DETERMINANTS OF EMPLOYMENT AND STRUCTURAL TRANSFORMATION IN INDIA IN PRE- AND POST-REFORM PERIOD

A thesis submitted during 2012 to the University of Hyderabad in partial fulfillment of the award of a Ph.D. degree in Economics

DOCTOR OF PHILOSOPHY IN ECONOMICS

BY

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CERTIFICATE

This is to certify that the thesis entitled "**DETERMINANTS OF EMPLOYMENT AND STRUCTURAL TRANSFORMATION IN INDIA IN PRE- AND POST-REFORM PERIOD**" submitted by Mr. Deepak Kumar Behera bearing Regd. No.05SEPH02 in partial fulfillment of the requirements for the award of Doctor of Philosophy in Economics is a bonafide work carried out by him under my supervision and guidance.

This thesis has not been submitted previously in part or in full to this or any other University or Institution for the award of any degree or diploma.

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DECLARATION

I Deepak Kumar Behera hereby declare that this thesis entitled "**DETERMINANTS OF EMPLOYMENT AND STRUCTURAL TRANSFORMATION IN INDIA IN PRE- AND POST-REFORM PERIOD**" submitted by me under the guidance and supervision of Dr. R.V. Ramana Murthy is bonafide research work. I also declare that it has not been submitted previously in part or in full to this University or Institution for the award of any degree or diploma.

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Contents

List of Tables

List of Figures

Figure No. Title Page. No.

Synopsis of the Thesis submitted in partial fulfillment of the award of Ph.D. Degree in Department of Economics

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Determinants of Employment and Structural Transformation in India in Pre- and Post-Reform Period

I. Introduction

Provision of employment is a major challenge in most countries of the world and its importance cannot be under-emphasised in development process. Therefore, achieving full employment is an important goal for the society in achieving political and social stability. But, unemployment is a source of modern societies, more particularly, for market economies and it lies as major reason behind poverty, crime, and lawlessness. Therefore, reducing unemployment is an important imperative in democracies. However, the sources and nature of the unemployment vary in different societies, depending on how the society and its economic activities are organised, what is the level of development or how fast the society is moving from one stage of development to another. Much of the received notion on employment is based on the development experience of the present-day developed countries. The experiences of Developing Countries vastly differ from it. Indeed, the issue of transformation remained an unresolved problem in the latter and is a crucial concern of development economics.

In the context of India, employment is an important issue in the development agenda and four decades of development planning in the past and latter seem to a neglected aspect. The employment trends in India suggests that there has been a deceleration of aggregate employment growth during post-reform period, indicating a job-less growth, compared to pre-reform period. Such adverse impact of liebralisation on employment has been noted by several scholars like Visaria and Minhas (1991), Deshpande (1992), Mundle (1993), Bhatacharya and Mitra (1993), Ghose (1994), Kundu (1997), Datt (1994, 1999), Bhattacharya and Sakthivel (2004). Sector-specific analysis suggests this decline in employment growth extends to be in all the three major sectors during the phase. In terms of status and nature of employment too, the evidence suggests that close to half of the work forces are employed in self-employed category and an overwhelming majority of 92 per cent are under unorganised sector.

As far as the structural transformation concerned, which lies at the heart of employment growth in a development context, India seems to have missed this

transformation trajectory. The transformation which is in place is quite different, led by a service sector rather than the manufacturing sector, in both income terms as well as employment. There is evidence for some movement in structural transformation in the past two decades, with an increased share of labour moved out of agriculture to non-agriculture. However, the nature of this transition remained less than satisfactory as employment generation is happening in informal sector and shrinking of the same in the formal sector casts doubts about substantive aspects of the transition.

II. Objective of the Study

In this context the motivation of the thesis is to examine what can explain the slow growth of employment in three major sectors namely, agriculture, industry and services sector. What is the magnitude of structural transformation in the economy and what explains the pace of structural transformation in the economy. In this regard, the objectives of the study are: (1) to review the literature on issues of employment and structural transformation in India and elsewhere; (2) to examine the trends in growth of employment and estimates the determinants of employment in three major sectors i.e. agriculture, industry and services in both organised and unorganised segments; (3) to identify the broad determinants of the growth of aggregate employment from disaggregated sectoral approach; and (4) to estimate the magnitude and pace of structural transformation in terms from agricultural to non-agricultural sector? And how much is this transformation from informal sector to formal sector?

III. Data Sources and Methodology

To examine the above objectives, the present study used the annual data set covering the period from 1972-73 to 2007-08. The empirical analysis in this study is based on two different data sources. First, Gross Domestic Product and its major components are collected from various issues of National Account Statistics. The GDP estimates of unorganised sector in each industry group are initially prepared for a bench mark year by using labour input method. Second, the major source on employment is the quinquennial surveys on employment and unemployment conducted by the National Sample Survey Office. Time series data for employment at an aggregate as well as disaggregate level is constructed using the discrete NSS rounds through interpolation. This study follows a broad Keynesian framework, in which employment is determined through determination of

output through demand-supply framework. The determinants of output are thus the indirect determinants of employment in sub-sectors as well as aggregate. The empirical estimations use simple and compound growth rates, and Ordinary Least Square (OLS) technique.

IV. Findings of the Study

The study is divided into eight chapters. The summary of each chapter is provided below.

Chapter I provides the introduction, research problem, objectives, methodology and data base of the study.

Chapter-II dealt with an empirical literature on the India's planning and programmes of employment, empirical studies on the relationship between growth, employment and technology at aggregate and disaggregates sectoral levels. The development economics literature recongises a potential conflict between the objectives of growth and employment, suggesting efforts to boost economic growth may not necessarily augment growth of employment. However, Indian economic policy seemed to have tilted towards 'growth first' strategy since early eighties and much more after economic reforms in 1991.

The protagonists of economic liberalisation held that growth of income is necessary for poverty reduction and employment creation. Much more, it is aimed at removing distortions in industrial sector and is argued that it would have a favourable effect on the growth of employment in industry. The favourable effects may arise from greater labour market flexibility and increased trade-orientation leading to changes in the structure of industries in favour of labour intensive industries and technique of production.

Whereas, the critics pointed out that deflationary policies combined with privatisation will adversely affect the employment growth, leading to jobless growth. They also held that even without the economic 'reforms' in the format of Washington Consensus could achieve growth in income as well as employment provided the government has taken care of financial and fiscal profligacy, rationalisation of wasteful expenditure and keeping the balance of payments in balance. The most adverse impact of the liberalisation policies ushered in 1991, were said to be seen on employment creation. A number of studies that we have reviewed brought to our notice that employment growth rates have

slowed, organised sector employment declined in absolute it in unorganised sectors. The employment elasticities have declined in the all three subsectors.

Chapter-III examines the employment dynamics in agricultural sector, where trends in growth and the determinants of employment are estimated. Though agriculture was not directly subjected to any reforms after 1991 reforms, the macroeconomic adjustment and liberalisation measures have indirectly affected the agricultural sector, which has slowed down the growth of the sector. But in terms of absorption of employability, it still employs a dominant majority of the work force in spite of some decline in the recent period. The composition of employment status in agricultural sector suggests that majority of agricultural workers are self-employed, constituting 64.2 per cent, and casual labour constituting 34.6 per cent, together 98.6 per cent are informal sector labour in agriculture.

With the decline in output growth in the sector, there has been significant slow down in the rate of growth of labour productivity and the rate of growth of real wage for casual labourer. The decomposition of labour productivity shows that during the post-reform period, capital productivity has gone down significantly despite the high growth in capital that displace the labour. It is also found that agricultural employment in post-reform period has been more responsive to growth than to investment. This suggests that production conditions in agriculture are under change in the long run, which gives some clues for slower generation of employment.

Given the slow and declining growth of employment in the long run, the study examined the determinants of employment in the sector for both organised and unorganised. The organised sector is in fact insignificant in its share of income as well as employment, still we conducted the exercise for the sake of uniformity of the study. For the unorganised agricultural sector, estimated results corroborate the view that performance of agriculture determines the capacity to generate employment in the sector where employment is positively influenced by HYV, K/L, terms of trade and public investment and variables like non-agricultural output and productivity displace labour in the sector. Capital-labour ratio bore a positive sign in the estimation is taken is as indication that technology is most labour displacing. The policy variable i.e. public investment indicates a positive but very less impact to the employment in the sector.

The fourth chapter is concerned with the structure, status and nature of employment and determinants of growth of employment in industrial sector by organised and unorganised.

The initial performance of industrial growth during 1956-64 was also highly successful, it has grown at an average of 7.8 per cent per annum, a record which is not yet surpassed. However, the mid-sixties industrial stagnation has brought several policy as well as macroeconomic constraints for industrial growth. The partial liberalisation of the economy started in the mid-1980s, saw changes in the external and industrial sector. The turn around in industrial output growth in this decade has been variedly attributed to liberalisation, improvement in public investment and public sector performance. A concrete shift in the policy towards liberalisation has been introduced in 1990-91. Abolition of licensing, near complete import liberalisation (barring agricultural products), rationalisation of tariff structure, opening up major sectors for foreign direct investment, capital market reforms, exchange rate reforms, and financial sector reforms. Also this made little impact on industrial growth rate. During the pre-reform period during 1983-93, industry grew at 6.17 percent per annum, in the post-reform period of 1993-05, it slightly increased to 6.68 percent. The major reason for this increase is accounted by a rise in the construction and manufacturing sector growth rate.

In terms of employment, we observed that its growth in industry has gone up during post-reform period and is higher than the other two sectors of the economy. However, much of the growth came from construction sector, it increased at 6.62 per cent and manufacturing employment increased at 2.65 per cent. The construction sector employment have actually shown a steady growth in the two decades where as manufacturing sector employment was sluggish during 1993-00, but picked up to 4.96 during 1999-05. This has reflected in terms of falling employment elasticities. Not only employment elasticities with respect to output are falling, the employment elasticities of investment are turning negative. Thereby, faster growth of output alone can raise employment in the sector. The structure of the employment in the sector is such that 90 per cent of employment is informal. Among these, 80 per cent constitute self-employed and casual labour. It is disheartening to note that even in the so called organised industry, informal labour constitute 60 per cent. Given the preponderance of self-employed and

casual labour, the incidence of disguised unemployment could be prevailing in considerable measure, but no estimates are available. Further, the labour productivity and capital labour ratio in aggregate as well as disaggregate level has been increasing. Capital productivity has been falling. This means a greater factor substitution becomes necessary to sustain growth, which eventually can erode employment; the growth of employment then is sustained by increase in capital accumulation over period.

Given the slow employment growth in the long run, the study estimated the determinants of employment in the sector for both organised and unorganised. For the organised sector, whose share is just about 10 per cent to total industrial employment, employment have positively determined by industrial lagged output followed by non-industrial income, investment, non-industrial income, and non-agricultural import. On the other hand, capital-labour ratio and labour productivity displaces labour in the sector. The overall result suggests that it is the income and investment in organised sector which has some deterministic influence on employment transformation in the economy. For the unorganised sector, the remaining 90 per cent of employment in the sector is positively influenced by non-industry income, lagged output, and gross capital formation. It is negatively influenced by capital-labour ratio, labour productivity, and non-agricultural export. It is suggested that for employment to grow in the unorganised sector, the capital formation had to rise faster than rise in productivity and capital-labour ratio.

On the whole, our econometric estimations have lent support to the above contention that the employment growth on whole is driven by income and capital formation, while it is slowed down by factor substitution.

Chapter-V deals with the slow growth of employment in the service sector at the aggregate level and estimates the determinants of employment in the service sector by organised and unorganised segments.

Services sector in India has grown rapidly in the last one and a half decades. Its growth has, in fact, been higher than the growth in other commodity-producing sectors such as agriculture and manufacturing sectors. Looking at the performance of the growth, it has shown a little higher growth i.e. 8.0 per cent in 1993-94 to 2004-05 from 7.06 per cent in 1983 to 1993-94. Among the sub-sectors in services, transport sector recorded a

higher growth followed by trade sector instead of finance sector during post-reform period. Among the services, the unorganised services grew at a higher rate than organised sector during post-reform period.

In terms of employment, it absorbs only 25 per cent of work force in the country and contributes 56 per cent of national income. The rate of growth in the service sector shows that employment trend has declined to 3.33 per cent in post-reform period from 4.06 per cent in pre-reform phase. Though the growth rate has accelerated (i.e. 3.89 per cent) during 1999-04, but the compensation of fall in employment growth (i.e. 2.86 per cent) in 1993-99 has not made any more employment addition during post-reform. The decline in services employment in post-reform phase is accounted by a massive fall in growth of community, social and personal services. Within the service sector, employment growth is highest in finance, insurance, and business services, followed by trade, hotels and restaurants and transport etc.

The composition of employment status in service sector too has a high share self-employed labour followed by regular-wage/salaried category. The nature of employment in the sector is such that nearly 86 per cent workers are engaged in unorganised sector which constitute highest share of informal workers in the economy. The informal labour in Trade, Hotel and Restaurant and Transport, Storage and Communication sectors have a combined share is 95 per cent to total services employment. For the organised sector, the services employment has come down in the post-reform period due to slow down in employment in the pubic sector. The faster growth in private sector employment did not offset the effect of the slow down in public sector employment in the organised segment.

Further, we observe that the labour productivity and capital-labour ratio in aggregate as well as disaggregate level has been increasing. Capital productivity has been falling. This would necessitate greater factor substitution to sustain growth, which eventually can erode employment.

With the declining growth of employment in the long run, the study tried to examine the determinants of output growth which in turn affects the employment in the sector for both organised and unorganised. For organised sector, estimated results corroborate the view that performance of services determines the capacity to generate

employment in the sector where employment is positively influenced by non-services output, last year services income, human capital and net export and variable like productivity displace labour in the sector. Variables like Investment, private final consumption expenditure and capital-labour ratio are not statistically significant. It is quite plausible that gross capital formation does not influence the employment growth in the sector. It can be observed that it is the output in services along with non-services output, and human capital have some deterministic influence on employment generation in the organised services sector. For the unorganised services, the employment is positively influenced by non-services income, lag output, and liberalisation dummy and negatively influenced by capital-labour ratio, labour productivity, and human capital. A negative impact of human capital on employment in unorganised sector suggests that with the increase in human capital, people will prefer to work in organised services rather than unorganised services. It is the skilled based job which requires quality of persons to be engaged in the services. Therefore, those with more skilled power, they intend to work in organised sector. The result also suggests that gross capital formation does not influence the employment growth in the sector.

Chapter-VI consolidates the results estimated in the previous three chapters and aggregates them to arrive at some understanding of the aggregate employment. At the aggregate level, the rate of growth employment in unorganised as well as the organised sector, both of them are declining. At the aggregate level, the supply side there is a clear upward trend in capital-labour ration and labour productivity.

We analysed aggregate employment by modellling it as a weighted average of sector-wise employment and these are estimated through regressing on a broad set of determinants. The sectoral employment is already estimated in the previous chapters, here, the estimated sectoral employment is aggregated. The estimated and observed employment rates converge well. At the aggregate level too, we conclude that while variables such as income and capital accumulation are pushing the employment up, there are factors such as capital-labour ratio and the labour productivity are pulling it down. The influence of the negative factors seems to have increased after reforms leading to slowing down the employment creation. Thus quite naturally, in private sector dominated capitalist economy,

it is quite understandable if the capital substitution for labour happens. However, this would eventually mean that structural transformation would also get slow down.

The seventh chapter examines the issue of structural transformation. An elaborate review of literature on structural transformation is undertaken before contemplating empirical analysis. The central feature of structural transformation process in substantial term is missing in case of India. First, output transformation is lot quicker than in employment for the past quarter century in India. Second, there is a declining transformation of employment during the post-reform period. This suggests that the shift of work force from agriculture to non-agricultural sector has been slow. Third, Despite the increase in level of income, development of urbanisation, and higher rural-urban migration, the pace of non-agricultural employment share has been lower due to declining in share of employment in agriculture is slower than the increase in share of non-agricultural sector employment. Fourth, though the quality of job in unorganised sector is very poor, due to low earning, low physical and human capital, poor assessment of education, insecurity of job, but still majority of workers basically from self-employed category are engaging in this sector.

An econometric investigation suggests that, the increase in share of employment transformation from agriculture to non-agricultural sector is positively influenced by share of non-agricultural income, share of non-agricultural investment, share of non-agricultural informal sector work force, rural-urban real wage differential, and human capital and variables like growing urban population and non-agricultural capital-labour ratio negatively influence the transformation in the economy. It can be observed that due to informal sector growth in terms of employment and growth in non-agricultural sector income has some deterministic influence on employment transformation from agricultural sector to non-agricultural sector. The substantive employment transformation i.e. from unorganised to organised sector is a positive influenced by investment and human capital and negative influenced by labour productivity, urban population and capital-labour ratio in organised sector. It is suggested that human capital and investment in organised sector which has some deterministic influence on quality of employment transformation in the economy.

From the entire exercise, we conclude that a high rate of economic growth has not been able to generate high employment growth, and it has, in fact, been accompanied by a slow down in employment growth in India in recent years. This made economists to term the recent experience as 'jobless growth'. Two main points needs to be looked into for future of employment growth in India. First, labour productivity and capital labour ratios have negatively influenced the employment creation. Employment driven by demand factors such as income and capital formation, the new employment creation will depend on the nature of the employment, technology and structure of the economy. Second, as the recent experience suggests that most of the new employment opportunities are likely to generate in the unorganised sector and belongs to poor conditions of work, and social security. Even within the organised sector an increasing number of workers are being employed in a 'flexible' manner on casual or contract basis, without the social security benefits available to regular workers. Thus the challenge of quality of work, in terms of earnings and social security will continue. With a decline in its share in organised sector and increase in that of the unorganised sector, the share of the unprotected workers is on increase. Provision of a minimum social protection to this large mass of workers is, therefore, likely to emerge as a much greater challenge than of expanding employment opportunities. It will require special attention of the state and society at large in coming years, as the market driven high growth even if accompanied by an expansion in employment opportunities may not by itself be adequate to address the issue of quality of employment.

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Chapter-I
Introduction, Objectives and Scope of the Study

I.1.Introduction

In the history of economics, there are two prominent men, namely, Karl Marx and John Maynard Keynes who brought the world's attention to the importance of studying employment. Provision of employment is a major challenge in most countries of the world and its importance cannot be under-emphasized in development process. Employment is a critical entitlement for individuals who possess no productive asset. Achieving full employment is an important goal for the society in achieving political and social stability. Unemployment is a major reason behind poverty, crime, and lawlessness. Therefore, reducing unemployment is an important social, political and economic imperative in democracies. However, the sources and nature of the unemployment vary in different societies, depending on how the society and its economic activities are organised, what is the level of development or how fast the society is moving from one stage of development to another. Much of the received notion on employment is based on the development experience of the present-day developed countries. Often, there is an uncritical application of ideas to solve the employment problems of developing countries. The issue of transformation remained an unresolved problem in the latter and is a crucial concern for the body of development economics. However, all different ideas on employment that have emanated in different areas of economic theory, say, classical, Keynesian, and Neo-classical model of employment, as well as in development economics, nonetheless offer the way to think about the issue in question. The central aim of this study is to understand the issues related to employment and transformation theoretically and analyse the problem empirically.

I.2.Employment in Received Economic Theory:

I.2.1.The Classical Model:

Karl Marx in his *Das Capital* held that unemployment is endemic to capitalist system and becomes an important reason for the downfall of the same eventually. In his scheme, cut-throat competition makes capitalists to increase organic composition of capital

defined as the ratio of constant capital to variable capital to increase the rate of surplus value. This would render a lot worker thrown out of the production process who would form unemployed reserve army. The unemployment would enable them to keep the labour insecure and extract maximum amount of surplus labour from them. Hence for Marx, unemployment is characteristic to capitalism [Junankar (1982)][1]. This notion radically differs from other classical thinker like Ricardo who was worried about the 'stationary state' but not much on unemployment problems.

Classical doctrine emanating from Say's Law dominated employment discourse in economics till pre-1930 World Depression, it postulated that there can not be any general unemployment in an economy in the long run. According to which, all resources are employed until the point where marginal product is equal to their respective prices. Labour market is determined by demand for and supply of labour. The supply curve of labour is an upwardly sloping curve for the relevant portion, based on the assumption of leisure-work trade-off[2]. On the demand side, given the diminishing marginal product, labour will be employed until the marginal product of labour is equal price of the product. Unless someone is not willing to work at a falling wage rate along the marginal product, everyone will be employed. Thus aggregate output is determined at the full employment level in the labour market, and the aggregate output produced will automatically generate aggregate demand for the output. Thus labour market and output markets are automatically cleared through an assumed flexible factor and output prices. This is not affected by any disequilibrium in the money market, since they assume nominal factors have no effect on the real variables, popularly known as 'classical dichotomy'. Any unemployment if prevailing is due to voluntary decisions of some of the labour, who either are temporarily unwilling to work at the prevailing wage rate or are in a transitory stage of finding suitable employment. This can prevail to certain extent in the short run, but in the long run it gets cleared and there would be no general unemployment[3] [Levacic and Rebmann (1982)].

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[1] Junankar, P.N. (1982), "*Marx's Economics*", Oxford: Philip Allan 1982, reprinted 1985, pp. x +166).

[2] Labour is assumed to be facing two choices leisure and work, which have utility and disutility respectively. At each point the marginal utility should equal marginal disutility at different levels of wages.

[3] The labour supply eventually bends backwards due to putative trade-off between work and leisure, implying limits to labour supply where disutility of excessive work exceeds marginal utility of work reflected in the real wage

I.2.2.The Keynesian Perspective

It is well known that the 1930 World Depression shook the world for almost a decade long, during which period the endemic unemployment coupled with economic slump crippled the world economies. Some economists took a view that the growing unemployment was due to workers' refusal to accept lower wages was a reason for non-clearance of labour market. The unemployment went up to a record level of 27 per cent in US and 24 per cent in UK and similar situation prevailed in most of the Europe, until Keynes broke new grounds in understanding the nature of the problem. Keynes in his seminal work *General Theory of Employment, Interest and Money* in 1936, dismissed the notion that full employment automatically occurs. For full employment theory, he has raised three important caveats, first, wages are downward inflexible, and therefore they cannot serve as mechanisms to clear labour markets. Second, he asserted that output determination does not take place through labour market equilibrium, instead it takes place through marginal efficiency of capital and effective demand. The latter largely is a function of investment decisions of entrepreneurs which in turn rests on the autonomous expectations. Autonomous expectations can mutually be reinforcing by the decisions of the individuals, an incidental actions of investment withdrawal can trigger a chain reaction leading downward spiral. Keynes saw no internal mechanism to set this process back on tracks once it sets off. The third caveat is about interest rate ineffectiveness in stimulating investment due to 'liquidity preference' of investors in the money market who fear a perpetual fall of bond prices. There is nothing internal to capitalist system that can restore full employment level of income. Only State as an external agent can stimulate the effective demand by creating employment through public spending to improve income and consumption and thereby stimulating private investment. Keynesian policies were extremely successful in Western capitalist countries which adopted aggressive expenditure policies and for the first time made 'full employment' as a macroeconomic policy objective for the state.

The body of Keynesian economics ran into rough weather during 1960 'stagflation crisis' when rising inflation was increasingly attributed to fiscal deficits, which is discussed in subsequent section. But two implications from Keynesian economics that have clearly emerged: first, it has given legitimacy to state intervention in capitalist

economies and rise of `welfare state' and brought distribution back into discourse for stability of capitalist economies. Second, in the context of developing countries, the state's role became a *sine qua non* in both building a modern economy as well as stabilising it. Keynes favoured even deficit financing, if needed, to stimulate the effective demand and maintain full employment.

I.2.3. New Classical School and NAIRU Hypothesis

Neoclassical backlash against Keynesian economics appeared in 1960s which gave new implications to the issue of employment. Milton Friedman, the founder of 'Monetarism' countered the Keynesian position on money demand function, reasserted that it is a stable function of price level, through a complex transmission mechanism, bringing back the role of monetary management for price control as central to macroeconomics and hinting at fiscal expansion to be perilous to the long run growth due inflationary consequences [Bhaduri (1986)].

An empirical paper by A.W. Phillips in 1956 gave rise to a notion that prices and unemployment are indirectly connected. It contemplated a stable, inverse and non-linear relationship between rate of change in money wage and unemployment rate. According to the simple Keynesian model, inflation should occur only if the investment is above the full employment level. But inflation occurred along with stagnation hence unemployment. Lipsey (1969) extended an explanation that excess demand in the labour market causes wage inflation. In the period of low unemployment, excess demand for labour exists and labour scarcity pushes money wages upward. But why should inflation exist along with high unemployment is seen as a paradox.

