance is documented for both organized and unorganized manufacturing sectors.
The India KLEMS dataset constitutes a rich source for examining many pertinent research issues for the Indian economy at the sectoral level. Their future research agenda constitutes examining the contribution of intermediate inputs including services to the observed output growth in a KLEMS framework.

2.35 Das, Banga & Kumar (2010a) discuss the implications of global crisis on India’s services sector and the changing composition of services sector. Trends in different sub-sectors of services have been examined with special reference to quarterly changes during the period of global crisis. Global income elasticities have been estimated for India’s aggregated and disaggregated services sectors to compare the significance of existing global and domestic demand for India’s services. To calculate the supply side factors contributing to growth of services, they estimate total factor productivity growth (TFPG) in identified services sectors. The services identified are Retail/Wholesale trade services; Software services; and Banking services. These services have a high share in GDP and contribute significantly to growth of services sector. A detailed firm-level analysis using Data Envelopment Approach (DEA) has been undertaken for banks and IT firms to examine the sources of productivity growth in these sectors and impact of global crisis on productivity. It further discusses the factors that may have affected productivity growth in services sector, including government policies and provides future policy directions for supporting productivity growth in the identified services sectors and aligning the restructuring of the services sector to the growing domestic demand.

Onset of global economic crisis has posed many new challenges to Indian economy and has also initiated a re-look at the growth strategies that the economy had been following. Cautious, calibrated but steady approach to liberalization of key sectors has improved the economy’s resilience towards external shocks. But at the same time the role of strong domestic demand and supply side factors like productivity growth in providing momentum to economic growth has been brought to the forefront. The impact of global economic crisis on Indian economy was relatively less severe due to lower dependence on exports and the fact that sizeable contribution to GDP came from services sectors which continued to grow at a steady rate contributing more than 80 per cent to India’s growth rate of 6.7 per cent in 2008-09.
In this context, they attempt to demystify the services-led growth of India in the face of falling external demand. They examine the contribution of disaggregated services to total GDP, and decomposes growth of GDP with respect to the disaggregated sectors of the economy. It is found that most of the sectors that have high shares in GDP are not dependent on external demand. Fall in external demand has therefore not led to severe decline in their growth rates. However, domestic demand has also declined in the wake of current crisis as the second stage effects of the crisis get translated into the economy. Fall in private consumption has been compensated by a substantial increase in government consumption which has cushioned the adverse effects that may have been felt due to lower private consumption.

Three sectors have been identified for sustaining the momentum of growth of Indian economy. These are retail/wholesale trade; software services; and banking services. All these services have high shares in GDP and contribute substantially to its growth. These services have a strong growing domestic demand and are on a rising productivity trajectory. Total factor productivity growth has been estimated at firm level for software firms and banks which show that both the sectors experienced a productivity growth of above 10 per cent in the post 2000 period. Interestingly, all three services form important inputs into the manufacturing sector and contribute substantially to its productivity growth. Efforts need to be made for further boosting productivity growth in these services as it will enhance productivity growth in other sectors of the economy, particularly manufacturing. Higher productivity in services can lead to a sectorally-linked productivity spiral.

2.36 Eichengreen & Gupta (2010) use National Accounts Statistics (NAS) and cross-country data from the World Development Indicators and EUKLEMS. They estimate the relative importance of final consumption, middle consumption and exports as sources of demand for services. Drawing evidence from the experience of other countries, they attempt to conclude the employment-generating capacity of services in India.

They find that the growth of services in India has been broad-based, while it has been unusually rapid in modern services like communications, business services and financial services. In practice, services that are tradable worldwide have grown fastest.
They reject the claim that the growth of the service sector is simply disguised manufacturing activity. Only a small fraction of the growth of demand, in fact, derives from the outsourcing of activities from manufacturing to services. Rather, most production that does not go towards exports derives from the growth of final demand at home. The growth of service-sector employment does more to include total employment outside agriculture than outsourcing arguments would lead one to expect. This suggests that policy makers should continue to encourage exports of IT, communications, financial and business services while also liberalising activities like education, health care and retail trade where regulation has inhibited the ability of producers to meet domestic demand.