In a reinterpretation, Friedman (1966) and Phelps (1968) held that it is a paradox because Phillips curve is wrongly specified. They argued that in the long run labour supply responds to real wages, not money wages. It is in the short run that labours do respond to nominal wages. They concede that in the short run excess demand coming often from fiscal stimuli can create demand for labor. Excess demand that result in pushing nominal wages translates into prices, resulting in inflation. But it does not take much time for them to realise that there is not much change in their real wages and withdraw their additional labour. Any further attempts to stimulate output beyond a level of employment would only

makes temporary changes in labour supply. No sooner they realize that the increased nominal wages are outweighed by price raise, hence no rise in the real wages, they tend to correct their expectations and withdraw the labour and output would be corrected to a long run stable level, which they have defined as 'Natural Rate of Unemployment' (NRU). In the long run, labour supply is consistent with NRU. A sense of full employment is internal to the notion of NRU where due to some frictional unemployment of temporary variety exists. In the model, monetary or fiscal policy can affect employment and output in the short run because in the short run employers and laborers can be misled by the anticipated inflation. But in the long run, these will become ineffective because employers and labourers will fully and correctly anticipate the inflation rate, as a consequence, unemployment will return to its natural rate. It is determined by the inherent characteristics of the labor markets such as leisure preferences, market imperfection or informational problems [Rakshit (2008)].

The new Classical School further argued that there is a 'Non-accelerating Inflation Rate of Unemployment' which is consistent with an optimum level of inflation (non-accelerating level) that the policy should aim to achieve. The two major implications that arise from NAIRU hypothesis is that monetary policy should focus exclusively on stabilising prices rather than aiming at full employment. The so-called monetary targeting is a fall out of this assertion that the central bank to follow monetary targeting objective without being influenced by political compulsions of achieving full employment in the country. They further argue that not only fiscal policy is ineffective beyond NAIRU, it could generate inflation. Thus, the rise of New Classical School laid ideological foundations to neoliberal policies of Margaret Thatcher in UK and Ronald Reagon in the US. This new orthodoxy also became theoretical backdrop for IMF's policies of structural adjustment under 'Washington Consensus'[4] [Van Waeyeberg (2006), Rakshit (2008)].

I.2.4. Harrod-Domar Growth Model:

Among the growth models, Harrod-Domar model theorised the fundamental instability associated with capitalist growth process. The model purports that output equals

[4] Elisa Van Waeyeberg `From Wasington to Post-Washington Consensus: Illusions of Development' in Jomo KS and Ben Fine edited *The New Development Economics: After the Washington Consensus*, Tulika Books, Delhi, 2006.

savings rate times the marginal product of capital minus the depreciation rate. The moment planned savings exceed the actual savings, the actual growth can fall short of warranted growth rate and lead to a downward spiral and vice versa. Besides the instability problem in the model, the major implication for the growth process is that increasing the savings rate, increasing the marginal product of capital, or decreasing the depreciation rate will be means to achieve growth. Although the Harrod–Domar model was initially created to analyse the business cycle, it was later adapted to explain economic growth. Its implications were that growth depends on the quantity of labour and capital; more investment leads to capital accumulation, which generates economic growth. The model also had implications for less economically developed countries; labour is in plentiful supply in these countries but physical capital is not, slowing the economic progress. Less Developed Countries do not have sufficient average incomes to enable high rates of saving, and therefore accumulation of the capital stock through investment. The model implies that economic growth depends on policies to increase investment, by increasing saving, and using that investment more efficiently through technological advances. The model leaves a major implication that an economy does not find full employment also face of constant instability growth rates [Thirlwall (2005)].

I.2.5.Solow Growth Model:

As a part of resurgence of neo-classical economic theory, Solow's growth theory is developed after World War-II. It comes back with an argument that the instability problem in Harrod-Domar is solved through changes in capital-labour ration and in the long run output growth rate in a function of labour supply or the population growth rate. Based on the standard assumptions of diminishing returns to capital, it explored the conditions of dynamic equilibrium. It postulates that the long run growth of the economy is independent of investment, it stabilises to a rate dictated by technical progress and population rate -a long run steady state of growth. Output and capital grow can grow faster than the rate of growth of the labour force, but sooner than later rising capital-labour ratio will lead to diminishing returns and growth rates will come down. If investment still exceeds the equilibrium capital-labour ratio, then real wages would go up to effect capital substitution to restore to full employment equilibrium. A rise in the ratio of saving and investment to GDP still has no effect on the long run equilibrium growth of output, unless of course a

higher level of investment raises the rate of growth of labour-augmenting technical progress, but this is ruled out by the assumption of diminishing returns in the neoclassical model and also because technical progress is assumed to be exogenously determined. Given the diminishing returns to capital, a higher capital-labour ratio can be associated with a higher capital-output ratio. As a rider to this theory, it suggests that developing countries can grow faster because they have a scope to increase the capital-labour ratio before it affects factor prices and eventually converge with the growth rates of developed countries. Solowian growth theory, in retrospect, builds on the old notion that full employment automatically occurs in the course of capital accumulation [Thirlwall (1986)].

I.2.6. Endogenous Growth Model:

In neoclassical growth model the economy is assumed to reach a steady state equal to exogenous population growth rate. By implication, the model suggests faster growth rates in developing countries due to larger absorption of capital and convergence with that of developed countries. But such convergence was not being witnessed in reality [Thirlwall (1986)]. To explain the differences in growth rates between countries, Lucas (1988)[5] and Romer (1986, 1990)[6]came up with new formulation, by allowing differences in human capital. The positive externalities associated with investment in human capital, innovation, and knowledge is assumed to explain the faster growth of countries. According to the new growth model, there can be only conditional convergence, holding constant all other factors that influence the growth of per capita income, including population growth, investment ratio and variables that affect the productivity of labour. The endogenous growth theory highlights the importance of human capital for long growth [Thirlwall (2005)]. The context to think about full employment in macroeconomic and growth theories sound remote for a developing economy like India, where structural unemployment is the major problem.

I.2.7. Lewis Models: Employment and Structural Transformation

The question of employment generation in the context of underdeveloped countries is also linked to the question of structural transformation. The development model that

[5] Lucas, R. E. (1988), "On the mechanics of Economic Development', *Journal of Monetary Economics* , 22.
[6] Romer, P.M (1986), "Increasing Returns and Long Run Growth", *Journal of Political Economy*, October.
_____ (1990), "Endogenous Technical Change", *Journal of Political Economy*, October.

explicitly considers these questions through economic growth is the model formulated by Arthur Lewis (1954). Lewis in his paper in 1954 on 'Economic Growth under Unlimited Surplus Labour' considers a dualistic economy characterized by a modern sector and a traditional sector. The traditional sector, which is agricultural, is characterised by 'surplus labour' with zero marginal productivity and modern industrial sector witnesses positive marginal productivity, real wages in the latter thereby are higher. The difference in real wages would attract the surplus labour from the traditional sector and modern sector continuously grows until the supply of surplus labour is exhausted. The withdrawal of labour from traditional sector does not lower its output as surplus labour does not contribute anything to the sector. Withdrawal of labour would further make the labour productivity positive in the traditional sector and generate savings there too. Thus Lewis model shows the possibility of development of a traditional economy. The model indicates the possibilities on modern sector employment[7] on one hand and structural transformation on the other. Critics have pointed out certain weaknesses of Lewis model. The assumption of zero marginal productivity for the traditional sector is critical to the model, in the event it is not it could pose a wage-good constraint. A more problematic aspect in the model is perhaps the assumed neutral role of technology. A labour-saving technological change can actually slow down employment creation in the modern sector, in spite of increasing labour productivity. The transaction costs in labour management could induce capital-intensive processes, in spite of lower real wages in developing countries [Thirlwall (2005)].

I.2.8. Harris-Todaro Model and Rural-Urban Migration

The high urban migration in the developing countries in the face of urban unemployment, Harris-Todaro model strives to explain the phenomenon. The question it addresses itself is why people migrate to urban areas when there is substantial unemployment present. The answer it provides is that migration under unemployment is still a rational response, because economic agents respond not to actual wages but to expected wage, defined as actual wage times probability of getting employment. As long as expected wage is higher than the wage at the origin, it is rational to migrate. The model,

[7] It is not clear whether the modern sector would be an `organised' sector in a legal sense with social security, but is certainly a sector with higher real wages due to higher productivity.

however, locates this in the larger problem of urban slums and deprivation and advocates rural employment programs to halt the migration (Todaro, 1969)[8].

I.2.9. Productivity and Kaldor's Growth Laws

Classical and neoclassical schools in economics were assuming diminishing returns and considered technology as *duex machine* to increase the productivity. A Dutch economist called Petrus Johannes Verdoorn made brilliant observation by reversing this causation, i.e., considering implications of faster industrial growth on increasing returns[9]. This later became the Verdoorn's Law, which states that faster growth in output increases productivity due to increasing returns. Verdoorn (1949, p. 59) argued that "in the long run a change in the volume of production, say about 10 per cent, tends to be associated with an average increase in labor productivity of 4.5 per cent." The Verdoorn coefficient close to 0.5 is also found in subsequent estimations of the law. Kaldor (1966, p. 289) reports a 0.484 coefficient. Verdoorn underscores the importance of industrialisation if a country wishes to prosper faster[10].

Kaldor (1966) explicitly makes industrialisation as *tour de force* of transformation in his quintessential laws of growth. He identifies certain causal relationships between industrial growth, productivity growth and GDP growth. These are known as Kaldor's Growth Laws[11]. They are:

1. The growth of the GDP is positively related to the growth of the manufacturing sector. This is perhaps better stated in terms of GDP growth being faster the greater the excess of growth of industrial growth relative to GDP growth: that is when the share of industry in GDP is rising.
2. Productivity of the manufacturing sector is positively related the growth of the manufacturing sector (Verdoorn's Law)[12].

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[8] Todaro, M (1969), "A Model of Labour Migration and Urban Unemployment in Less Developed Countries", *American Economic Review*, March.

[9] Verdoorn, J. P. (1949), "On the Factors Determining the Growth of Labor Productivity," in L. Pasinetti (ed.), Italian Economic Papers, Vol. II, Oxford: Oxford University Press, 1993.

[10] Looking at the countries of the world now and through time we can see a high correlation between living standards and the share of resources devoted to industrial activity, at least up to some level of income. Only New Zealand, Australia and Canada have become rich whilst relying mainly on agriculture [Cypher and Dietz (1997)].

[11] Kaldor, N. (1967) Strategic Factors in Economic Development, New York, Ithaca

[12] Here the argument is that there are increasing returns to scale in manufacturing. These may be static - where the larger the size of the sector the lower the average costs - or dynamic via the induced effect that output growth has on capital accumulation and technical progress. Learning by doing effects are also likely to be important.

3. The productivity of the non-manufacturing sector is positively related to the growth of the manufacturing sector. This last law is the least intuitive and is based on the argument that the non-industrial sector has diminishing returns to scale. As resources are moved out the average productivity of those that remain will rise.

Kaldor's laws of growth, echoing Lewis model implicitly suggest the conditions for process of structural transformation. The big push of investment in the industrial sector eventually would lead to increasing returns to scale and in turn accelerates the process of growth and employment. Kaldor's laws are extensively tested empirically and are based on the growth experience of developed countries and are a clear indication that developing countries should focus on accelerating investment in manufacturing sector.

Kaldor brings out three subsidiary propositions which are also important to take into account[13]. They are:

1. That as the scope for the increasing returns sector to absorb the labour from the diminishing returns sector reduces so too will be the rate of growth of GDP.
2. That in the early stages of industrialisation the demand comes from the agricultural sector - but in the later stages export demand is likely to drive the process. Here the limited size of the internal market is likely to be such as to limit the realization of economies of scale and there is the need for generating foreign exchange to import necessary inputs.
3. A virtuous circle can be generated by export growth and output growth but that this is difficult to establish as it is likely to depend on exceptional enterprise, protection or subsidy.

I.2.10.Technical Progress: Harrod and Hicks Neutrality

Technology has become a major factor in promoting economic growth. It is an umbrella term to cover all those factors which contribute to the growth of productivity and used to describe the character of technical improvement by adjectives of labour saving, capital saving or neutral. The classification of technical progress as to whether it is capital saving, labour saving or neutral owes its origins primarily to the work of Harrod (1948)[14] and Hicks (1932)[15]. Their criteria of classifications differ. Harrod's classification of technological progress employs the concept of the capital-output ratio. Given the rate of profit, technical change is said to be capital saving if it lowers the capital-output ratio, labour saving if it raises the capital-output ratio, and neutral if it leaves the capital-output ratio unchanged. His neutrality at the aggregate level is quite consistent with capital-saving

[13] [See Thirlwall (2003, p123-124)]
[14] Harrod, R (1948), *Towards a Dynamic Economics*, London, Macmillan.
[15] Hicks, J (1932), *The Theory of Wages*, London, Macmillan.

technical progress at the industry level. In fact, most of the evidence for advanced countries suggests that if technical progress is neutral in aggregate in Harrod sense, this must be due to substitution of capital for labour because pure technical advance have saved capital. The substitution of capital for labour takes place because as countries become richer the price of labour relative to capital tend to rise, which not only induces a pure substitution effect but also encourages investment effort towards saving labour, which is becoming relatively expensive. But if certain expenditures, which ought properly to be regarded as adding to the capital stock, are excluded from the measurement of capital, and these expenditures have grown faster than measured capital, the capital-output ratio will be biased downwards. Thus while technical progress may appear neutral in the Harrod sense, it may nevertheless be capital using, and would appear so if the capital stock were more appropriately measured [Thirlwall (2005)].

While Hicks classification of technical progress takes the concept of the marginal rate of substitution between factors, which is the rate at which one factor must be substituted for another, leaving output unchanged. Holding constant the ratio of labour to capital, technical progress is said to be capital-saving if it raises the marginal product of labour in greater proportion than the marginal product of capital; labour-saving if it raises the marginal product of capital in greater proportion than the marginal product of labour; and neutral if it leaves unchanged the ratio of marginal products. Hicks himself seemed to be of the view that technical progress is relatively labour-saving, but given the magnitude of the rise in the price of labour relative to capital and an elasticity of substitution of close to unity, labour could not have maintained or increased its share of the national income if technical progress was markedly biased in the labour-saving direction. If technical progress is biased in one direction or another, its major impact will be on factor utilisation if the prices of factors are not flexible. The type of technology employed, and the factor proportions it entails, must bear a major responsibility for the high level of unemployment in developing countries [Thirlwall (2005)].

I.2.11. Choice of Technique and Employment

A major cause of unemployment in developing countries lies in the application of inappropriate production techniques. This is generally because of the limited choice of techniques available to them, both from within and outside. The application of

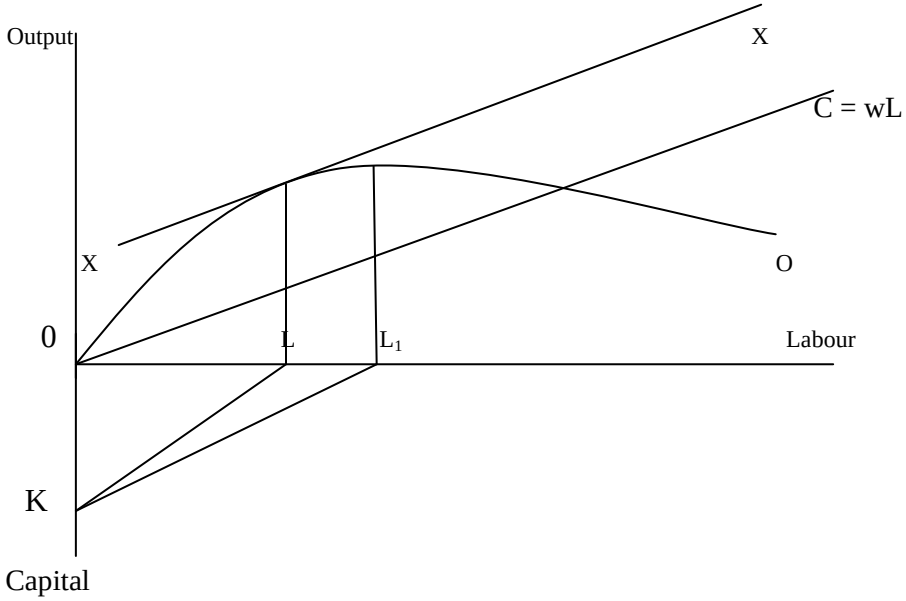
inappropriate technology not only exacerbates unemployment but perpetuates the dualistic structure of developing countries. This is also a global paradox where many developed countries which are abundant in labour are producing capital intensive goods and many developed counties are producing labour intensive goods. The question comes here that how will countries choose appropriate technique? In the choice of techniques a conflict of objectives may arise. First, a technique that maximizes employment may involve a sacrifice of productivity. Second, a technique that maximizes employment may involve a sacrifice of saving. In first case, a potential conflict between employment and output exists in the choice of new techniques because methods that employ high labour-capital ratios may involve high capital-output ratios the labour productivity being lower. There is a little evidence to support the view that labour intensive techniques have higher capital-output ratios than capital intensive techniques. On the contrary, there is growing evidence that labour can be substituted for capital, provided cooperating factors are available, without the level of output being impaired (Thirlwall, 2005).

Even if labour intensive techniques can be used without hurting output, there is still the question of conflict between employment and savings. The potential conflict of such was first raised by Dobb (1955) and Sen (1968). The choice of techniques in the development process brought about a link between the role of technology and rate of investment in employment generation and growth is presented in a diagrammatic way [Figure No.1.1]. Here, the rate of surplus, which in turn determines the pace of increase in capital stock and employment in the economy itself, is dependent upon the choice of technique. Consider K as the given amount of investible resources, 0O is the production function. Assuming that in the industrial sector labour is paid a fixed wage and all that is consumed, so that a ray from the origin 0C with a constant slope W shows the level of the wage bill and consumption at each level of employment. The difference between 0O and 0C is profit; and if all profits are saved the difference also shows the level of saving at each capital-labour ratio[16]. Saving is maximized where a line drawn parallel to 0C is tangential

[16] Assumptions of the model are that the production function is under diminishing returns to labour, all wages are consumed and profits saved, wage rate is invariant to technique of production, unemployment rate that arises from technique of production does not reduce saving that would prevail with more employment and higher wages and government lacks the ability to tax and subsidies labour to reconcile the potential conflict.

to the production function at employment level L_1. Beyond this point further employment generation would diminish the level of saving and investible surplus.

Figure.1.1. Employment versus Saving



Source: Dobb (1955) and Sen (1968)

Since there is a conflict between saving and employment maximization, a labour-intensive technique could provide relatively large employment, but its rate of surplus and hence reinvestment capacity being low, the pace of employment expansion was viewed as being low. A capital-intensive technique which yields the maximum rate of surplus at a given wage rate, on the other hand, might provide a low level of employment to start with, but in view of its reinvestment capacity being high, it was viewed as generating a high pace of employment expansion, thus posing a conflict between short term and long term implication of choice of technique for employment generation.

One way of reducing adverse implications of this conflict is to reckon an economy in terms of two segments. One pertaining to producing goods or services which are basic to building up long-term growth potential of an economy and for which less mechanised techniques may either not exist or be quite inefficient, as for example in the sphere of basic infrastructure or capital goods needed for certain engineering and chemical industries, telecommunications, etc. In the case of such activities which are essential for transforming a developing economy towards a high level of development, techniques of high capital

intensity would be inevitable, even if their employment generation effect is minimal, or foreign exchange requirement is high. The other could be goods and services using low-skilled labour intensive techniques that can take care of problem of producing mass employment, such as textiles, garments, finished consumer goods, electronic goods etc. So, one should appropriately augment the growth of capital intensive and labour intensive industries to reconcile the employment as well as growth objectives [Thirlwall (2003), pp.441-443).

Moreover, the problem of employment in developing countries is not simply that of inadequate job opportunities arising out of low capital formation or frequent use of high capital-intensive techniques in segments, where improved variety of labour-intensive techniques would be more appropriate, but also from lopsided demand pattern. What is even more serious is the very low level of income and nutrition of those forming the vast pool of underemployed and semi-employed workers. Unless the income distribution is less unequal, the demand for labour intensive goods may fall behind. On the other hand, when the inequality increases, demand for capital intensive and luxury goods industries will go up that fail to create industrial employment [Thirlwall, 2005].

Even when growth performances have been satisfactory, it often fails to 'trickle down' to make an impact on living conditions of substantial chunk of the population, particularly in the rural areas and backward regions of the economy. The equity dimensions of employment and income generated in the course of development therefore becomes important. However, in reality we observe in most developing countries an increase in capital-labour and capital-output ratios, which can accelerate the income growth but not employment. With a constant capital-labour ratio, the growth in capital formation would augment employment growth at slower income-growth, but when capital-labour ratios increase would mean higher growth at reduced employment growth. Given the conflict between income and employment growth, ironically income growth is often favoured [Thirlwall, 2005].

I.3. Employment Problems in Developing Countries

There is a consensus that developing countries also face the problem of involuntary unemployment of Keynesian type, frictional unemployment of the Natural Rate of

Unemployment as well as structural unemployment due in adequate development [Rakshit (2008)]. There are three important structural features that characterise the employment in developing economies. First economy is characterised by dualism consisting of a formal segment, which employs a small proportion of the labour force, and a non-formal segment which employs the bulk of the labour force. The second feature is the existence of surplus labour. The system of casual wage employment allows sharing of a given amount of wage-paid work by a varying number of wage workers, just as self-employment allows sharing of a given amount of work in household enterprises by a varying number of family workers. These modes of employment accommodate surplus labour at lower wages and workers appear as if they are fully employed. The third feature is absence of institutionalised social security. A vast majority of people in informal sector do not have access to any organised social protection system. In the absence of institutionalised social security systems, only persons from relatively well-off households can really be in unemployment. Most people have to survive, even if the work found is not full time and does not generate anything more than bare subsistence. Thus, in the context of developing countries, the unemployment rate usually reflects the extent of queuing by young persons from relatively well-off households for 'good' jobs in the formal segments and hides the surplus labour.

In many developing countries in Asia, Africa and Latin America employment growth in the formal segment is relatively small or negative while output growth was high. Evidently, growth in the formal segments was driven by rising capital per workers and technological innovations. If at all any formal sector with considerable employment happened, it occurred through the public sector. However, since the era of globalisation the share of the public sector in output and employment is declining. There are two types of restructuring which appear to have occurred in the formal segments after globalisation since 1990s. Some countries restructured capital and technology rather than output; in this case, labour productivity increased rapidly while employment showed zero or negative growth. Other countries restructured output rather than capital or technology; there employment increased rapidly while labour productivity showed zero or negative growth [Ghose et.al (2008)].

I.3.1. Employment and Unemployment Problem in India

Creation of employment has been a cherished objective in nation building process and economic policy. Our plan documents since the Second Five Year Plan have always mentioned employment as the principal objective. A reasonably high rate of economic growth combined with an emphasis on labour intensive sectors was envisaged to achieve this goal. In the initial three decades, the rate and structure of growth rather than technology were seen as the instruments of employment generation (Papola, 2006)[17]. Thus while granting that in an economy with relative abundance of labour, a bias in favour of comparatively labour intensive techniques is both natural and desirable', it is recognised that considerations of size and technology should not be set aside while emphasising employment (Planning Commission, 1956, pp. 112-113)[18]. A targeted economic growth rate of 5 per cent with some emphasis on labour intensive consumer goods sectors was expected to generate large enough employment over the years.

These assumptions and expectations continued from one Five Year Plan to another during the 1950s and 1960s. Meanwhile the magnitude and the rate of unemployment increased significantly along with the population. Economy grew at a rate of around 3.5 as against the planned rate of 5 per cent per annum. Yet, employment grew at a relatively high rate of 2 per cent per annum which was less than labour force growth of 2.5 per cent. Magnitude of unemployment had almost doubled during 1956-1972, from around 5 to 10 million and unemployment rate from 2.6 to 3.8 per cent (Papola, 1992). The Fifth Five Year Plan (1974-79) sought to address the employment issue by reorienting the pattern of growth in favour of employment intensive sectors. At the same time, a strong opinion was emerging to suggest that growth alone cannot solve the problems of poverty and unemployment, and therefore, a number of special employment and poverty alleviation programmes were launched. They were mostly of two kinds: providing financial and other assistance for productive self employment, and offering supplementary wage employment to the underemployed. Over the years, these programmes have been continued in one form or the other, have been modified or integrated, new ones have been started while some old

[17] Paopla, T.S (2006), "Employment Trends in India", in Basu, Kaushik., (ed.) The Oxford Campanion to Economics in India, Oxford University Press.
[18] Planning Commission (1956): *Second Five Year Plan*, New Delhi, Government of India.

ones have been discontinued. The latest in the series is the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) which aims at legally guaranteeing employment of up to 100 days annually to every rural household. While these programmes seem to have been able to reduce the degree of underemployment to a certain extent, the open unemployment rates have not declined over the years.

While looking at the trends of population, labour force, employment and unemployment in India[19], we see that population growth has come down over the period whereas labour force participation rate has increased during the post-reform period (1983 to 1993-94) over pre-reform period (1993-94 to 2004-05) indicating a 0.1 percentage point increase in the work force participation rate in post-reform (see Table.1.1). The observed deceleration in employment can not be dissociated from the sharp decline in the growth of the labour force. The growth rate of work force participation rate is less than the growth of the labour force participation rate indicating an increasing in the unemployment rate.

Table.1.1. Rates of Growth of Population, LFPR, WFPR, UR in India

Year	Population	LFPR	WFPR	UR
1983	2.19	43.0	42.2	1.9
1993-94	2.12	42.7	41.8	2.1
1999-00	1.93	40.5	39.7	2.2
2004-05	1.71	42.9	41.9	2.3
2009-10	1.36	40.0	39.2	2.0

Note: LFPR: Labour Force Participation Rate i.e. defined as the number of persons/person-days in the labour force per 100 persons /person-days. WFPR: Work Force Participation Rate i.e. defined as the number of persons/person-days employed per 1000 persons/person-days. UR: Unemployment Rate i.e. defined as the number of persons/person-days unemployed per 1000 persons/person-days in the labour force (which includes both the employed and unemployed). The measures are made on the basis of usual status approach.

Source: various rounds of NSS reports.

[19] The information on employment and unemployment is collected by NSSO using three basic activities such as; Usual activity Status (US), Current Weekly activity Status (CWS) and Current Daily activity Status (CDS). The US relates to the activity status of a person during the reference period of one year preceding the date of survey. The activity status on which a person spent relatively longer period during the 365 days preceding the date of survey is considered as the principal usual activity status of the person. If a person could be engaged for a relatively longer period during the last 365 days in one economic/non-economic activity and for a relatively shorter period in another economic activity preceding the date of survey is considered as subsidiary economic activity status. A person is called as employed in case of CWS basis if he/she engaged in economic activity for a reference period of seven days preceding the date of survey. And if he/she will engage for a reference period of each day of the preceding week is called as employed on the basis of CDS. The US approach takes into consideration the number of persons in the workforce, where as Current Status approach denote to the number of man-days**.** The current study considers US approach as the best suited as a measure of the level of economic activity in an economy experiencing seasonal fluctuations in employment.

I.3.1.1.Economic Liberalisation and its Impact on Employment

The balance of payments crisis of 1991 has compelled the Indian State to approach the IMF, which has induced India to take a Structural Adjustment Loan. Internal political instability, a Balance of Payment (BoP) crisis and several interest groups in bureaucracy, media and industry have all eventually led to introduce economic reforms in India in 1991. These are often described as 'reforms through stealth' [Kohli (2006), Tendulkar and Bhavani (2007) and Panagariya (2008)]. As a result of these measures, reduction of subsidies, reduction of fiscal deficit, opening up the global market, abolition of industrial licensing, restrictions and controls,, capital market reforms, devaluation, current account convertibility, public sector privatisation and disinvestment public sector and whole lot these were undertaken. There was clamour for labour market reforms, but since that involved legislative process and no government since then enjoyed full majority in parliament, they could not be undertaken. However, flexible norms in labour markets are applied through several de facto measures, such as contractual employment, outsourcing, and intentional ignorance of labour standards. By allowing capital goods of huge size and nature that displace labour in vast amounts, it led to a massive change in the structure of industries in favour of capital intensive industries (Singh, 1993; Papola, 1994). Efficiency and competition became the key words. In the name of cost rationalisation, voluntary retirement schemes are introduced and labourers are sent out with golden handshake. Appointment of part-time and casual employees is taking place in large number. Thereby, reform process resulted in acceleration of GDP growth without a commensurate increase in employment [Bhattacharya and Mitra (1997); Datt (1998); Madheswaran and Dharmadhikary (2000)]. As facts stand today, public sector employment has declined by more than one and half million jobs since 1991 because the public sector began to withdraw from several areas. It was expected that since organised private sector was expected to be the important factor in economic reforms, employment in the organised sector would grow at a much faster rate. But this did not happen even in the private sector. Faced with the process of internal liberalisation and of globalisation even in the private sector, industrial units started shedding excess labour and to compete with foreign players, new technology was increasingly introduced, resulting in loss of jobs. The new liberal economic policy regime marked by an increased competition on the one hand, greatly

improved access to foreign technology and imported capital goods on the others created among the industrial firms a drive towards the adoption of advance technology which led to increasing capital intensity of production and reduces the employment growth (Ghose, 1994)[20]. Under global competition, market will imports and absorb best global technologies which are quite often labour displacing. Protecting employment in a labour surplus economy and at the same time to remain competitive with the rest of the world is indeed the greatest challenge (Gupta, 1999).

The adverse impact of liebralisation on employment has been noted by several scholars like Visaria and Minhas (1991), Deshpande (1992), Mundle (1993), Bhatacharya and Mitra (1993), Ghose (1994), Kundu (1997), Datt (1994, 1999), Bhattacharya and Sakthivel (2004) that the labour force in the economy has grown at a rate of 1.04 during 1993-94 to 1999-00 to 2.85 percentages in 1999-00 to 2004-05. However, this has slowed down to 0.01 percent during 2009-10 (see table.1.2). There has been a declining growth in the post-reform period (1993-94 to 2004-05) with 1.86 per cent over 2.17 per cent during pre-reform (1983 to 1993-94). Such a decline would normally be associated with a slower growth in the working age population causing a reduction in the growth rate of population and a greater number of children may be joining the education institutions instead of joining the labour force. The declining in the labour force growth also affects the employment growth of 1.84 per cent during post-reform over 2.15 per cent in pre-reform. This sharp deceleration in the growth of employment has naturally received attention raising fears that economic growth in the post reform period has been of a “jobless” growth.

While looking at different sectors, it is observed that services sector and industry recorded the higher growth rates in employment than in agriculture. However, in general, the post-reform period witnessed a declining employment growth in all three sectors compared to pre-reform period, there is a negative growth in agriculture. What is particularly intriguing is that compared to an employment growth of 2.15 per cent with a

[20] Ghose, Ajit K. (1994) 'Employment in organized manufacturing in India', *Indian Journal of Labor Economics*, April–June, Vol.37, No.2, pp.141–162.

5.6 per cent GDP rate during the pre-reform period, with an increased GDP rate over 6-9 per cent, employment growth is much lower during post-reform phase[21].

Table.1.2 Rate of Growth of Labour Force and Employment in India

Year	1983 to 1993-94	1993-94 to 1999-00	1999-00 to 2004-05	2004-05 to 2009-10	1993-94 to 2004-05	1983 to 2004-05
GDP(1999-00 prices)	**5.68**	**6.51**	**5.99**	**9.41***	**6.27**	**6.1**
Labour Force	**2.17**	**1.04**	**2.85**	**0.01**	**1.86**	**2.01**
Employment^	**2.15**	**1.05**	**2.81**	**0.05**	**1.84**	**1.99**
1.Agriculture and allied	**1.47**	**0.10**	**1.47**	**-1.69**	**0.72**	**1.08**
2. Industrial Sector	**3.03**	**2.39**	**5.75**	**3.29**	**3.90**	**3.49**
2.1.Mining and Quarrying	3.95	-2.80	2.44	1.55	-0.45	1.62
2.2. Manufacturing	2.16	1.56	4.96	-1.28	3.09	2.65
2.3. Electricity, Gas and Water	5.17	-4.57	2.88	3.08	-1.25	1.75
2.4. Construction	6.02	6.35	8.14	11.16	7.16	6.62
3. Services Sector	**4.06**	**2.86**	**3.89**	**1.23**	**3.33**	**3.67**
3.1. Trade, Hotel and Restaurant	4.09	6.23	3.89	0.68	5.16	4.65
3.2. Transport, Storage and Communication	3.68	5.29	4.84	1.90	5.08	4.41
3.3. Finance, Insurance, Real estate and Business	5.61	5.20	9.41	5.62	7.10	6.39
3.4. Community, Social and Personal Services	4.00	-1.47	2.52	0.63	0.32	2.06

Note: * indicates growth rate from 2004-05 to 2007-08. ^ Employment is nothing but total work force in the economy.
Source: computed from various reports from NAS and NSS

[21] It must, however, be clarified that with large weight of agriculture (i.e. around 56 per cent), the overall employment growth has been mainly influenced by employment growth in that sector. Thus, even though employment growth in construction, trade, transport and manufacturing has improved, the aggregate employment growth has significantly declined during post-reform as compared to pre-reform due to a steep fall in employment growth rate in agriculture (and to a certain extent a decline in the growth rate of employment in community, social and personal services). Slow down in employment growth in agriculture has been a result both of a low GDP growth and a decline in employment elasticity (ratio of employment growth to GDP growth).

Another aspect of employment trend in a development context is the distribution of employment in terms of status[22] and nature[23] of employment category. Looking at the status and nature of employment, we understand that close to half of the work force are employed in self-employed category, most of them being cultivators, petty business, street vendors etc. around 32 per cent of the rest are casual workers and 16.36 per cent regular salaried employees in 2009-10. What is interesting to observe that there is a faster decline in self-employed during 2004-05 to 2009-10 and a rise in salaried as well as casual employment. However, there is an increase in the employment of unorganized sector from 92 per cent to 94.32 per cent while there is decline in the public as well as private sector organised sector employment. The total organised sector employment has declined from 7.93 per cent during 1983-84 to 5.68 per cent in 2007-08. Public sector share has come down almost close to half. The impact of 'reforms' is perhaps more clear that it led to (i) a decline in organised employment, prominently in public sector, (ii) there is an increase in casual employment and regular salaried and (iii) a decline in self-employment, even though it still dominates [see Table No.1.3].

[22] Status of employment is of three types such as: Self-employed, regular wage-salaried and casual labourer. Persons who operate their own farm or non-farm enterprises or are engaged in independently in a profession or trade on own-account or with one or a few partners are self-employed. Persons working in other's farm or non-farm enterprises, both household and non-household, and getting in return salary or wages on a regular basis (and not on the basis of daily or periodic renewal of work contract) are the regular salaried/wage employees. A person casually engaged in other's farm or non-farm enterprises (both household and non household) and getting in return wage according to the terms of the daily or periodic work contract is a casual labour.

[23] Nature of employment is of two types such as: Organised/formal sector and Unorganised/informal sector. Organised sector is defined as the sector which is registered, follows government rules, has employees and employers union and regulations under the factory act constricts of establishments using power and employing 10 or more workers each on any day of the preceding twelve months is called organised sector. The unorganized sector consists of all unincorporated private enterprises owned by individuals or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than ten total workers

Table.1.3.Percentage Share of Status and Nature of Employment in India

Year	Self Employed	Regular Wage/Salaried	Casual Labour
Status of Employment			
1983-84	57.31	13.35	29.34
1993-94	54.62	13.63	31.75
1999-00	55.45	15.52	29.03
2004-05	56.22	15.70	28.08
2009-10	50.69	16.36	32.95

Nature of Employment				
	Organised Sector			**Unorganised Sector**
Year	**Public**	**Private**	**Total**	
1983	5.44	2.49	7.93	92.07
1993-94	5.19	2.12	7.31	92.69
1999-00	4.85	2.16	7.01	92.99
2004-05	3.93	1.85	5.78	94.22
2007-08	3.62	2.06	5.68	94.32

Source: computed from various reports of NSS, Organised sector employments are computed from Ministry of labour & Employment, Director General of Employment Training (DGET) and unorganised sector employments are computed through residual approach.

The standard development models have purported that the modern sector would eventually absorb all the surplus labour from the traditional sector. If so, there should have been a faster growth employment in modern sector consisting industry and service sectors. However, in India even though this process seemed to have begun more so in the post-reform period, it is doubtful whether there is scope for a full-fledged transformation. There are several reasons for this skepticism, such as the nature of technology, demand constraints, investment, huge population backlog, environmental constraints, etc. Moreover, there is also a growing concern about the nature of transition as employment generation is happening in the informal sector and shrinking of the same in the formal sector. It is a matter of anxiety from the view point of quality of employment as workers in this sector suffer from poor conditions of work, low earnings and lack of employment and social security (Papola, 2006).

I.4.Research Problem and Objectives of the Study

The experience of six decades of development in India has transpired the difficulties in structural transformation of the economy. The structural transition that is ensued is not only partial in terms of sectoral income shares, it is far too behind the occupational transformation. The share of manufacturing remained static over a long

period. Absence of substantial growth of employment in the modern sector, much of the labour force (surplus labour) had to willy-nilly fall back on agricultural sector. The problem of underemployment would persist under the dominance of self-employed and casual employment in all sectors. Though manufacturing sector should be the engine of modern developmental process, late entrants into development like India seem to have missed this transformation trajectory since it has to absorb highly capital intensive technology. Therefore, industrial sector grew in terms of income but not in employment. Service sector became a default sector to absorb the surplus labour

Then the relevant questions in this study assumes are: what can explain the slow growth of employment in modern sector of the economy in general, during post-reform period in particular. Second, what is the magnitude of structural transformation in the economy? Third, what explains the pace of structural transformation in the economy? Given the diversity of conditions, this study would undertake a disaggregated approach at sectoral level to investigate into the issues and finally arrive at an aggregate explanation. In this regard, the objectives of the study are:

1. To review the literature on issues of employment and structural transformation in India and elsewhere.
2. To examine the trends in growth of employment and estimates the determinants of employment in three major sectors i.e. agriculture, industry and services in both organised and unorganised segments.
3. To identify the broad determinants of the growth of aggregate employment from disaggregated sectoral approach.
4. To estimate the magnitude and pace of structural transformation in terms from agricultural to non-agricultural sector. And how much is this transformation from informal sector to formal sector?

I.5. Approach and Methodology of the Study

The methodology of the study follows a broad Keynesian framework, in which employment is determined through determination of output in a demand-supply framework. The determinants of output are thus taken as the indirect determinants of employment in sub-sectors as well as an aggregate level. The aggregate employment is arrived from aggregation of sectoral employment. The economy is divided into three broad

sub-sectors, namely, agriculture, industry and services. Each of the sub-sectors is further divided into organised and unorganised sectors. The methodology of estimation entails use of growth rates, simple and weighted averages to show temporal and spatial trends. The determinants of employment growth and structural transformation are estimated using standard Ordinary Least Square (OLS) technique. The relevant variables are checked for their non-stationarity using Dicky-Fuller and Augmented Dicky- Fuller tests and are taken in logarithmic first differences to clear stationarity issues.

I.6. Data Sources

To examine the above objectives, the present study uses the annual data set covering the period from 1972-73 to 2007-08. The empirical analysis in this study is based on two different data sources. First, Gross Domestic Product and its major components are collected from various issues of National Account Statistics. As we know that the Central Statistical Office (CSO) compiles the estimates of GDP for organised and unorganised sectors (as used in NAS) separately at the level of broad tabulation categories. The organised sector is, however, not uniformly defined and there are variations in coverage across various industry groups. By and large, all Government and Public Sector Enterprises are in the organised sector. The GDP estimates of unorganised sector in each industry group are initially prepared for a bench mark year by using labour input method. The labour input data is obtained from Census of Small Scale Industry, National Sample Surveys (NSS) on Employment & Unemployment, Director General of Employment and Training (DGET) etc. For the subsequent years, the benchmark year estimates are extrapolated with appropriate physical indicators and the relevant price indices.

Second, the major source on employment is the quinquennial surveys on employment and unemployment conducted by the National Sample Survey Office (NSSO)[24]. As we know that there is no continuous data set available for employment in India, the present study makes an interpolation to construct a time series data on

[24] Presently in our country, the main sources of data on employment- unemployment are the various surveys being conducted by the National Sample Survey Office (NSSO), the Population Census and the Employment Market Information Programme of DGET which provides information on the organized sector employment and Employment Exchange Statistics. Of all the data sources available, surveys conducted by the NSSO are the main data source on employment and unemployment in the country. Beginning with the 27th round survey and based on the concepts, definitions and procedures as recommended by the Dantwala Committee (1970), NSSO has been conducting quinquennial surveys on employment and unemployment in the country. So far eight quinquennial surveys on employment and unemployment have been conducted by the NSSO.

employment[25]. Population data is taken from the Population Census of India and annual time series is constructed using average growth rates. The NSS data provides data on employment by status and nature. Besides this, data concerning labour and wages is taken from publications of Labour Bureau. For organised sector employment, data is taken from *Employment Market Information* (EMI) series of the Director General of Employment and Training publishing in the *Annual Employment Reviews*. Employment for unorganised sector is obtained by subtracting the total employment data to organised sector employment data.

Beside NAS and NSSO, extensive use has been made of other relevant secondary sources like Handbook of Statistics on Indian Economy published by Reserve Bank of India (RBI), Agricultural Statistics published by Ministry of Agriculture and various official reports. Hence, each chapter has their own data sources for estimating the employment growth. The data sets used for the empirical estimation are in real value at 1999-00 prices.

I.7. Limitations

It is well known that the problem in doing a serious empirical analysis with employment data is that it is fraught with methodological problems. First of all, the definitionally, the extent of unemployment is not captured, it only conveys the number of persons employed. Without having adequate information on how long a person is employed, it is not possible for a meaningful analysis of employment. The definition cannot capture the extent of underemployment, given the large share of work force placed in self-employed category. Second, there is no availability of continuous data series on employment to analyse annually. The interpolation method to evolve time series data is only an approximation for intervening years, therefore a statistical artifact. Third, there is no data on incomes and earnings of self-employed, except sketchy information. Fourth, given the aspect of underemployment in self-employed category, labour productivity measured as output per labour, may involve overestimation [Srinivasan, 2008]. The study acknowledges the risks involved in indulging in extensive empirical estimation and

[25] The similar exercise has also been made by Pattanik, Falugni and Narayan Chandra Nayak (2011), "Employment Intensity of Growth in India and Its Structural Determinants", *The Asian Economic Review*, Vol.53, No.1, pp.173-187.

exercised caution in interpreting the results. Hopefully, when better data sets become available, future work can go further in analysing the question.

I.8. Chapterisation

The study is divided into eight chapters. Chapter I provides the introduction, research problem, objectives, methodology and data base of the study.

Chapter II deals mainly with the empirical literature relating to growth and development of employment relation in India. It consists of two sections. The first section highlights the India's planning and programs of employment, whereas the second section deals with the empirical issues concerning the relationship between growth, employment and technology at aggregate and disaggregates sectoral levels.

Chapter III examines the employment dynamics in agriculture by looking at the trends in growth by status and nature and empirically estimates the effects of determining factors of both organised and unorganised sector.

Chapter IV is concerned with the structure, status and nature of employment and determinants of growth of employment in industrial sector by organised and unorganised segments in India.

Chapter V deals with the major reasons for slow growth of employment in the service sector at the aggregate level and estimates the determinants of employment in the service sector by organised and unorganised segments.

In Chapter VI, two exercises are undertaken, one, description of the trends in the sectoral and aggregate employment and output in the Indian economy. Second, estimation of determinants of aggregate employment with a sectoral approach is presented.

Chapter VII deals with the issues of theoretical and empirical literature on structural transformation. And we also undertake an empirical exercise to estimate the magnitude and determinants of structural transformation in the Indian economy.

Chapter VIII, the last one, draws a summary of the findings of the study and presents the major conclusions that emerge.

Chapter-II

Employment Growth and Issues in India: A Review of Literature

II.1.Introduction

From the previous chapter, we have seen the different models of growth, and economic development giving some understanding on employment growth and structural transformation. Yet there is no unique theoretical framework for explaining the employment problem in developing countries. It can be said in all fairness that, each one of them focuses on some particular facet of the problem. No theoretical model is complete in its explanation to the issue of employment problem which is intricately connected to investment, technology, output growth, demand and other socio-economic factors. The complexity of the problem and diversity of conditions merit an extensive research on the subject. The purpose of this review is to briefly visit the issues and insights from the empirical literature on the issue in question in India.

II.2. Received Empirical Studies on Employment Issues in India

II.2.1 Approach to Employment in Economic Planning

India followed a planned strategy for the first four decades of its development with a broad aim of achieving structural transformation through the growth process. The planning essentially focused on how to achieve a highest possible rate of growth of output in the long term. A basic assumption was that shortage of capital goods in relation to employable persons constituted a fundamental constraint on growth in the economy. Given the savings constraint, contemplating full employment appeared as a far cry. Achieving highest possible growth given the constraints was the central concern, improving employment progressively was the incidental objective. The economic growth was viewed as essential for improving the employment situation. The labour force growth was not expected as a problem. Thus, in the Five Year Plans, the generation of employment was viewed as a part of the process of development and not as a goal in conflict with, or to be pursued independently of economic development.

The approach to tackle the task of unemployment has varied from time to time. In the initial years of planning, reliance was placed primarily on the expectations of a rapid

industrial development and control of population. These expectations did not materialise and it was observed that the rate of growth of employment was generally much lower than the growth rate of GDP of the economy. The initial development process would only accelerate population rate in the initial phase of demographic transition. As a result poverty continued to rise along with unemployment, as shown by the classic studies of Dandekar and Rath (1971)[26]. Seasons of severe draught and failure of monsoons exposed large sections of population to extensive deprivations. From Fifth Plan onwards strategies, policies and programmes were re-designed to bring about a special focus on employment generation as a specific objective, described in terms of direct attack on poverty.

II.2.1.1.Planning and Employment in India

The Indian Five-Year Plans describe themselves as "employment-oriented" plans and with employment as a stated objective in each of them[27]. The First Five Year Plan (1951-56) is to increase employment opportunities and to raise the standard of living of the masses. The foremost issue was to tackle the problem of unemployment particularly in rural sector. Various measures had been proposed to reduce the unemployment pressure in rural areas, such as: undertaking of major and minor irrigation works, development of rural industries, encourage new industrial estates which can serve as complementary to large scale industries (Chapter- 39, para-5 & 6)[28]. At the end of the Plan, around 7 million jobs were created. The backlog of unemployment at the beginning of plan was about 3.3 million, and about 9 millions new entrants were estimated to have been added during the plan, taking total demand for job to 12.3 millions. But the Plan period only created 7 million jobs leaving 5.3 million backlogs at the beginning of the Second Plan. With the effort envisaged during the Second Five Year Plan (1956-61), additional employment opportunities were being provided to fresh entrants to the labour force. It was contemplated that not only there would only be a small addition to the working force engaged in agriculture, but as a result of the large programmes of agriculture, irrigation and rural community development which are to be undertaken, under-employment will be reduced

[26] Dandekar, V.M and N. Rath (1971), *Poverty in India*, Indian School of Political Economy, Pune.

[27] Only socialist planning in USSR was truly based on employment planning. The investment targets were worked out based on full employment of labour resources. Indian plans were in fact pursued investment targets to meet output goals. Employment was only incidental to the output generation. Liberal public sector expansion was aimed at promoting organised employment.

[28] Government of India (1951), *The First Five Year Plan*, New Delhi.

and, after allowing for additions to the working force in agriculture, income per occupied person is likely to increase. At the same time Second Five Year Plan also stressed on importance of implementing the plan so as to maximise its production and employment potential by coordinating complementary investments, planning the use of resources such as water, electricity, etc. which are created by the operation of the plan ensuring that the services of newly created institutions and agencies are brought effectively within the reach of those whom they are intended to benefit (Chapter-5, para-31)[29]. This plan chiefly relied upon cottage and small-scale industries for the creation of new job. But, in addition to the existing 5.3 million backlogs, along with the addition of 11.8 million new entrants, the Second Five Year Plan ought to have created about 17.1 million jobs to remove the unemployment pressure. But the plan could generate not more than 10 million jobs, leaving a backlog of over 7 million at the end. The principal aim of the Third Plan (1961-66) was expansion of employment opportunities commensurate with the increase in the labour force over the Plan period. The Plan draft stated if any further deterioration in the employment situations is to be avoided, the goal of planning must be to absorb in gainful employment in each five-year period at least the equivalent of new entrants to the labour force (Chapter-10, para-7)[30]. But this objective was too far to be realised. In rural sector job actually provided was much below the targets. The labour force was expected in this plan period to increase by 17 millions, where at the end 9.6 million backlogs were unemployed. The crash schemes for rural employment was initiated during the period to alleviate under-employment but failed due to poor conceptions and poor execution.