Finally, they observe that the skill content of labour employed in both manufacturing and in services is increasing and shows tendencies towards convergence. It is not as if manufacturing employs only low-skilled labour while modern services employ only high-skilled labour. Both sectors are moving towards the employment of skilled labour; the skilled-unskilled mix of labour in the two sectors is becoming increasingly alike. Therefore, it is no longer obviously the case that manufacturing is the exclusive destination for the vast majority of Indian labour moving into the modern sector and that modern services are a viable destination only for the highly skilled few. To the extent that the expansion of both modern manufacturing and modern services is constrained by the availability of skilled labour, it just underscores the importance for India of continuing to invest in labour skills.

They conclude that sustaining economic growth and raising living standards will require shifting labour out of agriculture into both manufacturing and services, not just into one or the other. The argument that India needs to build up labour-intensive manufacturing and the argument that it should exploit its comparative advantage in services are often posed in opposition to one another. They argue, in contrast, that these two routes to faster growth and higher incomes are complements, not incompatible alternatives.

Sustaining economic growth and rising living standards, thus, will benefit from shifting labour out of agriculture into modern services as well as manufacturing and not
just into the latter. To the extent that the development of both sectors continues to be forced by the availability of skilled labour simply underscores the importance for India to continue to advance in labour skills.

2.37 Ghose & Biswas (2010) estimate TFPG of seventeen 2-digit manufacturing industry groups of India, each of them taken at 3-digit disaggregated level, using ASI data during 1980 to 2001 and also explain the variations in TFPG of different industry groups separately.

It is significantly different from the earlier studies in many respects. First of all, the variations in TFPG of different manufacturing industries are estimated using non-parametric approach. The analysis of it can also be considered as a study of intra-industrial variation in TFPG and will definitely be helpful for framing sector-specific policies for boosting up TFPG of different industry groups of India at disaggregate level.

They try to explain the intra-industrial differences in TFPG, considering some trade-related variables along with other determinants of TFPG, bearing in mind that the effect of trade liberalization on a specific industry group will jointly depend on movement of trade related variables and industrial characteristics of that particular industry group. Further, most of the earlier studies related to the analysis of TFPG, commented on the effect of any explanatory variable considering aggregate industrial sector. But given the fact that there exists high degree of intra-industrial disparity, it is expected that no single explanation for variation in TFPG of each industry group at disaggregated level will hold true. Rather, factors explaining the variation in TFPG and also its responsiveness regarding each factor will vary across different industries. It adds the literature in this direction by explaining the variation in TFPG at disaggregated level of manufacturing industries of India in view of the differences in inter-industrial structure and highlighting the role of trade-related factors. The use of non-parametric approach of DEA to measure TFPG has certain advantages over the parametric approach in the sense that no assumption is required regarding functional relationship between input and output, but this non-parametric approach remained largely unexploited till date. To measure the TFPG of different manufacturing industry groups, a two-stage DEA-based
procedure is applied, where OLS estimation is used in second stage to explain the variation in TFPG of concerned industry group.

Considering the variables, defining industrial characteristics, it reopens the old debate between firm size and productivity growth at disaggregate level with evidence from Indian manufacturing industries in a set up where the variables capturing industrial structure and also trade liberalization are included to explain the variation in TFPG and the productivity is measured by DEA. The results of the analysis exhibit that firm size has positive and significant impact on TFPG of Leather Industry; Electrical Machinery Industry; Basic Metal & Alloys Industry. Clustering of firms over the years may lead to TFPG of Food Industry; Wood, Wood Products Industry; Paper, Paper Products Industry and Metal Products Industry, whereas, big size, secured market lead to TFPG of Beverages and Tobacco Industry. The two technological variables considered here are capital-labour ratio and (non-production) employees per production worker. The coefficient of capital-labour ratio is expected to be positive and the effect is vividly captured by Paper, Paper Products Industry and the effect is significant at a very low level for Textile Products; Wood, Wood Products Industry Groups. A reduction of internal bureaucracy due to lower number of non-production employees per production worker can be resulted to increase in TFPG of Metal Products; Basic Chemical and Transport Equipment Industry Groups. On the other hand, the right combination of workforce is operating in Other Food Products Industry thus helping TFPG.