The Fourth Plan (1969-74) reposed a strong faith in the capacity of the industrial sector in generating employment. A major objective of the Plan was to create more employment opportunities in the rural and urban sectors on an increasing scale. In the rural areas, this will be through labour intensive schemes such as minor irrigation, soil conservation, and special area development and private horse building. For urban employment, manufacturing industry should play a crucial role. The growth of employment there remained dependent considerably on the extent of public sector investments in industry, minerals, transport, communications, and power (Fourth Plan,

[29] Government of India (1956), *Draft Second Five Year Plan*, New Delhi.
[30] Government of India (1961), *Third Five Year Plan*, New Delhi.

GOI, Chap-22, pp-20)[31]. This plan too emphasised on crash schemes for rural employment in addition to specific programmes for the educated unemployed, like: giving advance loan to self-employed people for starting small scale industries, giving financial assistance to technically trained persons to start business on their own [programs like Training of Rural Youth for Self-Employment (TRYSEM)], etc. But, by end of the Fourth Plan, crude estimates put unemployment at about 17 million.

During the Fifth Five Year Plan (1974-79), Planning Commission noted that employment generation is happening at much slower pace and acknowledged it as the principle reason behind growing poverty. First time, employment programmes were supplemented to anti-poverty programs aimed at providing gainful employment of two varieties- wage employment and self employment. So far as wage employment was concerned, the increased labour intensive investment for rural development programmes were expected to generate considerable new employment opportunities. But this plan had clearly expressed the difficulty of inter-sectoral transfer of labour as a remedial measure towards unemployment and underemployment. However, available and growing surplus rural labour had to be provided with fuller employment within sectors. In short, the pattern of growth, inter-sectoral allocation of investment and determination of output targets were to be based explicitly on the need to increase employment generation rapidly. It can now be said in retrospect that the planners underestimated the demographic impact of development, the faster population growth in the seventies surely was the most frustrating aspect.

Under the Sixth Plan (1980-85), Planning Commission's emphasis appear to shift from the capital-intensive and labour-saving heavy industries to the energy/capital-conserving but labour-using small scale industries, at least in rhetoric. There was a concerted attempt to bring life to the discarded Gandhian strategy of development that stood for full employment to every able bodied person (pp.3-10)[32]. The estimated backlog of unemployment at the beginning of the Plan was 11.3 million to which there was an addition of about 33 million during the plan. But the Plan could not create more than 35 million jobs, where almost the entire backlog existing at the beginning of the plan was

[31] Government of India (1969), *Fourth Five Year Plan, 1969-74*, New Delhi.
[32] Government of India (1978a), *Draft Five Year Plan, 1978-83*, New Delhi.

carried over to the succeeding plan. This plan too continued the crash programmes for employment but under new grabs, such as, Integrated Rural Development Programme (IRDP), Minimum Need Programme (MNP) and National Rural Employment Programme (NREP). In formulating the employment strategy, the Seventh Five Year Plan (1985-90) assigned a key role to the growth of the agricultural sector since a steady growth in agricultural production through the expansion of irrigation, increase in cropping intensity etc. could create a large volume of additional employment due to their high labour absorptive capacity. In addition to the sectoral investments which would result in an expansion of employment opportunities through the process of growth over the five year plans, the operation of several employments oriented programmes were also to be continued during this plan, such as: NREP, IRDP, Rural Landless Employment Guarantee Programme (RLEGP), Training Scheme for Rural Youth for Self Employment (TRYSEM), Support to Training and Employment Programme for Women, Jawahar Rozgar Yojana (JRY), and scheme for self-employment to educated unemployed youth[33].

The Eighth Plan (1992-97), which is launched after the economic reforms making radical departures from the earlier strategies, also continued to talk about expansion of employment opportunities through economic growth. The main elements of the strategy, policies and programmes towards expansion of employment opportunities were, first: a faster agricultural growth will be there in the laggard states, where more labour intensive crop would give more priority to developed regions, Second, development of infrastructure and marketing arrangements for agro-based and allied activities, Third, greater attention to the needs of the small and decentralised manufacturing sector, particularly in the production of consumption goods and manufacturing exports, Fourth, greater flexibility in special employment programmes, such as, Employment Assurance Scheme (1993), Prime Minister's Rozgar Yojana (1993), Rural Employment Generation Programme (1995), and their integration with sectoral development with a view to ensuring their contribution to growth and sustainable employment, etc. These measures were expected to contribute to the faster growth of the economy and at the same time, increase the overall employment

[33] Government of India (1985), *Seventh Five Year Plan, Vol. II*, New Delhi.

content of growth. But, by end of the Eighth Plan, estimates put unemployment at about 7 million (Chapter-6, para-6.9.1)[34].

The Ninth Plan (1997-02) faced a greater challenge of providing employment not only for the additions to the labour force during the plan period, but also to reduce the backlog of unemployment accumulated from the past. This imperative needed to be seen in the context of both acceleration in the growth rate of the labour force and a secular downward pressure on the employment intensity of the growth processes. During the Ninth Plan period, the labour force was projected to increase by 52.4 million in the usual status workers, where it also predicted to employ almost 40 million people (at the rate of 2.44 per cent on an aggregate) during the end of the Ninth Plan (Chapter-4)[35]. During the Plan, several employment programmes were introduced and implemented such as: Swarnjayanti Gram Swarozgar Yojana (1999), Training for Rural Youth for Self Employment (1999), the Pradhan Mantri Gram Sadak Yojana (2000), Food for Work Programme (2000-01), Sampoorna Grameen Rozgar Yojana (2001). But at the end of period, the plan failed to achieve the targeted growth. To clear the backlog of unemployment, 35 million employment opportunities were required to be created in the Tenth Five Year Plan. Therefore, the Tenth Five Year Plan (2002-07) aimed at provision of gainful high quality employment to the addition to the labour force. With the sharp fall in growth of labour force, the Planning Commission Special Group decided to create some 10 million employment opportunities a year in the tenth plan at a rate of 1.8 per cent growth rate of labour force. Even the measurement of employment and unemployment were changed by considering current daily status over usual status. The plan period visualised a substantially higher rate of 8 per cent per annum which would create an addition of around 29.67 million persons. Even with the high rate of 8 per cent economic growth, providing employment opportunities to all additions to labour force would not be achieved for which total unemployment would be around 35 millions. This arises due to the near jobless growth character in many sectors especially in organised capital intensity sector, and some

[34] Government of India (1992), *Eighth Five Year Plan*, Vol. I, New Delhi.
[35] Government of India (1999), *Ninth Five Year Plan 1997-2002*, Volume I, New Delhi.

of the unorganised sectors including some small scale industries (Vol-I, Chapter-5)[36]. The Mid Term Appraisal (MTA) of Tenth Plan had also shown that the pace of creation of employment opportunities is not exceeding the addition to the labour force. The Plan had suggested the formulation of a policy on vocational training with a view to achieve a quantum jump in the capacity of vocational training institutes through public-private partnership. A simplified labour law regime was envisaged in order to promote growth of organised employment. The Plan period also set out some special employment programmes in selected labour intensive sectors to raise the employment content of growth. But not much progress is achieved either in launching new initiatives/programmes or scaling up some of the existing programmes in a major way in the first three years of the Plan (Part-II, Chapter-8)[37].

Major challenges of employment in the present Eleventh Plan (2007-12) are: first, how to ensure faster growth in employment than in the labour force so as to reduce unemployment; second, how to ensure faster growth in the organised sector than the unorganised sector so that the share of organised sector employment increases; and thirdly how to ensure growth in formal employment in the organised sector and not just the informal employment. The Approach Paper for this Plan projected an addition of 52 million to labour force in the period and had called for the creation of 70 million employment opportunities. The Plan projected new employment opportunities would be around 58 millions (Chapter-4)[38]. The MTA for Eleventh Plan mentioned that due to the global financial crisis, which erupted in 2008 and led to a slowdown in the economy, was bound to have an adverse effect on the employment situation compared with what would have prevailed under normal circumstances (Part-II, Chapter-9)[39]. The approach paper of

[36] Government of India (2002), *Tenth Five Year Plan 2002-2007*, Volume I, Dimensions and Strategies, Planning Commission, New Delhi.
[37] Government of India, *Mid-Term Appraisal of the Tenth Five Year Plan (2002-07*), Planning Commission, New Delhi.
[38] Government of India (2008), *Eleventh Five-Year Plan 2007-2012*, Volume I, Inclusive Growth, Planning Commission, New Delhi.
[39] Government of India, *Mid-Term Appraisal of the Eleventh Five Year Plan 2007-12*, Planning Commission, New Delhi.

Accordingly, the Eleventh Plan aimed at launching a National Skill Development Mission which would bring about a paradigm change in handling 'Skill Development' programmes and initiatives. Subsequently, the Union Cabinet approved a Coordinated Action Plan for Skill Development, which envisaged a target of 500 million skilled persons by 2022.

Twelfth five year plan (2012-17) aims at faster, more inclusive and sustainable growth where manufacturing sector will foster a higher employment creation to the economy[40].

In sum, one can say that unemployment in India is quite large and is growing very fast because the rate of growth of employment in various sectors is lagging behind that of the total labour force. If this trend continuous, the prospect of attaining full employment in the near future is extremely bleak. Removal of unemployment calls for not only the raising of the level of investment in the economy particularly of the employment-intensive type, but also acceleration of rising output growth in the economy.

II.2.2. Empirical Studies on Employment in India

II.2.2.1. Received view on Employment before Liberalisation:

One of the initial and influential studies in the pre-liberalisation period attempted to identify the structural changes in terms of output and labour in the Indian economy is by V.K.R.V Rao (1979). Considering the period from 1950 to 1976 by classifying into three sub-periods (i.e. first sub-period: 1950-60; second sub-period: 1960-70; and third sub-period: 1970-76) he found out that secondary sector, in terms of output which measured by net domestic product, had received a setback in the structure of the economy in the third sub-period. While the primary sector had shown a marginal improvement, it was the tertiary sector which had shown a marginal improvement in the third sub-period though it had a sharp set back during the second sub- period which had not been offset by the marginal improvement in the third sub-period. He also found out that non-commodity sector has been growing at a much faster rate than the commodity sector due to inadequate growth of secondary sector. While in terms of occupational structure, sectoral shares of workers and share of output in the aggregate remained the same during 1951-61. But between 1961 and 1971, it was just the opposite, the sectoral shares of workers and output started moving in opposite directions. His study notes that the productivity per worker had declined in the primary sector while it had increased in the secondary sector and to a lesser extent in the tertiary sector and reinforced the controversy about growth, employment and productivity. He concluded that structural changes have been taking place albeit slowly in

[40] Government of India (2011), *Approach Paper to the Twelfth Five Year Plan 2012-17*, Planning Commission, New Delhi.

the direction of modernisation and an increasing role for the secondary and tertiary sector. But the Indian economy continues to be dominated by the primary sector and unorganised enterprises. The startling feature is lack of the substantial structural change in the occupational structure to coincide with that of sectoral output.

Since the beginning of planning, various policies and programmes had been tried for reducing the unemployment from the time to time in the country, but the impact has been marginal. In view of the lack of success of the existing development strategy to eradicate unemployment, the Economic Advisory Council (EAC) under the Chairmanship of Sukhamoy Chakravarty in 1995 had prepared an interim report titled *Towards Evolving an Employment Oriented Strategy for Development in the 1990s*. The EAC report and rejoinders to the report by then prominent economists is perhaps the last found serious debate on employment in the official discourse. We shall summarise it here. The EAC Report mentioned that, first, growth in output has not been matched by a corresponding growth in employment. Second, strategy of development has to focus on widely dispersed agricultural growth. Labour intensive land development should play an important role here to improve agricultural productivity and provide incomes to the poor. Third, wage goods which are required in large volumes and at affordable prices could be produced in the medium/ large-scale industries which could be based on modern technology, even though they may be relatively less labour-intensive. On the other hand, the traditional industrial sector based on high labour intensity could produce commodities that satisfy the needs of higher income groups and exports. Fourth, expansion of production in agro-based industries and improving the efficiency of small-scale units through technology upgradation and modernisation would provide increased production of mass consumption goods and also larger scope for increased employment opportunities.

Dantwala (1990) in his study pointed out that growth of GDP is necessary but not sufficient for solving the unemployment problem. For example, employment of surplus labour on certain sectors like building well chosen community assets and infrastructure involves a gestation period, where returns from such projects will take time to accrue and resources would be needed in the meanwhile to sustain such employment. Any number of jobs can be created and in fact have been created retaining superfluous workers,

particularly in public sector enterprises. Such employment does not augment national wealth, instead it adds to the cost of production. Going into the sectoral performance, it is believed that a balance in regional growth can lead to more employment. But country like India having vastly differing natural endowments, a regionally balanced growth to be achieved in each sector and each commodity is unrealistic. Therefore, concentration has to be given more to agriculturally lagging regions through land reforms, efficient use of water resources, large public expenditure and managerial resources. Similarly for industrial sector, reduction in the cost of production will give a boost to demand and consequently to employment. But improved efficiency requires improved technology, modern equipment and inputs. All these involve more capital and less labour.

Dandekar (1990) another important thinker on development in the country too discusses the dilemmas of employment policy. He argued that agricultural incomes have not kept pace with the rise in non-agricultural incomes in the rural sector, because of diminishing size of holding due to growth in population. If the economy has not been able to generate sufficient employment in the non-agricultural sector, sufficient numbers must be withdrawn from agriculture and held in transitional employment through massive rural works programme. An employment oriented industrial policy is needed besides the need of developing basic and heavy industries for the manufacture of producer goods. The traditional village and hand industries were expected to produce the much needed consumer goods and in the process also solve the problem of employment. But, the labour intensive processes employed in the traditional industries can turn out to be high cost technologies if workers are to be paid statutory minimum wage and the consumer may not afford to support them. Therefore, some essential wage goods which are required in large volumes at affordable prices produced in the medium/large-scale industries based on modern technology, and that traditional industrial sector based on high labour intensity could produce commodities that satisfy the needs of higher income groups and exports. He also pointed out that so long as those employed in the traditional labour intensive industries are willing to accept the low wages, there is no problem. It will sustain a large volume of employment but will produce a small output; and the economy will settle down to a low and, most likely, a declining level of income. On the other hand, if those

employed will ask for more than what they produce, the whole pro-labour position will just not be viable.

VM Rao (1990) commenting on the EAC report, raised some issues. First, that a substantial expansion in employment programmes and their effective spread across areas and seasons are needed. Second, planning and nurturing sustainable growth in low-productivity backward areas poses challenging tasks. Third, small scale industries and the agro-based industries which are expected to generate substantial new employment are to be located in semi-urban areas. Fourth, institutional arrangements between the farmers and the processing units need to be worked out as lack of such arrangement has proved to be a major hindrance for more widely dispersed growth in rural areas. Fifth, not only is the capacity to provide unskilled wage employment itself is far from adequate, but also the rural poor have no ability to benefit from rewarding self-employment opportunities even when made available. It is not enough to create new and new types of employment. A far more difficult task facing the planner is to ensure that it reaches the groups which need it the most.

Rath (1990) underscores the importance of growth of agriculture which employs bulk of the labour. Given the importance of agriculture in creating employment, here is a greater need to step up drivers of growth of the sector, like technology, irrigation, and market support. He also emphasises on cost effective and productive-enhancing mechanisms to be encouraged. For industry, he points out the potential conflict between mill and traditional industries. He notes that traditional industries like handlooms are only cater upper end markets due their higher costs, hence only the mill cloth can satisfy the needs of the poor. He calls for a closer examination of employment creation on one hand against the employment destruction on the other.

Desai (1990), a known neo-liberal, argues that first, the absence of unemployment benefits makes it quite impossible for the poor in this country to remain unemployed for long; the observed unemployment consists mainly of frictional (transitional) unemployment among the poor and voluntary unemployment among middle class youth with a higher supply price than the market wage. In these conditions, the long-run growth of employment will match the growth of the labour force, suggesting a Solowian position.

Second, to boost the agricultural productivity, public investment on agriculture and rural infrastructure has been an important components; but ineffectiveness of investment is due to corruption in all rural investment expenditure and the under pricing of output, especially water and fertiliser. Third, employment potential is distributed unequally across regions due to natural resources (such as soil and water) differ, land tenure affects the application of labour, and the efficiency of state governments varies. In these circum-stances, it is better to move labour to land that can absorb more work than to sink fruitless investment in areas incapable of absorbing it. Fourth, if investment resources are constrained, then small firms do not create greater employment. Fifth, greater export-intensity would lead to greater import-intensity; it would change (and require a change in) relative prices in a direction that would lead to growth that is both faster and more labour-intensive. Thus Desai criticises the whole planned strategy of growth through regulation and intervention. But a labour-intensive regime needs generation of skills and education, which the Indian state has ignored. If the supply of skilled low wage labour is short in supply, then there would not be any cost of advantage. Moreover, comparative advantage based on low wages will only be short lived, since capital constantly moves to more low-wage countries.

II.2.2.2. Studies in the post-Liberalisation Period

In contrast to the pre-liberalisation period, we do not find any explicit employment policy from the state and there has been a greater reliance on the growth process determined through market forces for the same. However, it is serious concern that employment growth has dwindled in the post-reform period. Contrary the expectations, there has been no significant growth in the employment of manufacturing sector. We shall present some of studies which have reviewed the growth process of employment in the following.

Employment and Income

Naidu (1993) in his paper observed a clear rise in unemployment in post-liberalisation period, with an increased backlog of unemployment at the end of each plan period. The privatisation and rationalisation of employment is at the core of liberalisation, led to shrinking of organised employment in public sector and private sectors. He comments that different employment programmes have been only ad-hoc in nature and not formed a part of micro-level plans for rural and agricultural development. In the face of

declining agricultural employment, he opines that such decline can be arrested through development of watersheds, land reclamation, improvement of rural infrastructure, and relying on human labour and decentralised labour intensive enterprises in a Gandhian model of village development.

Datt (1994) made an early commentary on economic reforms and their possible implications of growth in India. His study states that as a result of the Structural Adjustment Programme (SAP), there has been an increase in unemployment in the short term. He expresses his optimism over the possibility of employment growth in the medium run from private investments by the Indian corporate sector along with higher dozes of foreign direct investment. He sounds cautious about the implications on agriculture and pleads allotting more resources to develop infrastructures both in terms of irrigation and rural credit, specially targeted to meet the needs of the small and marginal farmers. Like many he too opines that service sector has a very great employment potential in India. Contrary to his optimism, the employment growth in industry has not been promising, worse is the case of organised unemployment. The later trends even showed that employment even in service sector by 2004-05 had plateaued.

Bhattacharya and Mitra (1997), Kuldeep and Dhindsa (2000), Madheswaran and Dharmadhikary (2000), Gandhi and Gansan (2002), etc., commented on the nature of transformation of employment in primary, secondary and tertiary sector in relation to economic development and liberalisation process during 1981-98. The common observation made by all of them is that there has been a relative faster growth of tertiary sector employment than primary and secondary on one hand, but the absorption has been on a decline. They highlighted the need for growth of employment in primary and secondary sectors to compliment the employment growth in services, as the latter has not capacity to absorb all the surplus labour.

Sundaram (2001) analysed the changes in the size and structure of the workforce and in the unemployment in the country in the 1990s using large-scale quinquennial surveys of NSS between 1993-94 and 1999-2000. His estimates suggest that there has been a significant decline in the crude worker-population ratios in all the population segments due to a beneficial rise in the student-population ratios. In terms of distribution, the share

of the agriculture sector significantly declined with a marginal reduction in absolute number of workers. Similarly, there is a decline in share and in the number of workers in the community, social and personal services sector. But trade, hotels and restaurants; construction; and transport, communications and storage sectors have shown a sizeable growth in both share and number of workers. In terms of labour productivity, except for the construction sector, the gross value- added per worker has grown significantly in all the sectors in the economy as a whole. This significant growth in labour productivity has translated into an equally significant and widespread growth of daily average wage earnings of casual wage labourers, both for males and females and in rural and urban India. In turn, this growth in real wage earnings, and a rise in the number of days worked by females, has been sufficient to more than offset both a reduction in the crude worker-population ratios and a marginal reduction in the average number of days worked for male workers, to raise average wage earnings per capita in both rural and urban India over the period 1993-94 and 1999-2000. This result is consistent with a decline, over the same period, in poverty ratios in both rural and urban India.

Papola (2004), in his paper, focused on the prospects for growth and quality of employment in India. He found that employment elasticities have declined in most sectors, though in some sectors like construction, trade and transport, they increased. Their share in employment is still small as compared to manufacturing which has shown a relatively low employment growth with declining employment elasticity. He expressed concern over fact that most of the new employment opportunities are generated in the unorganised sector with poor conditions of work, lack of employment and social security. Even within the organised sector an increasing number of workers are being employed in a 'flexible' manner on casual or contract basis without the social security benefits available to regular workers.

Bhattacharya and Sakthivel (2004) in their article examined the employment behavior in the pre- and post-reform period by taking an alternative measure of employment i.e. usual status, current weekly status, and current daily status using NSS data. Their estimations indicate that while there has been a mild acceleration in the output growth rate and there is a sharp deceleration in the employment growth in the post-reform

period. What is more significant is that broad pattern of decline in employment growth is invariant with respect to different measures of employment. Among the sectors, the employment elasticity in the primary sector has become virtually nil during post-reform phase. The employment elasticity in secondary and tertiary sectors has also declined in the post-reform period. Overall, tertiary sector registered highest employment elasticity, followed by the secondary sector. They expressed their concern over the jobless growth that is taking place in India.

Dev (2008) examined the impact of economic reforms on trends, issues and policies relating to employment and unemployment in India. And he found that between 1999-00 and 2004-05, work-population ratio have increased in both rural and urban areas for all workers. Employment growth in post-reform period has witnessed a declining trend due to a massive decline in employment in agriculture and community, social and personal services. During the later phase of post-reform period (1999-00 to 2004-05), the rate of growth in agriculture wage employment declined significantly while that of agricultural self-employment increased. The growth of rural non-farm employment has more than doubled, where growth of self-employment in this sector was faster than that of wage employment. On the whole, growth in the self-employment is much higher in rural sector. In this respect, quality of employment continues to be poor. Organised sector employment had declined. Though employment in unorganised sector increased, significant increase is in self-employment category. A consolation in the midst of this grim situation is the significant increase in the share of regular employment for urban females and marginal increase for rural females in second half of reform period. He opines that rural diversification is required for an improvement in wages in agriculture as well as to shift the workers to more productive areas. As the share of rural non-farm sector in total non-farm sector has not increased over time despite higher output growth, several policy changes should aim at generating productive employment, such as increasing investment in labour intensive industries, improve social and capital expenditure.etc.

Informal Sector and Structural Transformation

Ghose (2006) while revisiting Lewisian development model identifies some characteristics that a growth process must possess if it is to improve employment conditions in labour-surplus economies. He contended that rapid economic growth would

improve employment conditions in developing countries is only wishful thinking. The issues of relative merits of openness and protection, of domestic and foreign capital, and of state and markets are often presented as issues of an appropriate growth strategy for the modern sector. But a growth strategy for the economy as a whole must incorporate a strategy for the traditional sector as well. Therefore, output growth in the traditional sector necessarily requires introduction of reproducible capital, i.e. investment. Since, accumulation occurs in modern sector, only entrepreneurs in that sector are in a position to invest. Agriculture dominated by small producers is starved of capital accumulation due to low productivity. If the modern sector produces food or imports food, there is nothing to even motivate the private entrepreneurs to invest in the traditional sector. Therefore, governments have to take the primary responsibility for investing in the traditional sector, and governments will do so only if they regard improving employment conditions as a central objective of economic policy. Second, investment in the traditional sector in any given period obviously means reduced investment in the modern sector. If investment in the traditional sector generates no profit or tax revenue for governments, therefore, investment in the economy as a whole would decline in the next period which affects the employment by growth. So it is vitally important to ensure that a part of the incremental output of the traditional sector, resulting from investment, accrues to governments as revenue which can be done either through specially designed tax schemes or through special pricing of the investment goods made available to the traditional sector. Third, rate of saving will have to grow so as to increase the feasible growth strategy that can improve employment conditions. And finally, a stable real wage is required in the modern sector which is associated with rising share of profits in value added in the modern sector and that means rising saving and investment rates. If real wage rises not only restrains growth of investment but also reduces employment per unit of investment. It, therefore, slows down the growth of employment in the modern sector and hence depresses real incomes of the masses of workers in the traditional sector.

Dev (2006) examines the current policies and programmes for employment generation, including social security for unorganised workers. He held direct programmes as important for employment generation. His observations indict macro policies as not been pro-employment in the post-reform period. He pleads for a more pro-employment

fiscal, monetary, trade and financial policies. The employment growth, he argued, particularly worsened after mid-1990s. A challenge that exists in the wake of declining employment is to provide alternative livelihood and social security to the vast sections stuck in informal/unorganised sector. For improving their productivity and reduce risk and vulnerability, he suggests a comprehensive policy to include a cluster approach for industrialisation, programmes for training and skill improvement, provision of credit and technology upgradation and social security, since the problem in India that of the "working poor". Finally, special employment programmes and social security are equally important.

Unni and G Raveendran (2007) have analysed the nature and quality of employment in India from 1983 to 2004-05. The trend shows that employment growth had slowed slightly in 1993-04 compared to 1983-93. The slowdown is quite marked in rural areas. Employment has grown in urban areas over the past decade, but the nature of this growth and the quality of employment has not yet improved. There has been a substantial growth in self-employment in the recent period 1993-94 to 2004-05. However, much of this work is poorly remunerated. Even a faster grown regular salaried work among women in urban areas also appears to belong to the same. They observed a decline in the real wage rates of regular salaried workers and urban casual workers. They argued that there is a progressive informalisation of work event in the unconventional places of work and of home-based work among women, which has implications for incomes and security of the workers. From this analysis, they concluded that the majority of the work forces do not seem to be reaping the benefits of GDP acceleration.

Dhas and Jacqueline (2008) critically examined the impact of globalisation on employment in India. Globalisation protagonists contend that foreign investment flows into countries and global export opportunities would expand employment. In practice, the evidence suggests only a growth informal employment, not much of formal employment. There is evidence to suggest that globalisation has led to creation of sweat shops where conditions of work are deplorable.

Chandrasekhar and Ghose (2010) argued that high growth in post-reform period has done little in raising employment, on the contrary they contemplate a deceleration. While aggregate employment rate declined during 1993-99, it recovered during 1999-04

and again fell during 2004-08. The increase in self-employed category and casual employment is argued to characteristic to the nature of growth shaped by the neo-liberal policies of deflation, and informalisation.

Employment and Poverty

Dev (2002) examined how far the economic growth has occurred in India has benefitted the poor. Economic growth to alleviate poverty, it must be accompanied by relatively high elasticities of employment; increased productivity and real wages, a decline in casual, part-time employment, increase in regular full time jobs. But the feature of the growth is that it is led by a high aggregate rural employment which has declined though it increased in rural non-agricultural sector. Not only in agriculture, but even in rural non–farm sector (RNFS), real wages remained below labour productivity.

Sundaram and Tendulkar (2004) examined demographic determinants of poverty, size of the poor in labour force, gender and economic status and etc., for 1993-94 and 1999-00. They found a high child-labour dependency ratio and the child-women and lower workers-population ratio. They contend that there is a decline in working poor both in rural and urban areas during 1999-00, a decline in rural working poor engaged in all major economic activities and a marginal rise in male casual labourers and self-employed female workers in non-agricultural activities. Urban working poor declined for all economic activities for both male and female except female self-employed in agriculture and both male and female working as casual labour in public works. In terms of educational endowments, the proportion of illiterate working poor was higher than that among the non-poor workers. They admit that male-female differences became sharpened among working poor in rural and urban areas. Thus, by looking at poor households, they try to show the positive improvement in the reform period.

Ghose (2004) addressing the issues on nature of the employment, observed that employment rates are often better in poor households. This is because of poor wages, poor can’t afford to remain unemployed. The high worker-population rates are because of poverty than increase in gainful employment. He notes the declining elasticity of regular wage-employment with respect to GDP declined along with the quantity of rural wage employment generated by special employment schemes. He argued that economic policies

must seek to ensure that rate of growth of regular wage employment exceeds that of labour force. He further argues that high rate of economic growth is required for sustaining a high rate of regular wages and regular wages employment. He holds that policies must seek to hold a substantial proportion of the labour force in viable self-employment, including in agriculture and halt the trend of casual employment. For that land reforms have to be re-designed so as to promote viable and technologically dynamic family farms, and have to do away with both tiny plots and large farms. The social policies that give priority to poor households should be increased, integrated programmes of maternity, child health and family planning services and public distribution with universal access.

Bhalla (2008), in his presidential address to Indian Society for Labour Economics, notes an increase in over all employment. However, it is because of increase in informal employment outside agriculture and a decline in average earnings. While the average earnings in organised sector have gone up, its share in aggregate employment has come down. He raised serious concern over the impact of globalisation on employment, poverty reduction and inequality.

The above mentioned studies highlight the lack of change in employment structure in India in the post-reform period and adverse consequences of reforms on employment. We understand that the high growth economy has not produced commensurate employment. It is being built on more and more informalised labour at lesser real wages. Liberalisation has increased the labour productivity in manufacturing and service sectors while in agriculture there is deterioration. As a result there is decline in employment absorption in non-agricultural sector, while agricultural sector stagnated. There has been downsizing of employment in public sector, which is not fully compensated by the rise in private sector.

II.2.3. Studies on Sectoral Employment

There are also studies that have looked at sectoral employment and issues relating to them. We shall discuss some of them in the following.

II.2.3.1. *Agricultural Sector*

Agricultural sector accounts nearly 56 per cent of total employment and in the short and medium run it is the most important source of employment and livelihood. There are

serious difficulties in assessing the extent of unemployment given vast share of self-employed. The labour in the sector is the constant migration between rural and urban as well as with in rural areas. Such migrations are also accompanied by distress driven processes. The course of migration that we usually observe that unskilled male labours migrate temporarily workings in informal activities in non-agriculture, female labour tend to join the process too. After a long haul of seasonal migration, with skill and acquaintance they look for permanent migration. Next generation graduate into urban industrial and service sectors like transport, hotel, trade, etc. Thus there is first stage of migration from agricultural to non-agricultural informal sector. The possibilities of movement from urban informal sector to urban formal sector should arise subsequently after receiving education, professional skills and so on. If a policy support is extended then this process could be less painful and less tedious. There is a considerable literature that examined the conditions of poor in the process of transformation.

Task Force Report, chaired by Montek S Ahluwalia (2001), the architect of Indian reforms, while mentioning the importance of public investment in agriculture, particularly, in irrigation, also mentions measures of liberalisation of agriculture such as removal of restrictions on marketing of agricultural produce, liberalising tenancy law, diversification of agriculture, promotion of agribusiness etc. as solutions to creating job opportunities. The Steering Committee on Labour and Employment for Tenth Five Year Plan Report chaired by S.P Gupta (2001) also suggests that improvement in agricultural productivity is necessary to improve the wage of workers and earnings of the self employment requires investment in areas such as irrigation, water conservation, land development, etc. The Report notes slowing down of the public investment in real terms in agriculture and recommends a reversal and also to encourage private investments. But the very means of raising labour productivity suggested could be labour displacing, particularly mechanisation like harvesters, weedicides, transplantors etc.

There is a view that shifting cropping patterns in favour of non-food and cash crops like fruits, vegetables and other higher value-added crops can increase labour intensity as these usually have higher employment elasticity higher than for food grains. Also, development of allied activities will also increase employment. Dev (2002) calls for bold

initiatives on public investment, credit and creating incentives for private investment in order to revive agricultural growth and rural employment which in turn will reduce rural poverty. Radhakrishna (2002) highlighted the interdependence in the food and labour markets. A strategy of combining promotion of agricultural growth, productive non-farm employment and high levels of social development would be needed for labour-intensive growth in rural areas. There should also be substantial investment in human resource development.

Jha (2006) studied the relationship between employment, labour productivity and wages in agriculture during the period from 1983 to 1999-00. The growth of agricultural income during the early Nineties is marginally higher than in the Eighties, but the rate of employment is negative during the 90s. Increase in employment at the aggregate level would depend on employment intensity of the competing crops, and its effect on the cropped area. Indices of cropped area show a marginal decline in the 90s over the previous decade. Employment elasticity in agriculture at the aggregate level reduced over the decade, the corresponding figure almost approached zero in the year 1999-2000. This mismatch between employment and income suggests job-less growth in agriculture. He has also noted that large proportion of female workers in rural employment reflects low wage employment in agriculture. Labour productivity in agriculture has increased along with a decline of agricultural employment in the 1990s. He further showed that the negative effect of labour productivity on real wage. There is a need to increase land and labour productivity in agriculture to increase employment.

II.2.3.2. ***Industrial Sector***

The role of industrial sector is crucial for its vast potential for generating productive employment opportunities and standard of life in the economy. The experience of Western developed countries stands testimony to this maxim. But in India, the share of this sector is 19 per cent of work force, with marginal increase from 15 per cent in the last sixty years while its share in GDP has increased from 15 per cent to 26 per cent. Albeit, growth of industrial sector income can spur the growth of service sector, the growth of the former is necessary for the latter. According to the current scenario, industrial sector growth is augmented through technological advancement, capital and human development

during the liberalisation period. We shall review the literature on employment in industry in the following.

Goldar (1987), who analysed the trends in industrial output and employment during 1950-80, investigated into the factors that influenced the rate of labour absorption in Indian industry. And he found that during 1950s and 1960s, employment growth lagged seriously behind output growth. In the 1970s, the growth rate of employment was close to that of output. This was associated with a marked increase in employment-output elasticity and a sharp fall in the growth rate of labour productivity. The analysis showed that relatively faster growth in employment and slower growth in labour productivity in the 1970s can be attributed to a reduction in the growth rate of real wages (real cost of labour) during this period. While we can understand the need for stability of real wages for a sustained capital accumulation, a decline of real wages would imply increased exploitation of labour. He further observes that by keeping food prices reasonably low, industrial wages were also kept low.

Unni, Lalitha and Rani (2001) analysed the trends in growth and efficiency in the utilisation of resources in the manufacturing industry of all-India and Gujarat. The data period for such analysis was covered from 1978-79 to 1995-96, where 1978-90 considered as partial liberalisation and from 1990-95 as liberalisation period. They found that the growth of value added, employment and capital in the organised manufacturing sector in the country as a whole surge forward after the introduction of economic reforms. However, this growth was achieved with an inefficient use of resources as reflected in declining and negative total factor productivity. This growth is reflected in value added, employment and capital formation in the organised sector. This was accompanied by a decline in capital intensity and an increase in capital productivity and labour productivity. The growth in the unorganised manufacturing sector peaked in the initial phase of partial liberalisation (1978-85) and tapered off in the reforms period. There was a declining TFP growth in organised and unorganised sector in the reforms period. Aggregate employment in the organised sector both before and after the introduction of reforms declined since late eighties.

Chaudhuri (2002) in his study shows that the growth of manufacturing industry showed a decline in post-reform period in the 1990s than in the 1980s. Annual rate of

growth of employment of workers has been negative in five out of the nine years considered in the 1990s. For the registered manufacturing sector as a whole, labour intensity has decreased progressively from 1990-91 to 1997-98. Labour-intensity has gone down not only in the capital-intensive goods but also in labour-intensive goods. Labour productivity increased steadily between 1990-91 and 1995-96, but has stagnated since then. Capital productivity increased marginally till 1995-96. Since then there has been a decline. They conclude that the disappointing industrial performance in the 1990s is due to the declining role of government on demand side. They argued that scope of exports to stimulate industrial growth is limited and efforts should continue to build home market.

Balakrishnan and Suresh Babu (2003) investigated the trajectory of growth and its relationship to distribution in Indian industry in the 1990s. They have found that there is a faster rate of growth of output across manufacturing since 1991, there is also a rise in employment, though perhaps not commensurate with the increase in the rate of growth of output. The causes for output growth in the nineties has been investment i.e. with the share of investment that reflects response to a regime change, the rise in its share signals the success of reforms in energising the supply side of the economy. However, the rise in investment provides a rise in the rate of profit, though marginal, which provided the incentive to invest via a higher return on capital. An increase in the share of profit has eased the financing constraint for firms distribution as the share of profits in output enters the growth dynamic in this way. However, they have also investigated distribution from the perspective of the allocation of the gains from the change in the policy regime since 1991. Within manufacturing, capital has gained. This view is consistent with findings of Shastri and Murthy (2002) that the share of wages in the value added of organised manufacturing sector has come down from 55 per cent to 25 percent in the past thirty years.

Venkataramaiah and Burange (2003) addressed the effect of economic liberalisation on industry, particularly manufacturing industry, in the context Andhra Pradesh during 1980-81 to 1997-98. They found that manufacturing output growth has slightly accelerated during post-reform, where it was the non-agro industry which benefited the most. In terms of employment, registered manufacturing sector has increased

in post-reform period, but it is the agro-based industries which contributed to this rise. They observed that growth of wages was lower in the 1990s than in the 1980s.

Rani and Unni (2004) analysed the impact of economic reforms on the organised and unorganised manufacturing sectors during 1984-05 to 2000-01. They found that initial reforms promoted the consumer goods industry, along with certain basic and intermediate goods, through protection and import liberalisation. The metal-based and machinery industry slowed down in the phase of partial liberalisation, as they faced fierce competition due to tariff reduction. The growth of employment generating is low because of capital-intensive sectors grew faster like chemical and consumer goods industries. The initial growth in the early 1990s had shown some employment generating potential in some consumer goods industries, but this potential tapered off in the late 1990s. Machinery and metal-based industries did not have labour absorption capacity during the reforms period in the organised sector. Initial reform policies affected the unorganised sector adversely and employment growth was negative. The reforms of the early 1990s did not help the unorganised sector to grow, and employment continued to be negative during this period. However, after the promotional policies towards small-scale industries of expanding their capacities and raising their investment limits, the unorganised segment surged forward in the 1990s. The growth also generated employment in most of the industries. The metal-based and machinery industry, which suffered badly after initial reforms, also picked up in the unorganised sector in the late 1990s. Though the employment generating potential in these industries was low, the quality of employment improved. The sub-sector analysis showed that in the liberalised era, two sectors, namely, automobile and the construction industry, have actually helped the growth of the manufacturing industry, especially the unorganised segment.

Devnathan (2004) pointed out that employment in manufacturing is not increasing. This is due to lack of substantial growth in exports of labour-intensive and low-technology manufacturing industries. Growth in hitech industries would increase employment of skilled and professional labour. Labour intensive industries can contribute to employment and incomes of semi-skilled labour that are bigger in number. Panagariya (2008) and

Bhagavati (2008) take a view that lack of labour market flexibility due to overprotective legislations stood in the way of growth of labour intensive industries.

Mazumdar and Sarkar (2004) examined the employment growth in manufacturing sector by testing the determinants of employment elasticity in the sector during 1974 to 1996. They found that there is enormous variation in employment elasticity in manufacturing sector. During 1974-80, elasticity was close to unity due to favourable real exchange rate, which enhanced the growth rate of the real value of the wage bill above the level of output growth without any perceptible change in the wage share. The wage-employment trade off favoured the employment growth during this period. During 1980-86, elasticity became negative due to a reversal in trend of real exchange rate which increased the real product wage at a faster rate than consumer wage price; the increase in man-hours per worker as employers led to decrease in the wage cost by reduced employment, and shift in the composition of manufacturing output and employment, which saw a large decrease in employment in the older industries (chiefly cotton textiles and food products) and increased growth of new product lines.

Nagaraj (2004) pointed out that up to the mid-1990s, job losses did not show up in the aggregate, as there was considerable job creation due to the boom in industrial output and investment. As the boom went bust, there was a steep fall in employment in the second half of the 1990s. He mentioned that relative cost of labour did not seem to matter in employment decisions, even as the wage-rental ratio declined secularly. The extent and spread of the job losses witnessed suggest that the much discussed inflexibility in industrial labour market seems over done at least in the aggregate. Productivity gains have largely accrued to employers, as real wages were practically stagnant. The real need of the hour, therefore, is perhaps not greater freedom to employers to hire and fire at will, but to ensure that those losing jobs during industrial restructuring get their legitimate dues from their employers and public institutions. They require retraining to acquire marketable skills, and financial assistance to become self-employed.

Goldar (2009) analysed the impact of trade on manufacturing employment, both organised and unorganised segments, in India by using the data set from 1998-99 to 2003-04. He found that employment in organised manufacturing has been falling since 1995.

Domestic demand expansion had a strong positive effect on employment, but this was more than neutralised by a decline in labour intensity, which is partly attributable to changes in relative factor prices. Exports had a favourable effect on industrial employment, but the positive effect of export increase was offset by the negative effect of increases in imports. The net effect of trade on employment in organised manufacturing was marginal. But, there are indications that the failure of trade to raise industrial employment lies primarily in the changing product composition of trade and the changing direction of trade. On the other hand, unorganised manufacturing sector has experienced a reasonably high rate of employment growth. He also found that higher export intensity led to higher output growth in unorganised manufacturing as well as higher labour intensity of production. The favourable effect of exports on employment in unorganised manufacturing can thus make a significant contribution to employment generation in the industrial sector. However, non-tariff barriers are a bigger problem for the unorganised sector enterprises than organised sector enterprises. This is so because such enterprises due to their small size may not have the technical capabilities or resources to overcome the problem. It seems therefore that technical and financial support of the government agencies is essential for unorganised sector enterprises to take adequate advantage of the trade opportunities.

Alessandrini (2009) analysed the jobless growth problem in India in terms of a Kaldorian framework where the linkages between agriculture and industry enter the labour demand side through the changes in the terms of trade between the two sectors. And he investigated the role of the unorganised sector in influencing the growth of the registered employment. Using a dynamic panel data set on registered manufacturing from the 15 major Indian states over the period 1980-2004, he found that States with a higher growth of demand for industrial goods originating from agriculture also exhibit a higher growth of employment. In addition, in those states where the weight of the unregistered manufacturing has risen over time, the jobless growth problem has worsened.

Das et al (2009) investigated whether industrial deregulation and trade liberalisation has led to a shift in India's industrial structure towards more labor intensive industries during 1990-91 to 2003-04. They found that there has been a continuous decline in labor intensity across all the labor intensive industries despite a positive output growth

during post-reform period. Their explanation for the observed decline in labour intensity across all the industries, specifically the labor intensive industries in organised manufacturing, is that import liberalisation made access to capital and new technologies easier and cheaper. They also found that labour productivity has increased consistently till 2000, but latter it fell down due to decline in capital productivity. The income share of labor in total value added expressed as the ratio of real wages upon labor productivity also shows a declining trend.

Virmani and Hashim (2009) examined the determinants of factor employment, their shares, and output growth by using CES production function for the organised manufacturing industry from 1973-74 to 2001-02. Their study also dwells on the subject of sustainability of high growth in output on the back of raising capital labour ratio. They found that the determinants of employment of labour indicate that wages have started playing an equally important role as that of technology. As the wage rate is found to be smaller than the marginal product of labour, increasing employment is possible through making technology more labour inductive, which in turn, call for making labour laws simpler**.** The results also indicate that both labour and capital have been paid lower than the marginal product. Job security regulations apparently had less to do with jobless growth of the 1980s; rather, it was due to sharp rise in wages. For capital, the deviation between marginal product and its price was statistically significant only during 1992-01, which would mean that capital in post-reforms period till the beginning of the 2000s has been slightly underemployed. With regard to the sources of output growth, it is found that much of the growth in output had come from capital accumulation followed by labour and productivity. The low contribution of productivity can be attributed mainly to the heavy decline in capacity utilisation following the 1990s reforms as a result of a time lag between investment and output growth. The findings on sustainability of output growth with rising capital–labour ratio indicate that the growth in capital– labour ratio may be constrained because both elasticity of substitution and degree of biased technical change were found to be declining. Output growth then is not 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. Hence adequate reforms in labour

laws are necessary to ensure sustainability of output growth which in turn would also unshackle the employment potential.

Kathuria et.al (2010) analysed the productivity performance of the organised and unorganised segments of the Indian manufacturing sector at the sub-national level for the period 1994-95 to 2004-05. His study showed improved partial and total factor productivity for manufacturing as a whole. TFPG for a long time remained stagnant since 1991. It is found that labour productivity in the organised sector has increased, whereas both labour productivity and capital intensity growth in unorganised sector have slowed down between 2000-01 and 2005-06. The contribution of labour to TFPG has declined in unorganised sector. This is a cause for concern as this segment is a significantly larger employment provider compared to the organised sector. The total factor productivity grew steadily in the organised manufacturing sector while there was a decline in the unorganised manufacturing sector. The declining role of labour in the production process and the falling total factor productivity on the one hand and the increasing capital intensity of the sector on the other, are both causes of worry and raise several important questions. They concluded that the growth in value added is finally productivity driven.

Goldar (2011) examined the determinants of growth of employment in organised manufacturing industry during 2003-08 by taking the panel data analysis of pooled OLS method. He found that an increase in industrial sector employment is positively influenced by real gross value added growth and the labour reforms index in the sector. The estimate of gross value added growth is positive with statistically significant and plausible in numerical magnitude. The coefficient of the labour reforms index is positive and statistically significant. Thus, there is evidence to indicate that state-level labour reforms (like privatisation) were one of the factors contributing to the rapid organised manufacturing employment growth. Probably, this was one of the most important factors contributing to the employment boom.

As seen from the given literature, the impact factors which have significantly influenced employment generation in industry, particularly in manufacturing sector, in India in the post reforms era have been quite varied from one study to other. But most of study point that it is the technological factors which determine the industrial employment

growth. The studies on employment absorption in unorganised industrial sector found that it is a slowing growing one to absorb labour.

II.2.3.3. ***Service Sector:***

Service Sector is the biggest source, in terms of growth, which accounts 54 percent share (in 2007-08) to the total GDP in India. The sectoral disaggregation of national income shows that the service sector has grown relatively faster than other sectors throughout the post-independence period of the Indian economy. This continuously increasing trend experienced by the share of the services in national income has given rise to several controversial issues. Some economists have refused to accept is as an indicator of economic development especially when judged in the context of developing countries [Rao, 1954, 1983, 1986][41]. The proportion of labour force engaged in agriculture declines not only because the productive efficiency of the worker tends to increase in agriculture but the sector suffers from a decline in relative demand. Where as the service sector, which advances rapidly, does not depress the share of the labour force employed in the sector because the demand for services increases even more rapidly [Clark, 1957]. On the other hand, factors like the increasing role of the government in implementing the objectives of growth, employment generation and poverty alleviation, the historical role of the urban middle class in wholesale trade and distribution and the demonstration effect in developing countries create demand patterns similar to those of high income countries, etc., have been highlighted in the literature to justify the dominance of the service sector in the recent period [Panchamukhi, Nambiar and Mehta, 1986][42].

Bhattacharya and Mitra (1990) investigated the pattern of growth of the service sector and its implication on growth and distribution in India in the post-independence period i.e. 1950-51 to 1986-87. And they found that the services sector in India is growing much faster than the commodity sector. The relative disparity between the growth rates in

[41] Rao, V K R V (1954), 'Changes in India's National Income-A Static Economy in Progress', Capital, December 16.
-1983, *India's National Economy 1950-1980: An Analysis of &Economic Growth and Change*, New Delhi: Sage.
-1986, "Balance between Agriculture and Industry in Economic Development", *VIII World Economic Congress*, Inaugural Address.
[42] PanchamukhiV, R, R G Nambiar, and R Mehta (1986), "Structural Change and Economic Growth in Developing Countries", *VIII Work Economic Congress of the International Economic Association*, Theme 4, December.

services and the commodity sector has widened in the eighties as compared to the seventies. The share of services in national income is much larger than its corresponding share in employment. There is a higher growth rate of employment in the informal service sector than that in organised service sector. Since the average income per person engaged in the informal sector is likely to be less than that in organised tertiary sector for both public and private, the relative faster growth of employment in unorganised tertiary sector over organised tertiary sector reflects growing inequality of income with in this sector.