Increase in real wage can enhance the growth process of TFP of Paper, Paper Products Industry and Food Industry. Positive change in real wage rate has favourable, significant effect on TFPG of Paper, Paper Products Industry; Beverages, Tobacco Industry; Non-electrical Machinery Industry; Cotton Textile Industry. Regarding the effect of trade liberalization on TFPG of different industries, the impacts of trade-related factors like ERP, ICR, IPR and REER on TFPG are very much industry specific.

Effective Rate of Protection (ERP) represents a proxy measure of import liberalization and negative coefficient of ERP implies lowering of ERP has favourable effect on TFPG as shown by two industry groups - Metal Products Industry and Transport Industry. Reduction in ICR and fall in IPR signify that imported goods become cheaper.
leading to greater access on more capitalistic and sophisticated technology, cost of production may fall and industry groups may enhance their TFPG over the years. Negative and significant coefficient of Import Coverage Ratio (ICR) is exhibited by Electrical Machinery Industry; whereas three industry groups, namely, Cotton Textile, Basic Chemical and Metal Products Industries, experience negative and significant coefficient of Import Penetration Ratio (IPR). The coefficient of Real Effective Exchange Rate (REER) is expected to be positive throughout the regressions and it happens so for four industries - Food Products Industry; Paper, Paper Products Industry; Non-electrical Machinery Industry; whereas the significance level is low for Wood, Wood Products Industry. Notably, with change in each of these variables the magnitude and responsiveness of TFPG vary across industries.

Analysis regarding the relationship between trade-related variables and TFPG broadly reports that lowering of tariff, non-tariff barriers, shifting of products from restricted list to OGL category and realistic adjustment of real effective exchange rate may have contributed positively to Total Factor Productivity Growth of different manufacturing industries. So it can be said that the effects of trade-related variables on TFPG of different industries are definitely felt and the impact of trade liberalization do not indicate any significant adverse effect on productivity growth of Indian manufacturing industries.

The whole analysis reveals that there is great heterogeneity in TFP performance across industry groups and there exists intra-industrial differences in the determinants of TFPG also. The relationship is different not only with respect to sign condition but also to the extent to which the factors can influence TFPG. All the observations, in turn, place the need for formulating industry-specific policies for enhancing Total Factor Productivity Growth of Indian manufacturing sector.

2.38 Islam (2010) empirically tests the proposition that countries where the pattern of growth was characterized by high growth of labour-intensive sectors were the ones that achieved more employment-intensive growth. Conversely, the countries where the pattern of growth does not exhibit such a character demonstrate lower employment intensity of growth.
The mirror image of the above relationship between the pattern and employment intensity of growth is the relative contribution of labour productivity and quantity of labour in output growth. The countries which exhibit a lower contribution of labour productivity to output growth are the ones that are characterized by higher employment intensity of growth. In quest of a pattern of growth that is conducive to a high rate of employment growth, he examines whether there are countries that exhibited high share of employment in output growth and yet were able to combine employment growth with growth in labour productivity.

He argues that the pattern of economic growth in terms of the sector and sub-sector composition of output is important in determining the employment outcome of growth. Extending Kaldor’s analysis of economic growth where sustained economic growth requires a high rate of growth of manufacturing in relation to overall GDP growth and growth of other sectors, he argues that such growth may also be conducive to a high rate of employment growth. High rate of growth of manufacturing at the initial stage of development is necessary for creating conditions for Lewis-type transfer of surplus labour from sectors characterized by low labour productivity to those with higher productivity. However, for that process to succeed, it is also important for more labour-intensive sub-sectors of manufacturing to grow at high rates at least at the initial stages of development.

He is empirically demonstrated that a few countries of East and South East Asia (ESEA) (especially, Rep of Korea and Malaysia, and Indonesia and Thailand, to some extent) were able to achieve the kind of growth pattern mentioned above. In general, the countries of ESEA not only had higher growth manufacturing in relation to overall GDP growth, the sector composition of the manufacturing sector was also more labour-intensive (at least during the initial stages of their growth) than in countries of South Asia. As a result, the employment intensity of growth during the initial stages of their development was also higher than in the latter.

He also addresses the issue of possible trade-off between employment growth and labour productivity. Even from the point of view of growth accounting, it is pointed out that depending on the pattern of growth, it should be possible to achieve a balance
between employment and productivity growth. By undertaking a decomposition exercise for overall GDP growth and manufacturing output growth, he is demonstrated that countries of ESEA have been able to achieve a more balanced growth of employment and labour productivity than those of South Asia. The difference in this result can also be ascribed to differences in the pattern of economic growth. In that respect, it is argued that trade liberalization by itself is not adequate for bringing about a change in the pattern of growth that is in line with the comparative advantage of a country. Other policies, by distorting the incentive structure in an economy may militate against the outcome that is expected from the pursuit of an open economy regime.

2.39 Kathuria (2010) discusses the following issues:

i) Is there any evidence that manufacturing has acted as an “engine of growth” for the Indian states?

ii) Has dualism (presence of unorganized sector) abetted industrialization? And lastly,

iii) Is the current path of industrialization sufficient to generate the jobs necessary to absorb the growing population?

The traditional neoclassical model, under the assumptions of access to similar technology, comparable saving-rates and an identical rate of labour force growth, predicts that due to decreasing returns to capital accumulation, convergence in GDP per capita will more or less automatically occur. It is quite clear that this notion does not consider the relevance of investment (through manufacturing, as it is the locus of technical change) or other supporting factors required to catch-up, which Cornwall (1977) and other researchers working on endogenous growth models have considered imperative. Incidentally, all the standard assumptions of neo-classical model can be satisfied at sub-national level, where different regions or states have not only access to the same technology, but also governed by more or less similar credit availability, labour supply. This implies that testing for convergence hypothesis and whether manufacturing acts as an engine of growth is less controversial at the sub-national level than at the supra-national level.
The choice of India is appropriate as the 1991 reforms removed several barriers to grow and offered avenues to enhance productivity especially for the manufacturing sector. Yet, the impact of reforms has been quite differential. Some of the industrialized states like Gujarat, Maharashtra or Tamil Nadu have grown faster than the states like Uttar Pradesh, Bihar or Madhya Pradesh. The former having average growth rate of 5.7 per cent during 1991-92 to 2003-04 against 4.1 per cent of the latter states for the same period.

The first objective is addressed using the methodology as given by Cornwall (1977) and later modified by Fagerberg and Verspagan (1999, 2002). The methodology involves regressing the real growth rates on growth rates of manufacturing. If the coefficient of manufacturing growth is higher than the share of manufacturing in GDP, this is interpreted as supporting the engine of growth hypothesis. Since output growth may be at the expense of using more inputs rather than using the inputs more efficiently. The analysis is reinforced by computing productivity levels and productivity growth of both organized and unorganized manufacturing sector across major Indian states. This is done by technique developed by Levinsohn and Petrin (2003) that accounts for simultaneity bias. In order to do so, the study uses unit level data for both organized and unorganized sectors and aggregates at 4-digit level.

The results indicate that manufacturing has acted as an engine of growth for the period 1994-95 to 2004-05. This is despite its declining share over the period. On the other hand, despite continuous increase in the share of services in the last 2-3 decades, it is not unequivocally acting as an engine of growth.

Kathuria further examines what is driving output growth in the manufacturing sector. Analysis yields that it is primarily the factor accumulation, especially the capital, not the productivity growth, that is driving output. TFP grew in six states over the period, but TFPG is accompanied by a decline in employment. Characterisation of states based on output, TFP and employment growth reveals that the current trend of growing without creating employment is not sustainable. This points out to implementing appropriate policy interventions so that states follow desired growth path.
2.40 Sahadeven (2010) evaluates certain macro economic implications of the transition of the Indian economy from a traditional agrarian to a modern services economy. In view of the popular belief that the services growth has an urban bias he examines the role of fast growing services economy in promoting overall growth and its stability and the implications of tertiarisation for achieving inclusive and unbiased growth.

While the initial economic reform which began in 1984-85 accelerated the growth of service sector the full-scale reform of 1990s has transformed India into a service sector-dominated economy. The empirical evidence reveals that post-reform growth has become more stable and less volatile as compared to that in 1980s; and that while the pre-1984 growth was mainly driven by the performance of the primary sector the tertiary sector turned out to be the engine of growth during the post-1984 period. The Chow (1960) test evidence supports the structural shift in services sector in 1984-85.