Madheswaran and Dharmadhikary (2000) have estimated the growth rates of GDP and employment generation in service sector. While commenting that, the service sector in India has shown a disproportionate growth between income share and employment share. They pointed out the possible reasons for the high share of service sector as increasing demand for intermediate use, final domestic consumption and increasing growth of women participation in the workforce. They found that the share and growth rate of employment in the service sector in both public and private sector is declining. It is because of pattern followed for allocation of investment, technology adopted in service sector, expansion of literacy, and availability of skilled labour force.

Seema Joshi (2004) analysed the sectoral composition of GDP and employment for the period of 1950 to 2000. In her analysis, she found that tertiary sector witnessed a deceleration in growth rates of employment during post liberalisation period. When employment absorption capacity of agriculture has reached the saturation point and employment growth in the industrial sector is unable to absorb more labour due to increased use of capital intensive technology, it is the tertiary sector which should become the residual source for employment generation. In order to provide the employment in service sector, she suggested measure such as: first, through development of the semi-skilled labour intensive industrial segments by government. Secondly, the development of rural and urban physical infrastructure can be another source of employment. Thirdly, to set the high skilled labourer in the area of IT sector, social sector like education, health etc. can provide to be instrumental in generating employment. The agriculture sector might witness more intense use of IT than what it is doing now, be it the use of remote sensing

through satellite for regular monitoring of crop soil condition, water resources for weather forecasts. Similarly in the Industry sector also.

Banga and Goldar (2007) examined the contribution of services to output growth and productivity in Indian manufacturing in the pre- and post-reform period. For this purpose, a KLEMS production function was estimated, explicitly recognising services as an input to production. Panel data for 148 industrial groups for the period 1980-81 to 1997-98 were used to estimate the production function. The results brought out that the importance of services as an input to the 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 contribution of services to the growth of manufacturing output went up considerably in the 1990s. The trade liberalisation undertaken in the 1990s, which increased competition in the domestic market was found to be responsible 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 industrial productivity. The acceleration in the growth of the services sector in the Indian economy in the 1990s, ahead of industry and agriculture has raised the question of sustainability of India's overall growth rate. There is a view that due to the slow growth rate of industry, the services sector might not be able to sustain its pace of growth as it will come to face constraints emerging from slow growth in domestic demand. However, they 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. It is possible 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.

Mazumdar and Sarkar (2007) in his article analysed that the tertiary sector-led employment growth in recent decades in India is out of sync with the experience of modern economic development. They raised concerns about the level of earnings at which labour is being absorbed in this sector. The movement of the distribution of the mean per capita expenditure over period showed that there has been not only an outward shift of the

distribution in the tertiary sector but also an increase in inequality and dualism in the sector and within its critical sub-sectors.

Goldar and Mitra (2008) analyses how productivity increase and changing sectoral composition in India have contributed to an accelerated economic growth in the post-1980 period. Productivity analysis reveals that a faster total factor productivity 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. Econometric analysis of the impact of different sectors on the rest of the economy brings out that the trade-transport sector and the secondary sector are important determinants of the growth of the economy. Variance decomposition analysis aimed at assessing the inter-sectoral growth linkages indicates that the causality runs from secondary sector to the trade-transport sector rather than in the revere direction. It is accordingly argued that though there has been a major shift in the composition of GDP towards services and this has contributed to the overall growth in India, it is the secondary sector which is the lead sector in the medium to long run, and the policy focus should therefore be on manufacturing.

Mitra (2009) estimated the impact of trade liberalisation on services sector employment during the period 1999-00 and 2004-05. Based on the time series macro data, the elasticity of organised services sector employment with respect to value added and exports and imports is estimated. After controlling for growth, the paper says it is difficult to identify a positive and significant impact of international trade on employment on the organised service sector. He has also tried to work out the direct and indirect effects of exports and imports on employment and concluded that the positive effects are mostly negligible. For the informal or unorganised services sector employment, the impact does not seem to be greatly different from what is observed in the case of the organised services sector employment. Also as per the company level data international trade does not seem to be an important determinant of employment in the services sector. Thus this study shows how trade liberalisation is a panacea for employment prospects in India.

As far as empirical findings on services sector employment is concerned, most of the economist argued that though service sector is providing much employment opportunities to the economy, but in near future, it won't absorb that much of employment which will be required for the existing society. Liberalisation effects have also put some question towards the development of service sector in terms of employment growth. And some others are saying that this is the only sector which can minimize the unemployment problem by absorbing most of work force from the total labour force in the economy.

II.3. Conclusion

To recap, we see from the first chapter that there is a considerably rich conceptual understanding that comes from the various theories in economic theory. Economic theory has well theorised the way employment is determined, factors that enable and obstruct employment. Much of the economic theory, however, concentrated less on the problem of structural unemployment of developing countries. Development economics has highlighted the problematic of employment generation as well as structural transformation which is the major problem for the latter. In spite of theoretical understanding in a broad way, the historical specifities impose the need to study contextual developments specific to countries. There is a need to do extensive empirical work to refine the theoretical understanding for their application.

In India, the planning process initially was concerned and hoped to create employment. But in the pursuit of growth, it is realised that employment creation is far beyond the preparation that went into planning. Also, given the potential conflicts between the objectives of growth and employment, somewhere in the eighties onwards the latter is compromised. However, ever since the introduction of the economic liberalisation programme, two diametrically opposite views could be traced. One viewed that economic reforms are expected to have a favourable effect on the growth of employment in industries. The favourable effects may arise from greater labour market flexibility and increased trade-orientation leading to changes in the structure of industries in favour of labour intensive industries and technique of production. Others have gathered the impression that economic reforms will have decelerating effect on the growth of employment. They have expressed the fears of jobless growth and they also hold the view that even in the absence of economic reforms it would have been possible to achieve

significant growth in employment in 1990s provided the government might have taken care of the problems arising out of increasing budget deficit and imbalance in the balance of employment. Ever since, the liberalisation policies ushered in 1991, the employment creation has slowed down much more. Plethora of studies that we have reviewed tirelessly brought to our notice that employment growth rates have slowed, organised sector employment declined in absolute terms. The overall employment has increased as whole for the liberalisation period, but much of it in unorganised sectors. The employment elasticities have declined in the all three sub-sectors. The elaborate survey provides insights into the question of employment. It also points out that there have been no studies on the structural transformation in the recent past, which is an important area of developmental process. This study hopes to contribute to empirical investigation into the determinants of employment at disaggregate as well as aggregate and the determinants of structural transformation.

Chapter-III
Growth and Determinants of Employment in Agriculture

III.1. Introduction

Agriculture is considered to be the backbone of our economy since independence. There is a view that in the recent times, India has surpassed this stage of development; it has arrived into a non-agricultural sector dominated take-off stage of the economy. While this statement appears to be true from the point of national income generation, same cannot be held so strongly from either macroeconomic point of view or employment. On one hand, there is still a strong complementary relationship between agriculture and non-agriculture through linkages of demand and supply; and on the other, the sector directly supports 55 per cent of workforce engaged in agriculture as their principal occupation, and indirectly even more. Even though, the latest NSSO's quinquennial survey (2004-05) on employment show a slight decline in the share of agriculture and an increase in the share of non-agricultural sector in aggregate employment, such a structural transformation is only expected in the economy, but the rate of transformation has been much slower than desired. Even with the rural sector, this process of transformation from agriculture to non-agriculture sector is also slower (Jha, 2006). Moreover, in the rural India, the growth rate of employment in the non-agricultural sector has been far short of the increase in the rural workforce. As a result, rural unemployment is mounting. Besides this, to make things worse, with a dominant share of small and marginal farmers in the agriculture, there is said to be a substantial disguised unemployment as well. No wonder, Indian State is grappling with employment question in the rural economy by introducing employment guarantee scheme to mitigate the consequences. One can dread about a possibility in the long run that Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) becoming the sole employer in the rural economy. This chapter examines the employment dynamics in agriculture by looking at the trends in growth and empirically estimates the effects of determining factors of the same.

According to the 61st round data of NSSO, in the year 2004-05 almost 18 million jobs are created in the agriculture and allied sector, which contributed Rs. 36,565 crore (at 1999-00 prices) to the agricultural output compared to 1999-00 period (only 1.5 million

jobs were being added which contributed Rs.79,284 crore). Though the growth of agricultural workforce has increased at 0.1 per cent during 1999-00 to 1.5 per cent in 2004-05, the growth in the output declined from 3.3 per cent during 1999-00 to 1.6 per cent in 2004-05. The long term agricultural growth rate during 1950-08 has remained 2.7 per cent. The highest growth rate in agriculture that occurred during the decade of 80's is 3.3 per cent per annum and it has declined to 2.1 per cent during post-reform period. While aggregate GDP growth accelerated since 2004-05, at more than 8.5 per cent, there is a deceleration that of agriculture. Employment growth becomes a natural casualty with such a declining growth. Worse if the capital-output ratios and capital-labour ratios keep increasing, which will rapidly bring down employment elasticity of output, even if agricultural sector grows at the much desired Plan target of 4 percent, it still can lead to jobless growth in agriculture.

In this context, it would be interesting to examine the relationship between income and employment in agriculture under varying conditions of productivity at the aggregate level, considering a general perception that agriculture is a labour intensive sector. Moreover, what are the determinants of employment in agriculture is worth examining in the macroeconomic context of employment.

III.2.A Brief Historical Background of Agricultural Policy and Growth

Indian agriculture has undergone a substantial change in the institutional setting over the period. India inherited a traditional, non-capitalist and semi-feudal structure of agriculture from the colonial rule on the eve of Independence. The major policy reform that was first mooted for the sector is abolition of intermediates, like Zamindars, Jagirdars, etc. This measure has brought substantial increase in land under cultivation during 1950s, which became the chief source of growth of the sector during the period. Of course, a land consolidation and modernisation program under Community Development Programme was also undertaken in 1960s. However, Indian agriculture decelerated towards the sixties and the country was in midst of successive famines and food grains shortage. The major policy change that was mooted to push the agriculture to a higher growth path was the

Green Revolution Programme in 1965-66 (Dantwala, 1986)[43]. During the seventies, tenancy laws were enacted to provide security of tenancy, regulation of rent, and conferring ownership rights on cultivating tenants, albeit with limited success (Rudra, 1978)[44]. Nevertheless, these institutional factors mark a turning point in the history of Indian agriculture with a rate of growth of almost 2.8 per cent during 1950-51 to 1964-65 (pre-Green Revolution period) compared to less than 0.5 per cent per annum during 1904-05 to 1944-45 (Bhalla, 1988)[45]. Since mid 1960s, the Green Revolution strategy meant a policy shift from an emphasis on institutional to technological change with the input-intensive seed fertiliser-water-technology along with credit and market support. Green Revolution, which was successfully adopted everywhere by mid-seventies, is widely held responsible in improving the food grain economy to achieve a long cherished dream of self-sufficiency, ending the import dependence. With the green revolution period, the agricultural sector grew at 3.2 per cent during 1965-1966 to 1975-1976. The decade of eighties is supposed to be the golden period in Indian agriculture, where the improvements in yield on one hand and tremendous rates of public and private investments on the other pushed the agricultural growth to an average growth of 3.8 per cent. Despite at a cost of fiscal burden, the impressive agricultural growth certainly played a complementary role to manufacturing and service sector growth to push the GDP beyond the plan target of 5.5 per cent.

The post 1991 economic reforms, however, did not target agriculture directly, but nonetheless, it received the impact indirectly from the macroeconomic policy and other institutional reforms [Chand, Raju and Pandey (2007)][46]. The deflationary policies aimed at reducing aggregate demand and fiscal deficit led to slowing down of public investment

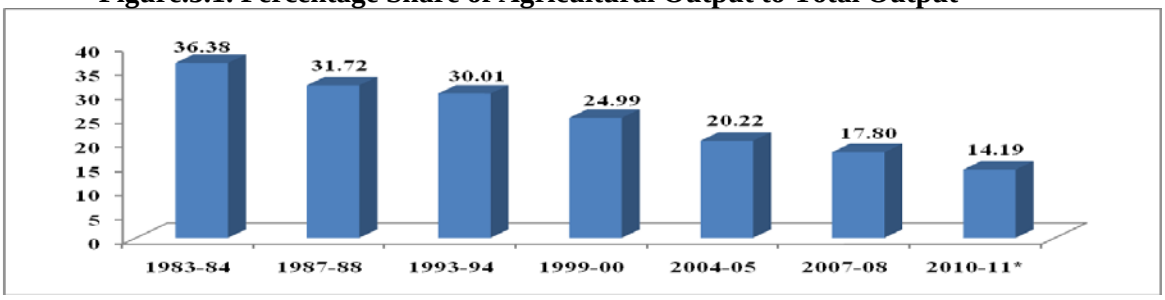
[43] Dantwala, M L (1986), "Agrarian Structure and Agrarian Relation in India", in Dantwala et al (eds), *Indian Agricultural Development since Independence*, Oxford and IBH Publishing Co, New Delhi.
[44] Rudra, Ashok (1978), "Class Relation in Indian Agriculture", *Economic and Political Weekly*, Vol. 13, No. 22, June 3, pp. 916-923.
[45] Bhalla, G.S (1988), "The nature of Agricultural Development in India", *The Monthly Commentary*, Annual Number, Vo. XXX No. 5, Dec.
[46] Chand, Ramesh; S.S Raju and L.M Pandey (2007), "Growth Crisis in Agriculture: Severity and Options at National and State Levels", *Economic and Political Weekly*, June, pp. 2528-2533.

in agriculture (Chand 2005)[47], reduced the availability of institutional credit (Shetty 2006)[48], reduced the subsidies and market support. This is increased cost of production, deteriorating terms of trade (Rao and Gulati 2005)[49], leading to increased indebtedness and market risk. The net effect is a marked slow down in the agricultural growth rate and rapid decline of its share in GDP. Brief periods of improved terms of trade in the initial years, and a substantial hike in minimum support prices given by the government, did not succeed in outweighing the effects of the deflationary measure adopted to sustain the growth (Rao, CHH 2005)[50]. As a result, the post-reforms growth rate has declined to 2.9 per cent during 1991-00 and further to 2.1 per cent during 2000-09.

III.2.1. Structure and Growth of Agricultural Income during 1983-2010

The share of agricultural output which stood at 36.4 per cent in 1983-84 gradually kept falling to 30.01 per cent during1993-94, 20.2 per cent during 2004-05, and 14.2 per cent during 2009-10 (see Figure.3.1), according to the New Series (2004-05 base). In the pre-reform period between 1978-91, the compound average per annum growth rate of agriculture and allied sector was around 3.8 per cent, which has come down to 3.3 per cent during the first-half of the reform during 1991-00 and further to 1.6 per cent during the later half of the reform (1999-05).

Figure.3.1. Percentage Share of Agricultural Output to Total Output



Note: 2010-11 share is calculated by the new base price 2004-05
Source: Computed from Central Statistical Office Data

[47] _____ (2005), "Exploring Possibilities of Achieving Four Per Cent Growth Rate in Indian Agriculture", *NCAP–Working Paper (01)/2005*, National Centre for Agricultural Economics and Policy Research, New Delhi.

[48] Shetty, S.L (2006), "Policy Responses to the Failure of Formal Banking Institutions to Expand Credit Delivery for Agriculture and Non-farm informal Sectors: The Ground Reality and Tasks Ahead ", Revised Version of the Seminar Paper, *Monthly Seminar Series on India's Financial Sector, ICRIER*, New Delhi, November 14.

[49] Rao, C H H and Ashok Gulati (2005), "Indian Agriculture: Emerging Perspectives and Policy Issues", in selected papers by C H H Rao, Academic Foundation, New Delhi.

[50] Rao, C.H.H (2005), "Agriculture, Food Security, Poverty and Environment", in *Essays on Post Reform India*, Oxford University Press, New Delhi.

Table.3.1. Compound Growth Rate of Agriculture and Allied Sector

Year	Growth Rate (*in percent)*
1977-78 to 1990-91	3.8
1990-91 to 1999-00	3.3
1999-00 to 2004-05	1.6
1990-91 to 2004-05	2.5
2004-05 to 2007-08	4.9
2004-05 to 2009-10*	3.0

Note: * is computed by the new base price 2004-05
Source: Computed from Central Statistical Office (CSO) Data

III.3. Structure and Growth of Employment in Agricultural Sector

India's working population, according to NSSO in 2004-05 is 468 million. Out of this, nearly 458 million are supposedly employed (by usual status), which comes to 97.7 of the workforce, and a mere 10 million unemployed, constituting 2.3 per cent. The agricultural sector employs almost 259 million (56 per cent) of the workers, out of which around 249 million people (96.1 per cent) are engaged in rural agricultural activities, and the rest in rural non-agricultural activities. These statistics make it clear that agriculture still is the principal employer in the economy. Table.3.2 depicts the trend and share of the agricultural employment over the period.

Table.3.2. Percentage Share and Growth Rate of Agricultural Employment

Year	RM	RF	RT	UM	UF	UT	Total
Percentage Share							
1983	77.5	87.5	81.2	10.3	31.0	14.6	68.3
1987-88	74.5	84.7	78.2	9.1	29.4	13.3	64.9
1993-94	74.1	86.2	78.4	9.0	24.7	12.3	63.9
1999-00	71.4	85.4	76.3	6.6	17.7	8.8	60.4
2004-05	66.5	83.3	72.6	6.1	18.1	8.7	56.5
Growth Rate (*in percent)*							
1983 to 1987-88	0.77	-0.12	0.42	0.02	1.82	0.82	0.44
1987-88 to 1993-94	2.11	2.23	2.16	3.35	0.98	2.30	2.16
1993-94 to 1999-00	0.34	0.10	0.25	-2.63	-4.63	-3.45	0.10
1999-00 to 2004-05	0.50	2.68	1.37	2.01	6.62	3.92	1.47
1983 to 1993-94	1.57	1.28	1.46	2.01	1.31	1.71	1.47
1993-94 to 2004-05	0.41	1.27	0.76	-0.55	0.33	-0.17	0.72
1983 to 2004-05	0.96	1.27	1.09	0.66	0.80	0.72	1.08

Note: RM-Rural Male; RF-Rural Female; RT-Rural Total; UM-Urban male; UF-Urban Female, UT-Urban Total.
Source: computed from NSSO report no. 515 on Employment and Unemployment Situation in India, 2004-05

Though the share of agricultural employment has been declining over period, the absolute number of workers in this sector has increased by nearly 18 million, i.e. over 30 per cent of the incremental workforce in 2004-05 over 1999-00. The share has come down from almost 68 per cent in 1983 to 64 per cent during 1993-94 and further fell to 56.5 per cent in 2004-05. The post-reform period witnessed a faster declining share of agricultural employment compared to pre-reform period. The majority of workers in agriculture are females who accounts for 83 per cent total rural female employment. The dominance of female participation is higher in both rural and urban areas. The agricultural employment has grown at a rate of 1.08 per cent during the long term period, while employment grew at 1.09 per cent in rural and 0.72 per cent in urban areas. It is to be noted that these rates are much below the population growth rates. Further, the post-reform period (1993-94 to 2004-05) witnessed a decline in growth of employment to 0.72 per cent from 1.47 per cent during pre-reform period (1983-94). The decline of employment growth is even more pronounced in urban sector with a negative growth of -0.2 per cent. In the rural sector also, it fell and female participation rate is almost stagnant.

From the above analysis, it can be inferred that agricultural sector employs a dominant majority of the workforce despite a declining growth of employment. The composition of work force in agriculture is such that it is predominantly engaged with female workers suggesting male workers are increasingly seek employment in the non-agricultural sector. Though the data shows 97 per cent of workforce as employed, given the incidence of disguised unemployment in self-employment, actual employment could be much less.

III.3.1. Employment Status in Agricultural Sector

In the NSSO terminology, status of employment refers to whether the worker is self-employed, regularly employed or casual labour. The composition of employment status in agricultural sector as presented in table 3.3, suggests that majority of agricultural workers are self-employed, constituting 64.2 per cent, and casual labour constitute 34.6 per cent, and together 98.8 per cent as the informal sector labour in agriculture. NSS data refers to employment in organised agriculture, which mostly means labour employed in public sectors like irrigation, agricultural department, etc., constitutes 1.4 per cent of the total. Within agricultural workers, cultivator class constituted 36.4 per cent in 1999-00,

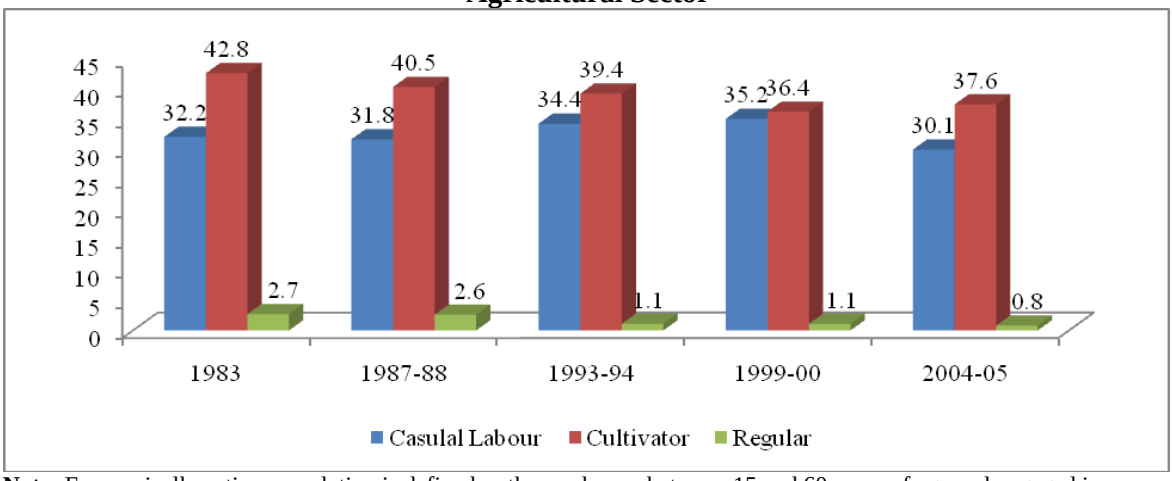
which increased to 37.6 per cent in 2004-05 (see Figure 3.2). But, the share of casual labour in the rural work force has declined from 34.4 per cent in 1993-94 to 30.1 per cent in 2004-05 after rising slightly during 1999-00.

Table.3.3. Percentage Share of Agricultural Employment by Status

Year	Rural			Urban			Total		
	SE	CL	RW	SE	CL	RW	SE	CL	RW
1993-94	60.1	38.5	1.4	58.1	39.5	2.3	59.9	38.6	1.50
	(81.3)	(85.9)	(17.2)	(17.0)	(27.0)	(0.7)	(70.9)	(78.9)	(7.3)
1999-00	57.9	40.9	1.3	58.6	37.9	3.4	57.6	40.8	1.6
	(79.0)	(83.9)	(14.3)	(12.0)	(18.6)	(0.7)	(67.1)	(76.3)	(7.1)
2004-05	63.9	35.1	0.9	67.7	29.0	3.2	64.2	34.6	1.2
	(77.2)	(78.3)	(9.7)	(12.7)	(16.4)	(0.7)	(66.1)	(70.2)	(5.0)

Note: Bracketed figures are percentage share of agricultural employment by status to total employment by status.
Source: computed from NSSO reports no. 409, 458, 515 on Employment and Unemployment in India.

Figure.3.2. Employment Share among Economically Active Population in Rural Agricultural Sector



Note: Economically active population is defined as those who are between 15 and 60 years of age and engaged in work.
Source: see Peter Lanjouw and Rinku Murgai (2008)[51]

At the same time, the land distribution remained unequal and relatively unchanged. The proportion of landless households increased from 13 per cent in 1993-94 to 14.5 per cent in 2004-05. The share of marginal holdings increased from 59 per cent to 62 per cent, which small holdings constituted 24.2 per cent. The small and marginal holdings together constitute 86 per cent of total ownership households.

[51]Lanjouw Peter and Rinku Murgai (2008), "Poverty Decline, Agricultural Wages, and Non-firm Employment in Rural India: 1983-2004", *Policy Research Working Paper: 4858*, World Bank, March.

The picture remains same even when we consider the data on structure of operational households (see Table 3.4). The inequality of ownership and operational land remained skewed over period. By early nineties, nearly 63 per cent of the holdings and 16 per cent of the area was under less than 1 hectare holding size. Approximately 18 per cent of the holdings and area was under less than 2 hectares holding size. In 2002-03, around 22 per cent of the operated area was under marginal holdings and another 21 per cent was under smallholdings. It should be noted that 86 per cent of the marginal and small farmers operate around 43 per cent of agricultural land while 14 per cent of the medium and large farmers operate around 37 per cent of the land[52].