The higher overall growth achieved through an increasing contribution of services sector during post-1991 reform period has widened the gap between the rural and urban India in terms of income and purchasing power. The national accounts data reveal the rural share of output has dipped substantially between 1970-71 and 2004-05.

The urban bias in distribution of national income has reflected in higher household saving rates which indicate that the increased GDP during the post-reform period has been distributed favorably towards high income group in urban India whose marginal propensity to save is higher than the lower income group.

There has been a decrease in the growth rate of total factor productivity of the manufacturing sector during the post-reform period. In view of this it is argued that the structural shift achieved mostly through non-key factors and with low investments has reduced the rate of innovation and technological progress.

It is not the magnitude of share of services in GDP that raises concerns. Instead, the strength of intersectoral linkages and the penetration of services to rural areas are vital for achieving sustainable and unbiased growth. It reveals that the positive linkage between services and industry is not strong enough to maintain the prosperity achieved mainly through the former. While industry and rural agriculture sectors provide sufficient
demand that pushes services growth, the later facilitates productivity growth in the former. However, this feedback system has not strengthened enough in the Indian context which raises concern about sustainability of service sector-driven growth. The domestic demand in rural India is severely constrained by lack of upward mobility of its low income people. The falling contribution of communication, banking, insurance, real estate and business services to the rural share of national income shows lower penetration of these segments in rural areas. It is important to note that industrial demand and output can revive only if the prosperity of service sector trickles down to low income rural segment. Otherwise, the rural-urban divide can deteriorate further and pose serious threat to achievement of inclusive growth.

2.41 Gupta & Kumar (2011) discuss the empirical evidence which shows the way in which various factors have affected the industrial performance.

They discuss the record of manufacturing growth in India and the factors that are considered responsible for the rather modest growth in this sector in India. They argue that there are many factors that have inhibited the growth of industrial sector in India. One major factor has been that the labour laws have been rigid and strict and these have affected the industrial performance in a number of ways, by keeping the size of the establishments small, by not encouraging production of labour intensive goods, by pushing activities to the unorganized sector, and by keeping the Indian industry uncompetitive. The labour laws would undoubtedly be politically difficult to introduce, but one way to reduce the resistance could be to grandfather some of the existing schemes and by making laws applicable to new industries more flexible; and to let the states introduce the reforms. Economic incentives can be provided to states that promote industrial growth and employment and the best practices in these states can be adopted elsewhere. This dualism and decentralization has been the Chinese way to successfully bring many policy changes, including those related to labour laws, and might as well work in India too.

They discuss that besides labour laws there are other factors that have been responsible for the modest performance of the manufacturing sector. These include difficulty in the acquisition of land, inadequate financing and infrastructure, and
cumbersome business climate. They present arguments and evidence which show the importance of these factors. For faster poverty reduction and to raise the standards of living, India needs both industry and services sector to grow faster, but because of these constraints there seems to be a long way to go before Indian manufacturing takes off. It would need an enabling environment in which land can be acquired easily; labour can be hired and laid off as required; businesses can be opened as well as closed with ease; there is adequate financing and physical infrastructure available; and finally skills are available aplenty. Unless this whole package is available, small tinkering in the policy framework are unlikely to unleash the potential of the sector.

Given India’s vast population and the masses of unskilled, uneducated people in the work force, it is important that any growth path is intensive in its use of labour and particularly unskilled labour. Observers point to the necessity of high growth in Indian manufacturing, especially in unskilled manufacturing, on the grounds that it would generate employment. The declining intensity of employment, overall and in manufacturing, is not a feature that is unique to India but is seen in other countries as well. Second, as noted in Eichengreen and Gupta (2010), the skill content of labour employed in both manufacturing and services is increasing overtime and shows tendencies toward convergence. It is not that the manufacturing employs only low-skilled labour while modern services employ only high-skilled labour, both sectors are rather moving towards the employment of skilled labour; and the skilled-unskilled mix of labour in the two sectors is becoming increasingly alike.

To the extent that the expansion of both modern manufacturing and modern services might be constrained by the availability of skilled labour going forward, this just underscores the importance for India of continuing to invest in labour skills.