The increased demographic pressure on land has reduced the average size of the holdings. When considered along with the declining productivity, slow rate of income growth, the picture about the quality of labour in the sector looks grim. Being largely self-employed in nature, with diminishing asset base, the quality of labour certainly tends to decline, which we shall examine in the next section.

Table.3.4. Distribution of Operational and Ownership Holdings (All India-Rural)

Size class (Hectares)	Percentage Distribution of Operated Holdings			Percentage Distribution of Operated Areas		
	1982-83	1991-92	2002-03	1982-83	1991-92	2002-03
Marginal (< 1)	56.0	62.8	69.7	11.5	15.6	22.6
Small (1.01-2.0)	19.3	17.8	16.3	16.6	18.7	20.9
Medium and Large (> 2.0)	24.7	19.4	14.0	51.9	65.7	56.5
All Sizes	100.0	100.0	100.0	100.0	100.0	100.0
Concentration Ratio*	0.624	0.641	0.624			
Size class (acres)	**Percentage Distribution of Ownership Holdings**			**Percentage Area Owned**		
Landless (0.01)	11.3	11.3	10.0	0.0	0.0	0.0
Marginal (0.01-2.49)	55.3	60.6	69.6	12.2	16.9	23.1
Small (2.5-4.99)	14.7	13.4	10.8	16.5	18.6	20.4
Medium and Large (5.0-25.0 and above)	18.7	14.7	9.6	71.3	64.5	56.5
All Sizes	100.0	100.0	100.0	100.0	100.0	100.0
Concentration Ratio*	0.708	0.710	0.740			

Note: *values are in ratio.
Source: National Sample Survey on Land Holding, 37th Round No. 330 and 331, 1982; 48th Round No. 388, 1992; and 59th Round No.492, 2002-03.

[52] Given the absence of data on tenancy, the land under small and marginal farmers could be actually more than shown in official data.

III.3.2. Labour Productivity, Earning and Elasticity in Agriculture:

Productivity as argued earlier is a very important aspect of output growth and its sustainability. Unless the factor productivity increases over period, the overall growth momentum cannot be sustained. This not only reduces the cost of production, but also increases the demand by reducing the price. Thus, factor productivity in turn can spurn the factor demand, thus employment creation can be increased by an increase in the former with some caveats, discussed elsewhere. Though labour productivity can be defined in various ways, in the present discussion we shall consider the labour productivity defined as real GDP per worker. The spatial and temporal trends in labour productivity are presented in Table 3.5.

The table shows that the share of labour productivity of agriculture and allied, out of total productivity has declined from 53 per cent in 1983 to 36 per cent in 2004-05. This reflects in growth terms too. The rate of growth of productivity has declined from 2.29 per cent in pre-reform period to 1.80 per cent in post-reform period. However, during the first decade of post-reform period in 1991-00, the productivity grew at an impressive rate of 3.21 per cent per annum but drastically fell down to 0.12 per cent in 1999-04. On the other hand, during 1999-00, employment growth has come down and increased marginally during 1999-05 suggesting a negative relationship.

Table.3.5. Productivity Growth in Agricultural Sector during 1983 to 2004-05

Year	**Productivity** *(in Rs.)*	**Percentage share to total**
1983	12240	53.1
1987-88	13253	48.8
1993-94	15362	47.0
1999-00	18584	41.5
2004-05	18673	35.8
Growth Rate *(in percent)*		
1983 to 1993-94	2.29	
1993-94 to 199-00	3.21	
1999-00 to 2004-05	0.12	
1993-94 to 2004-05	1.80	
1983 to 2004-05	2.03	

Source: computed

Given the significant slowdown in the rate of growth of labour productivity, the real wage rates have increased in the post-reform period. However, the rate of growth has come down along with the decline in growth of productivity. The table 3.6 depicts that the deceleration in rate of real wages during 1999-00 to 2004-05. The fall in real wage rate for female workers is more than that of male counter part. These trends seemingly suggest a possible trade-off between employment and productivity in agriculture.

Table.3.6. Real Wage Rates in Agricultural Occupations from NSS (1999-00 prices)

Segment/Period	**Wage Rates** *(Rs./Manday)*			**Growth Rate of Real Wages** *(in percent)*	
	1993-94	**1999-00**	**2004-05**	**1993-94 to 1999-00**	**1999-00 to 2004-05**
Male	37.9	44.8	48.1	2.80	1.38
Female	26.5	31.6	33.4	2.95	1.04
Persons	33.7	40	42.6	2.78	1.31

Note: Real Wages are for casual labourer of age group 15-59 years. Growth rate of real wages at 1999-00 prices
Source: NCEUS, 2007

The major problem in the Indian agricultural sector is lack of adequate investment or capital formation. Private investments are needed by individual farmers to meet the expenses are on irrigation, land development, machinery etc. Public investment is needed to build rural infrastructure like canals, dams, roads and electricity, research & extension, market yards, storage space, transport facilities, etc. It is believed that the two have great complementarities in the sector. These factors would increase productivity and strengthen the agricultural sector. The trends in the share of public investment in the total investment in agriculture show that it has come down from 46.7 per cent in 1983 to 22.5 per cent share during 2004-05 (see Table.3.7). Private investment share in total agricultural investment had increased from 53 per cent in 1983 to 83 per cent in 1999-00, but declined to 77.5 per cent in 2004-05. However, during the 10^{th} Plan period, some massive dose of public investment has been executed during 2004-08, with an increasement from 12.0 per cent in 2004-05 to 14.2 per cent in 2007-08. This was a part of UPA government's electoral agenda as well as a move to boost sagging agricultural growth rate.

Table.3.7. Investment Growth in Agricultural Sector during 1983 to 2004-05

Year	Investment *(in Rs. Crore)*		Investment Rate^	Growth Rate *(in percent)*		
	Total	Public Sector		Total	Public Sector	Private Sector
1983	27778 (17.19)	12962 (46.7)	10.9	---	---	---
1987-88	28797 (14.10)	10981 (38.1)	10.3	0.90	-4.06	4.72
1993-94	28137 (10.41)	8907 (31.7)	7.7	-0.39	-3.43	1.28
1999-00	50151 (10.15)	8670 (17.3)	11.2	10.11	-0.45	13.67
2004-05	57759 (7.72)	13019 (22.5)	12.0	2.87	8.47	1.52
2007-08	79328 (6.72)	22107 (27.9)	14.2	11.16	19.30	8.55
1983-93	---	---		0.13	-3.68	2.64
1993-04	---	---		6.76	3.51	7.98
1983-04	--	---		3.55	0.02	5.40

Note: Investment is defined as Gross Capital Formation at 1999-00 prices. Bracketed value for agricultural total investment is the percentage share to total investment. And for public sector investment in agriculture is the percentage share to agricultural total investment. ^ Percentage share of investment in agriculture sector to gross domestic product in this sector.
Source: National Account Statistics, 2007 & 2009.

The most influencing factor in the trade-off between productivity and employment is the role of capital. As it is known that in a simple production function, output is determined by labour and capital. In the short run efficiency of labour use matters for growth. But in the long run, capital accumulation plays an important role in output growth. However, the increased capital intensity can displace labour. The technological change which keeps capital-output ratio constant is referred as Kaldor-neutral and if it keeps capital-labour ratio constant as Hick-neutral. In practice, technology rarely is neutral. In table.3.8, the growth rate of capital, capital-output ratio and capital-labour ratio are presented for the agricultural sector. We observe that the capital formation grew at a rate of 2.44 per cent during 1983-05 which is quite low. The rate of capital productivity during 1983-07 remained negative, except a short span during 2004-05 where it recovered, suggesting an over all decline in capital productivity. The decomposition of labour productivity[53] shows that during the post-reform period, capital productivity has gone down significantly despite the high growth in capital that displace the labour. Therefore,

[53] $\frac{Y}{L} = \frac{Y}{K} X \frac{K}{L}$, where Y/L is labour productivity, Y/K is capital productivity, and K/L is capital-labour ratio.

labour productivity growth can be improved if output per capital growth is sustained with the slower growth of capital-labour ratio.

Table.3.8. Growth Rate of Capital, Capital Productivity and Capital-Labour Ratio

(1999-00 prices)

Year	Capital	Capital Productivity#	Capital-Labour Ratio
1983 to 1993-94	2.21	1.51	0.78
1993-94 to 2004-05	2.64	-0.11	1.90
2004-05 to 2007-08	4.17	0.67	---
1983 to 2004-05	2.44	0.66	1.37

Note: Capital is Net Fixed Capital Stock. # inverse of capital productivity is capital-output ratio.
Source: National Account Statistics, 2007 & 2009.

The employment elasticities are useful measures in economic analysis which indicate the rate of employment creation from a growth of output. The estimates of overall employment elasticity in the agricultural sector, expressed as a ratio of agricultural employment growth to rate of growth of national income, are presented in table.3.9. The employment elasticity in agriculture for the period 1983-05 is 0.18. While comparing to pre-reform period, the employment elasticity has come down from 0.25 to 0.11 in the post-reform period. Even own sectoral employment elasticity in agricultural sector, defined as ratio of agricultural employment growth to agricultural output, also shows the same. The steady rise in capital-labour ratio suggests a labour-displacing capital intensive technological progress taking place at a slow but steady pace. The decomposition of sectoral own employment elasticity[54] has shown that agricultural employment in post-reform period has been more responsive to output growth than to investment.

Overall, it is found that agricultural employment in post-reform period has been more responsive to growth than to investment. But investment has been more growth promoting and less employment generating. This suggests that production conditions in agriculture are under change in the long run, which gives some clues for slower generation

[54] $\frac{\delta E_A}{\delta Y_A} = \frac{\delta E_A}{\delta I_A} / \frac{\delta Y_A}{\delta I_A}$, where E, Y and I are employment, income and investment respectively. Subscript 'A' is agricultural sector. $\frac{\delta E_A}{\delta Y_A}$ Is own employment elasticity, $\frac{\delta E_A}{\delta I_A}$ is sectoral employment to investment elasticity, and $\frac{\delta Y_A}{\delta I_A}$ is sectoral income to investment elasticity.

of employment. We shall consider the determinants of employment more rigorously in the econometric analysis in the next section.

Table.3.9. Elasticity of Agricultural Employment in India

Year	Overall Sectoral Employment Elasticity	Sectoral Own Elasticity	Sectoral Employment ***w.r.t.*** Investment
1983 to 1993-94	0.25	0.39	11.44
1993-94 to 2004-05	0.11	0.29	0.11
1983 to 2004-05	0.18	0.35	0.30

Source: calculated

III.4.An Econometric Model of Employment Determination in Indian Agriculture

In the Indian context, the agricultural sector has been important from a policy perspective for several reasons. Even from the point of view of accelerating economic growth, transition from an agrarian economy to an industrial or modern economy would depend on how well the agricultural sector enables this transition. Recognising that, the majority of workers are employed in agriculture where labour productivity is low, a faster growth of agriculture is necessary to make employment more remunerative. While no significant increase in the number of workers can be expected in agriculture, greater use of underemployed and unemployed person becomes important. Taking into consideration of such various factors, we proceed to evolve an economic model of employment determination though an econometric estimation.

There is a well established literature on output determination in agriculture in India. The agricultural output in general is considered to be dependent on investment, fertilizer use, irrigation, rainfall, and technology from the supply side. Bhatia (1999)[55] emphasised that there is a strong relationship between rural infrastructural development and level of per hectare yield of foodgrains and also of the value of output from agriculture. Bhattarai and Moorthy (2003)[56] have empirically shown that improvement in irrigation and rural literacy are the two most important factors for agricultural growth in India. Mahendra Dev

[55] Bhatia, M S (1999), "Rural Infrastructure and Growth in Agriculture", *Economic and Political Weekly,* Vol.34, No.13, March 27, pp.A43-A48..

[56] Bhattarai, Madhusudan and A Narayanamoorthy (2003), "Irrigation Impact on Agricultural Growth and Poverty Alleviation: Macro Level Impact Analyses in India"**,** paper presented at *IWMA-Tata Workshop*, January.

(2002)[57] showed that there is a greater need for public investment in agriculture, irrigation, credit availability, better marketing of agricultural products, research and development (R and D) along with adequate pricing and other incentives for private investment that would help revive agricultural growth. Dhar and Kallumal (2004)[58] suggested that the share of agriculture in gross capital formation has remained in single digits, which explains the slackening of its growth momentum during the past decade. Gulati and Bathla (2001)[59] observed that private investment is playing an increasing role in agriculture over time while there is a decline in public sector capital formation in the sector. Public sector investment, along with positive terms of trade can have a crowding-in effect on private capital formation. Sachdev and Ghosh (2009) forecasted the agricultural output growth using average capital-output ratio (ACOR). That average ratio is determined through rainfall, high-yielding varieties and a lag value of its own output. Narayan and Ghose (2009) used error correction methodology to estimate the agricultural output growth through gross capital formation in agriculture, price deflator in agricultural output, rainfall, non-agricultural export and import, agricultural export, industrial output and industrial price deflator. Kar and Pradhan (2009) estimated agricultural output determined through capital stock in agriculture, rainfall along with drought effect dummy and structural dummy. Bhide and Parida (2009) used OLS technique to estimate output of agriculture and allied sector and further disaggregated in terms of crop categories. Gross cropped area is first determined based on the gross irrigated area and rainfall during the monsoon season. The irrigated area crop is related to the gross cropped area crop. Crop yield is estimated as a function of the extent of irrigation in the total area under the crop, price of inputs relative to the expected crop price and rainfall. Mishra and Hazell (1996)[60] estimated the agricultural output through gross terms of trade, gross cropped area and area under high

[57] Dev, S Mahendra (2002), "Bold Initiatives Need on Agriculture and Rural Employment", *Economic and Political Weekly*, March 23, pp.1088-1091.
[58] Dhar, Biswajit and Murali Kallummal (2004), "Trade Liberalisation and Agriculture: Challenges before India", *Social Scientist*, Vol. 32, No. 7/8, July-August, pp.48-51.
[59] Gulati, Ashok and Seema Bathla (2001), "Capital Formation in Indian Agriculture: Revisiting the Debate", *Economic and Political Weekly*, May 19-26.
[60] Misra, V. N and P.B.R Hazell (1996), "Terms of Trade, Rural Poverty, Technology and Investment: The Indian Experience: 1952/53 to 1990/91", *Economic and Political Weekly*, Vol. 31, No. 13, Review of Agriculture.

yielding varieties. Bhattacharya, Bhanumurthy, Kar and Sakthivel (2004)[61] used recursive methodology to determine the agricultural output through the supply side factors such as rainfall, gross cropped or net sown area, irrigation, fertliser consumption, electricity used in agriculture and public investment in agriculture. Bhattacharya and Mukherjee (2004)[62] estimated the agricultural output as a function of fertilizer, rainfall index and electricity consumption in agriculture.

There are also some literatures which follow the determinants of employment in agricultural sector. Like Gupta (2002) suggested that improvement in agricultural productivity is necessary to improve the wage of workers and earnings of the self employment requires investment in areas such as irrigation, water conservation, land development, etc. Mahadevan (2003)[63] traced that productivity growth is necessary to lower the costs of production. In order to promote agricultural productivity growth, training the farmers and educating them appropriately to change their mindset and reorienting them to take up new activities or adopt foreign technology is of utmost importance. Ghose (2003)[64] pointed out certain factors that can reduce employment agricultural sector, such as: expansion of non-agricultural sector in rural areas, technological and cropping pattern changes that have reduced the demand for labour in agriculture, pattern of land relations in rural India, increasing landlessness of the rural population, informal credit sources at very high rates of interest may also lead to less employment generation in agriculture.

The above literature established a firm link between the various factors mentioned and agricultural output in India. Assuming that output is reasonably good estimator of employment, we use some of the variables as proxies for determinants of the latter.

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[61] Bhattacharya, B. B; N. R. Bhanumurthy; Sabyasachi Kar and S. Sakthivel (2004), "Forecasting State Domestic Product and Inflation: Macroeconometric Model for AP, Karnataka and UP", *Economic and Political Weekly*, Vol. 39, No. 31, July 31 - August 6, pp. 3541-3550.

[62] Bhattacharya, B. B and Mukta Mukharjee (2004), "Forecasting of State Domestic product Through Macroeconometric Model: Tamil Nadu", *Discussion Paper Series No. 92/2004*, Institute of Economic Growth, New Delhi.

[63] Mahadevan, Renuka (2003), "Productivity Growth in Indian Agriculture: The Role of Globalisation and Economic Reform", *Asia-Pacific Development Journal*, Vol.2, No. 2, pp. 57-72.

[64] Ghose, Jayati (2003), "Whatever Happened to Farm Employment", *Macroscan*, May 2. See: http://www.macroscan.org/cur/may03/cur020503Farm_Employment.htm

III.4.1.Model Specification

Considering Keynesian theoretical explanation about the change in the employment which depends on expected output or change in output, the agricultural employment will be influenced by the volume of agricultural output. That volume of output will be determined through the equilibrium mechanism of supply of and demand for output in the market. It means that the employment in agricultural sector will be directly influenced by the market equilibrium mechanism of output. This framework is presented in the following:

Let Y_A is agricultural output and E_A is agricultural employment.

$$Y_A = Y_{OA} + Y_{UA} \text{ , and } E_A = E_{OA} + E_{UA} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.1)}$$

Where OA = organised agricultural sector, UA= unorganised agricultural sector.

Determinants of Organised Agricultural Sector:

By putting Keynesian view on determining employment in the sector in an equation format,

$$Ln(E_{OA}) = F[Ln(Y_{OA})] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.2)}$$

Where, Y_{OA} as a function of the discrepancy between the two sides of the market i.e. supply of and demand for output in the sector. So, Supply of output in agricultural sector is given by

$$Y_{OA}^S = F(RI, ELCTRCTY_A, Y_{oA(t-1)}) \ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.3)}$$

The Demand for output in agricultural sector is:

$$Y_{OA}^D = F(LP_{0A}, GCF_{PUB}, K/L_{OA}, AEXP, NAY_{OA}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.4)}$$

The equilibrium condition $Y_{OA} = Y_{OA}^S \cong Y_{OA}^D$ will yield agricultural output as:

$$Y_{OA} = F(RI, ELCTRCTY, NAY_{OA}, LP_{org}, GCF_{PUB}, (K/L)_{OA}, Y_{OA(t-1)}) \ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.5)}$$

Putting Y_{OA} component in the equation 3.2, the final equation will be;

$$Ln(E_{OA}) = \alpha + \beta_1 RI + \beta_2 Ln(ELCTRCTY) + \beta_3 Ln(NAY_{OA}) + \beta_4 Ln(Y_{OA(t-1)}) + \beta_5 Ln(LP_{OA}) + \beta_6 Ln(GCF_{PUB}) + \beta_7 Ln(K/L)_{OA} + \beta_8 L_{91} + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.6)}$$

Like wise, *for Unorganised Agricultural Sector*,

$$Ln(E_{UA}) = F[Ln(Y_{UA})] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.7)}$$

Supply of output is given by;

$$Y_{UA}^{S} = F(RI, HYVPRP, ELCTRCTY, Y_{UA(t-1)}) \ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.8)}$$

Demand for output is a function of;

$$Y_{UA}^{D} = F(LP, GCF_{PUB}, GCF_{PVT}, (K/L)_{unorg}, AGTOT, NAY_{UA}) \ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.9)}$$

Equilibrium now requires $S_{UA}=D_{UA}$

$$Y_{UA} = Y_{UA}^{S} \cong Y_{UA}^{D} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ (3.10)}$$

$$Y_{UA} = F(RI, HYVPRP, ELCTRCTY, NAY_{unorg}, LP_{unorg}, GCEF_{PUB}, GCF_{PVT}, (K/L)_{unorg}, AGTOT, Y_{unorg(t-1)}) \ldots\ldots \text{ (3.11)}$$

Putting Y_{UA} variables in equation 3.7;

$$Ln(E_{UA}) = \alpha + \beta_1 RI + \beta_2 Ln(HYVPRP) + \beta_3 Ln(ELCTRCTY_A) + \beta_4 Ln(NAY_{UA}) + \beta_5 Ln(Y_{UA(t-1)}) + \beta_6 Ln(LP_{UA}) + \beta_7 Ln(GCF_{PUB}) + \beta_8 Ln(GCF_{PVT}) + \beta_9 Ln(K/L)_{UA} + \beta_{10} Ln(ATOT) + \beta_{11} L_{91} + \mu \ldots\ldots\ldots\ldots \text{(3.12)}$$

Where, RI=	Rainfall index which is constructed by taking last five years simple average of normal rainfall at all India level.
ELCTRCTY=	Electricity used in agricultural sector.
NAY=	Non-Agricultural Output i.e. addition of industrial and services output.
HYVPRP=	Proportion of Area under High Yielding Varieties is the ratio of High Yielding Varieties to Gross Sown Area.
NAY=	Non-Agricultural Output which is addition of industry and services output
Y_{t-1}=	last year Output of the agriculture.
LP=	Labour Productivity which is defined as output per each labour unit
GCF_{PUB}=	Gross Capital Formation in Public Agricultural Sector
GCF_{PVT}=	Gross Capital Formation in Private Agricultural Sector
K/L=	Capital-Labour ratio
ATOT=	Agricultural Terms of Trade i.e. value of export to value of import

Given this argument, one would expect each variable to have a significant effect on employment in the sector.

III.4.2.Data Sources and Methodology

The above model focuses on the determinants of employment in agricultural sector, both for organised and unorganised segments, for which time series data has been used from the period 1972-73 to 2007-08. Data required for estimation are collected from various sources. For example, aggregate agricultural employment data are compiled from various periodic estimates of NSSO and Census data. The data collected through the usual status approach are considered comparable to the population census estimates. Organised sector employment data are collected from the Employment Market Information (EMI) series of the Director General of Employment and Training publishing in the Annual Employment Reviews and for unorganised sector, the residual methods has been used by subtracting the total employment data to organised sector employment data. Output, gross capital formation and net fixed capital stock at 1999-00 prices data are collected from National Account Statistics, Central Statistical Office, Government of India. Rainfall data are collected from Meteorological Department, Government of India. Data on high yielding varieties, irrigation and fertiliser values are sourced from various agricultural statistics. Data on agricultural export and import are provided by Director General of Commercial Intelligence & Statistics, Ministry of Commerce and converted into 1999-00 prices through GDP deflator.

In order to examine the above model specification equation, simple Ordinary Least Square (OLS) technique is employed. We used Dicky-Fuller and Augmented Dicky- Fuller test for testing stationarity of the variables to be used in regression.

III.4.3.Estimation Results

The method used in the estimation is Ordinary Least Square (OLS) method. At the first stage, the stationarity of variables is checked by using the standard unit root tests, namely, Dicky Fuller/Augmented Dicky Fuller Test and the results are presented in the Appendix.3.1.

Subsequently, the variables are taken in logarithmic first differences, for the main econometric equation, the estimated result for unorganised sectors are presented in the following[65].

The result of estimated regressions on determinants of employment on unorganised sector is presented in the table.3.10. All the regressions have reasonably good coefficient of determination. The predicted and actual employment figures (converted into million numbers) for unorganised agricultural sector is plotted in figure.3.3.

III.4.3.1. *Agricultural Sector Employment (Unorganised)*

The estimated equation has a reasonably satisfactory goodness of fit, of 75 percent. The estimated coefficients of most variables, namely, public investment, area under HYV, capital-labour ration, labour productivity and dummy for 1991 reforms are found to be significant and have expected signs. Capital-labour ratio bore a positive sign in the estimation is a surprising result. Coefficients of variables such as rainfall index, electricity, private investment and last year output are found to be statistically insignificant. The results are presented in the table.3.10. Estimated results corroborate the view that performance of agriculture determines the capacity to generate employment in the sector where employment is positively influenced by HYV, terms of trade and public investment and variables like non-agricultural output and productivity have a negative relation with labour in the sector. Capital-labour ratio also shows a positive relation. According to the estimates, first, the adoption of HYV has the highest elasticity of 0.038. Second, the K/L ratio has the second highest elasticity of 0.021. This suggests that the nature of technology is not labour displacing at the aggregate level. Third, public investment does influence employment positively by increasing 0.012 per cent. Fourth, terms of trade have shown a positive elasticity of 0.002 to employment, indicating a higher growth in output and demand for labour in this sector. Fifth, one percent increase in non-agricultural output displaces 0.115 percent labour. Sixth, employment has a negative elasticity with respect to labour productivity at 0.003. The overall result suggests that it is the rate of adoption of

[65] As we know that the organised sector's share of employment in agriculture is insignificant with less than 1 per cent share in output, hence it is not really very much needed. Yet we have estimated the determinants of employment in organised sector of agriculture, these are presented in Appendix 3.2.The study includes them for the sake of uniformity with the exercise done in the other chapter where estimators for organised and unorganised sectors will be synthesised to arrive sectoral aggregates.

HVY which has some deterministic influence on employment generation, which is consistent with plethora of studies that have also suggested the same. Labour productivity has a negative relationship with employment generation. The technological change happened so far does not show a labour displacing effect at the aggregate level. Terms of trade favoured the demand for labour in the sector.

Table.3.10. Regression Results on Employment Determination in Agriculture

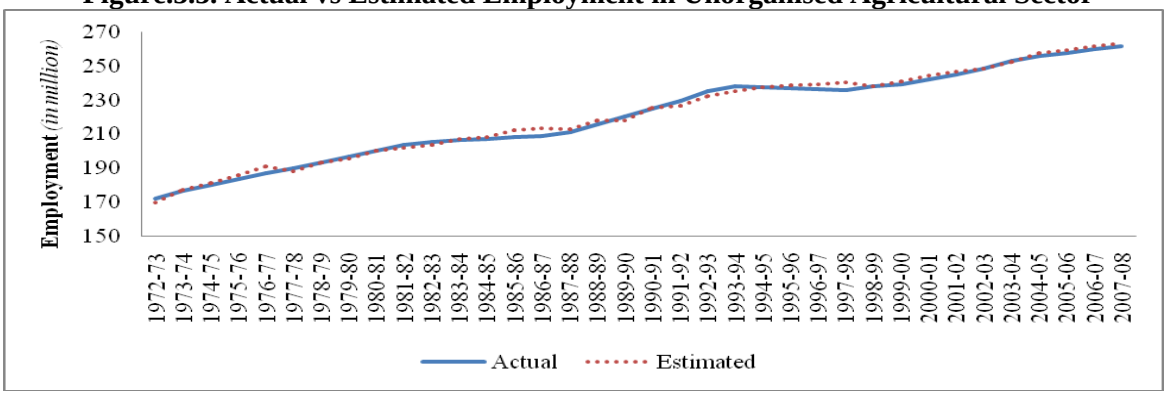
Dependent Variable: Δ *Ln (E)*	**Unorganised Sector**			
Independent Variables	**Step-I**	**Step-II**	**Step-III**	**Step-IV**
Constant	0.018 (3.21)*	0.018 (3.22)*	0.018 (3.22)*	0.018 (3.23)*
Δ *Ln*(RI)	0.024 (1.21)	---	---	---
Δ *Ln* (ELCTRCTY)	-0.004 (1.34)	---	---	---
Δ *Ln* (HYVPRP)	0.020 (2.01)*	0.022 (2.12)*	0.015 (1.97)*	0.038 (2.98)*
Δ *Ln* (NAY)	-0.100 (-2.36)*	-0.101 (-2.39)*	-0.099 (-2.21)*	-0.115 (-2.67)*
Δ *Ln* (Y_{t-1})	-0.004 (-1.35)*	-0.003 (-1.23)	-0.001 (-1.11)	---
Δ *Ln* (LP)	-0.008 (2.14)*	-0.009 (-2.19)*	-0.005 (-2.06)*	-0.003 (-1.97)*
Δ *Ln* (PUBI)	0.015 (2.14)*	0.015 (2.13)*	0.015 (2.12)*	0.012 (2.02)*
Δ *Ln* (PVTI)	0.000 (-1.64)	0.000 (-1.61)	---	---
Δ *Ln* (K/L)	0.019 (2.01)*	0.011 (1.97)*	0.007 (1.91)	0.021 (2.09)*
Δ *Ln* (ATOT)	0.001 (1.60)	0.001 (1.66)	0.002 (1.86)	0.002 (1.98)*
L_{1991}	-0.006 (-1.97)*	-0.005 (-1.96)*	-0.005 (-1.96)*	-0.005 (-1.96)*
R^2	0.75	0.75	0.73	0.73
D-W Test	1.69	1.69	1.67	1.65
Prob (F-Statistics)	0.000	0.000	0.000	0.000
No. of Observation	35	35	35	35

Note: * at 5% significant level**;** Δ is at first difference

It can be observed that the elasticities in general are small goes in line with the view that employment generation slow in agricultural sector. The results also should be interpreted cautiously, given the presence of considerable disguised unemployment. The variables such as capital-labour ratio showing positive sign at the aggregate level are perhaps a case in point. It is widely reported that introduction of harvesters and weedicides in agriculture in the last one decade had a considerable displacement effect on labour, which is unlikely to show up in the aggregate estimates since the data on employment, definitionally, it may not capture the unemployment incidence fully.

The policy variable used for employment determinant is investment on agricultural sector. Both public and private investment is needed to boost the growth but private investment shows a negative and insignificant trend value to determine the employment in the sector. It is because private investment is coming from the household savings and that saving is generated from the last years profit from the sector and also generated through the other sectors. So it is obvious that household saving may increase the investment in the current year but the proportion of people engaged in the sector will not be same due to a better saving rate allowing them to work in non-agricultural activities. But public investment boosts the output growth in the sector through various subsidies, loans etc. which tries to motivate the people to engage themselves in the sector. However, the coefficient is very small (i.e. 0.012 per cent) indicating a very little impact of it on the employment in the sector. The overall model is significant robustness of the estimators (F-Statistics value) with an overall explanatory power of 73 per cent.

Figure.3.3. Actual vs Estimated Employment in Unorganised Agricultural Sector



III.5.Conclusion

To summarise the above discussion, we observe that agricultural sector employs a dominant majority of the work force inspite of a declining trend. Such decline is accompanied by a significant fall in agricultural productivity. Given the slow down in the rate of labour productivity, the rate of real wage for casual labourer has also shown a declining trend. There seems to be a trade-off between productivity and employment and investment has a positive impact on output less on employment. This suggests that production conditions in agriculture are under change in the long run, which gives some clues for slower generation of employment. Therefore, the study tries to examine the determinants of output growth which in turn affects the employment in the sector for both

organised and unorganised. Agricultural income has a negative relation with employment. For agricultural sector, we found that the rate of adoption of HVY has positive influence on employment generation. Labour productivity has a negative relationship with employment generation. The technological change happened so far does not show a labour displacing effect at the aggregate level. The policy variable i.e. public investment indicates a positive but very little impact to the employment in the sector. Elasticities of most variables are quit weak, which is consistent with the received view that they have fall over period. Agricultural income has a perverse sign with employment, is perhaps plausible in fast declining employment. Thus it is important for agricultural sector to grow faster to generate employment, so inducements of technology, investment and favourable terms of trade.

Chapter-IV

Growth and Determinants of Employment in Industrial Sector

IV.1. Introduction

Modern sector's growth is the hallmark of take-off stage of growth and is the most celebrated path of modern development of the society. Manufacturing sector, within the modern sector historically played an important role in accelerating growth, building productive capacity of nations and became backbone of modern developed countries experience. The scale and scope of industrial employment is considered as the path of transformation of an economy. Historically, it is also the experience of most western developed nations in the process of economic development, often described as the structural transformation of the economy [Fisher (1939)[66], Clark (1940)[67], Kuznet (1971)[68], Bell (1974), Chenery and Syrquin (1975)[69]]. According to them, as economy develops, the proportion of output and labour force in the economy moves from the agricultural sector to industry, subsequently to service sector. However, developing countries or the late entrants into development seem to have missed this transformation trajectory as industrial activity that takes place is highly capital intensive in nature. Therefore, industrial sector share grows in terms of income but not in employment. Albeit, growth of industrial sector income can spur the growth of service sector, the growth of the former is necessary for the latter and both need a commensurate growth of agricultural output.

The latest NSS quinquennial survey (2004-05) on employment in India reveals that only 19 per cent of work force are engaged in industrial sector which contributes 26 per cent of total GDP (compared to services sector which absorbs almost 25 per cent of total work force and accounts for 54 percent to total GDP). This indicates parochial peculiar

[66] Fisher, A G P (1939), "Production, Primary, Secondary and Tertiary", *Economic Record*, Vol. 15, PP. 24-38.
[67]Clark, C. (1940), *The Conditions of Economic Progress*, Macmillan, London."
[68] Kuznets S (1971), *Economic Growth of Nations*, The Belkanap Press of Harvard University Press, Cambridge.
[69] Chenery, J M and M. Syrquim (1975), *Pattern of Development 1950-1970*, Oxford University Press, London.

path of growth, where growth of the services sector precedes a manufacturing growth in income.

IV.2. Industrial Policy and Industrial Growth in India

India adopted a development strategy based on central planning after Independence with an objective of rapid industrialisation. The Industrial Development (and Regulation) Act 1956 defined the framework of industrial strategy of reservation of industries under schedules A, B & C for public, joint and private investments. The 'Commanding Heights' of public sector was conferred on it to play a complimentary role to private sector by augmenting infrastructure, basic and capital goods, and sectors, where private investments were lacking. The strategy, inspired by the contemporary development models, was exemplified in the Mahalanobis model of growth, Lewis model and Big Push models. The initial performance of industrial growth during 1956-64 was highly successful, which grew at 7.8 per cent per annum, a record which is not yet surpassed. However, the mid-sixties industrial stagnation transpired several policy as well as macroeconomic constraints for industrial growth (Nayyar, 2007). Recognising wage-goods constraint to accumulation, government launched a green revolution strategy in mid sixties – a condition in Lewis model that the food production not to fall with the rise of modern sector to be satisfied (Mitra, 1976). Famines, wars and foreign exchange shortages and political instabilities adversely affected the public investment during the period and thereby the industrial growth. Another stream of thought argued that controls and regulations have caused distortions in resource allocation, encouraged unproductive rent seeking activities that have made the former inefficient (Ahluwalia, 1984). Since eighties, the industrial policy was changed with a cautious and partial liberalisation by diluting some of the provision of IDA 1956. In the mid eighties, this was further relaxed during Rajiv Gandhi government and "delicensed several industries; increased the ceiling of investment for big business houses; relaxed rules for importation of foreign technology; replaced quantitative trade restrictions with tariffs, and lowered tariff barriers overall, reduced marginal tax rates on personal and corporate income and simplified tax rules; and, finally, announced that public sector

reforms was necessary" (Varshney, 2001)[70]. Import of capital goods against replenishment licences was granted to small-scale industries and non small-scale industries (Das, 2003)[71]. There was also easing of licensing restrictions, particularly with respect to expansion and diversification within the same product group, broad banding (Kathuria, 1995)[72]. The 1980s saw changes in the external and industrial sector in matters pertaining to licensing for scale and technology as well as quantitative restrictions on imports and tariff rates (Das, 2003). Industrial export growth also improved in the second half of the 1980s as import restrictions moved from quotas to tariffs (as a first phase of trade reforms) although at very high levels, and a steady depreciation of the currency in nominal terms. The turn around in industrial output growth in this decade has been variedly attributed to liberalisation, improvement in public investment and public sector performance (Ahluwalia 1992[73]; Nagaraj 1990[74]). A policy of import liberalisation and a liberal external borrowing inspired a revival in industrial growth. The 1991 external crisis led to introduction of 'reforms by stealth' that had far reaching implications for the strategy as a whole.

A concrete shift in the policy towards liberalisation has been introduced in 1990-91. Abolition of licensing, near complete import liberalisation (barring agricultural products), rationalisation of tariff structure, opening up major sectors for foreign direct investment, capital market reforms, exchange rate reforms, and financial sector reforms comprised completely a comprehensive framework to mark a shift towards a new industrial policy. This marked policy shift from protectionist, public sector-led, regulated regime to market oriented, pro-business, and liberal regime to promote certain segments of the manufacturing sector [Rani and Unni (2004)[75], Tendulkar and Bhavani (2007), Panagariya

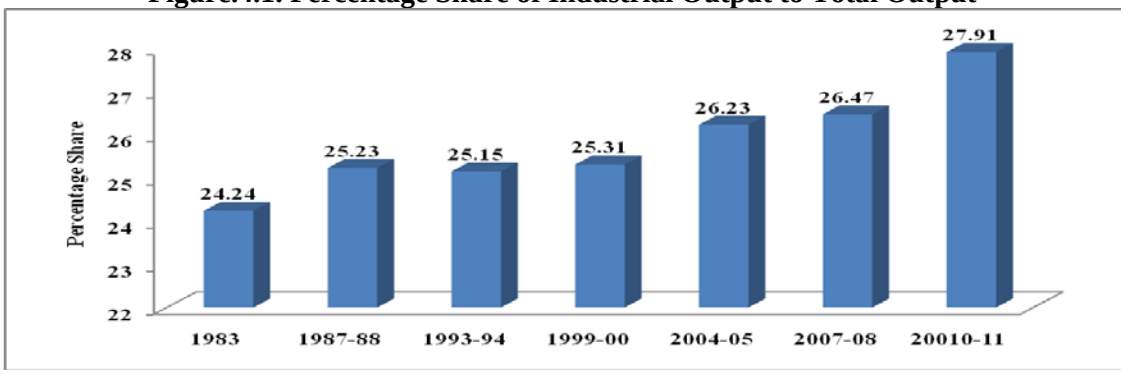
[70] Mass Politics of Elite Politics? India's Economic Reforms in Comparative Perspective' in Jeffery Sachs, Ashutosh Varshney and Nirupam Bajpai (eds), *India in the Era of Economic Reforms*, Oxford University Press, New Delhi.
[71] Manufacturing Productivity under Varying Trade Regimes: India in the 1980s and 1990s', Working Paper No 107, Indian Council for Research on International Economic Relations, New Delhi.
[72] Kathuria, Sanjay (1995), "Competitiveness of Indian Industry" in Dilip Mookherjee (ed), *Indian Industry: Policies and Performance*, Oxford University Press, Delhi.
[73] *Productivity and Growth in Indian Manufacturing*, Oxford University Press, Delhi.
[74] Industrial Growth: Further Evidence and Towards an Explanation and Issues', *Economic and Political Weekly*, 24-25, June 16-23: 105-109.
[75] Rani, Uma and Jemmol Unni (2004), "Unorganised and Organised Manufacturing in India: Potential for Employment Generating Growth", *Economic and Political Weekly*, October 9, pp.4568-4580.

(2008)]. The performance of industry in the new changed policy regime after 1991 reforms has not any radically altered the growth rates. The industrial growth rates have in fact decelerated from peak rates of 7.04 per cent during 1983-87 to 5.59 per cent during 1987-94. Even for the period during 1994-00, the growth rate has marginally improved to 6.62 per cent. The growth rates however accelerated towards 9.75 per cent during 2004-08. On a comparative basis, several scholars commented that the long term growth rate of industry which stood at 7.33 per cent during the post-reform period of 1993-08 is comparably much lower than fast growing economies such as China, Brazil, or many East Asian countries, which have clocked a double digit growth. Particularly, when entire gamuts of reforms are aimed at boosting the sector's growth performance, what is witnessed is rather disappointing. We shall discuss the trends in more detailed way in the next section.

IV.2.1. Structure and Growth of Industrial Output (1983-08)

The industrial sector, by activity, which comprises of four subsectors, viz, mining and quarrying, manufacturing, electricity, gas and water supply and construction, accounted 24 per cent share in GDP in 1983-84 and since then it increased its share to 28 per cent in 2010-11 (see Figure. 4.1). Much of the increase indeed happened only in the last few years since 2004-05.

Figure.4.1. Percentage Share of Industrial Output to Total Output



Note: 2010-11 share is calculated by the new base price 2004-05
Source: Computed from Central Statistical Office Data

The industry, by status of employment, has two segments namely unorganised and organised and the relative shares of these within the sector are 35 percent and 65 percent respectively (see Table.4.1). We shall see that later, line in agriculture, unorganised sector supports overwhelming number of workers in industry too, also for the same reason of prevalence of self-employed in abundance in the sector. Among the industry,

manufacturing sector has a lion's share of almost 57 per cent in the industry. Construction sector, which is one of growth drivers in the economy, contributes close to 28 per cent of output to the industry. A major part of if its income comes from unorganised segment, up to 62.4 per cent. Mining contributed 7.5 per cent while electricity, gas and water contribute around 8 per cent.

Table.4.1.Percentage Share of Industrial Output by segments: 2007-08

Sector	Organised	Unorganised	Total*
Mining	92.1	7.9	7.5
Manufacturing	67.6	32.4	57.5
Electricity	95.3	4.7	7.7
Construction	37.6	62.4	27.3
Industry	63.4	36.6	100.0

Note: * percentage share of sectoral output to total industrial output

The growth rates in the industrial sector are presented in table.4.2. During the pre-reform period i.e. 1983-93, industry grew at 6.17 per cent per annum, but in the post-reform period of 1993-05, it slightly increased to 6.68 per cent. The major reason for this increase is accounted by a rise in the construction and manufacturing sector growth rate. In the recent period between 2004-08, industry rose to 9.75 per cent, which is led by construction, manufacturing, mining and electricity, gas and water sector. We have noted earlier that unorganised sector hold 35 percent of output share in the industry. We further observe that the post-reform growth in industry is led by unorganised sector which grew at 7.14 per cent compared to organised sector's growth 6.43 per cent during 1993-05. This is largely due to faster growth of construction sector, in which 9.6 per cent growth came from unorganised segment. A consolating factor is that as far as manufacturing sector is concerned, the organised segment grew at 7.24 per cent compared to 5.65 per cent of unorganised counterpart.

Table.4.2. Growth Rate of Industrial Sector Output

Year		Mining	Manufacturing	Electricity	Construction	Industry
1983-94	Org	6.56	7.79	9.26	6.15	7.49
	Unorg	5.10	3.37	11.89	4.78	4.00
	Total	**6.44**	**5.97**	**9.43**	**5.43**	**6.17**
1993-05	Org	4.96	7.24	5.97	5.09	6.43
	Unorg	5.78	5.65	1.69	9.60	7.14
	Total	**5.02**	6.70	**5.71**	**7.63**	**6.68**
2004-08	**Total**	**5.64**	**9.67**	**5.20**	**12.68**	**9.75**

Source: Computed from Central Statistical Office (CSO) Data

IV.3. Employment Profile in Industrial Sector

There is no significant change in share of industrial employment in the country in the last half a century. The share of industrial employment in 1983-84 which used to be 13.78 per cent of total work force has increased to 16.25 per cent in 1999-00 and further to 18.71 per cent during 2004-05 (see Table.4.3). In this meager addition of 5 per cent in the last 21 years, manufacturing sector generated an increase of 2.5 per cent and another 2.5 per cent is added in the construction sector, while in the other two sectors which are supposed labour intensive sectors, lost marginal. In terms of growth, employment in industry in India has increased at 3.49 per cent, which is higher than the other two sectors of the economy. However, much of the growth came from construction sector, it increased at 6.62 per cent and manufacturing employment increased at 2.65 per cent. The construction sector employment have actually shown a steady growth in the two decades where as manufacturing sector employment was sluggish during 1993-00, but picked up to 4.96 during 1999-05.

Table.4.3. Percentage Share and Growth Rate of Employment in Industrial Sector

Sector	Mining	Manufacturing	Electricity etc	Construction	Industry
Percentage Share					
1983	0.60 (4.36)	10.66 (77.39)	0.28 (2.01)	2.24 (16.23)	13.78
1987-88	0.72 (4.50)	11.07 (69.66)	0.35 (2.23)	3.75 (23.61)	15.90
1993-94	0.72 (4.77)	10.68 (71.14)	0.37 (2.47)	3.24 (21.62)	15.01
1999-00	0.57 (3.49)	11.01 (67.75)	0.26 (1.62)	4.41 (27.14)	16.25
2004-05	0.56 (2.98)	12.21 (65.25)	0.26 (1.41)	5.68 (30.36)	18.71
Growth Rate *(in percent)*					
1983 to 1993-94	3.95	2.16	5.17	6.02	3.03
1993-94 to 1999-00	-2.80	1.56	-4.57	6.35	2.39
1999-00 to 2004-05	2.44	4.96	2.88	8.14	5.75
1993-94 to 2004-05	-0.45	3.09	-1.25	7.16	3.90
1983 to 2004-05	1.62	2.65	1.75	6.62	3.49

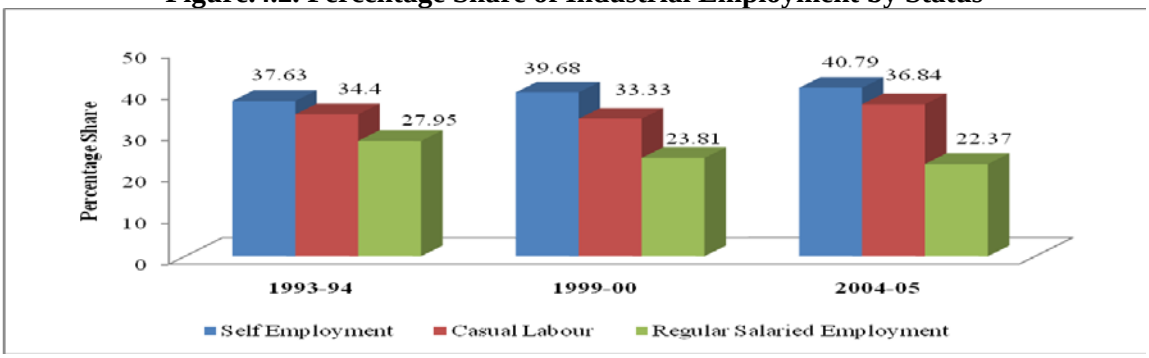
Note: Bracketed values are percentage share to total industrial output.
Source: computed from NSSO report no. 515 on Employment and Unemployment Situation in India, 2004-05.

IV.3.1. Status of the Employment in Industrial Sector

The composition of employment by status in industrial sector, refers to the category of the worker belongs to self-employment, regular salaried employment and casual labour, are presented in figure.4.2. We can observe that an overwhelming majority of 40.79 per cent belong to self-employed category, 36.84 per cent belong to casual labour and only

22.37 per cent are regular salaried workers in the Indian industry. Thus the quality of employment in India to an overwhelming majority of workers is disappointing, such that they either live on self-exploitation or daily wages – similar to what exits in agricultural sector.

Figure.4.2. Percentage Share of Industrial Employment by Status



Source: computed from NSSO reports no. 409, 458 & 515 on Employment and Unemployment in India

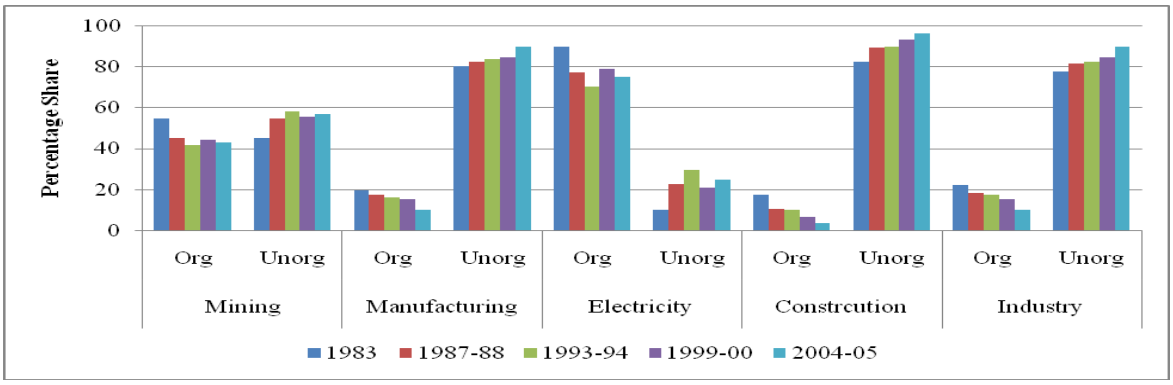
IV.3.2. Nature of the Employment in Industrial Sector

Among industry in general the share of urorganised sector workers is found to be 90 per cent in 2004-05, which used to be 78 per cent in 1983 (see Figure.4.3). The manufacturing sector, biggest employer among industry, had its informal worker share rose from 81 to 84 per cent during the same time. Similarly, in construction industry, share of unorganised sector employment has increased from 82.52 per cent in 1983 to 89.97 in 1993-94 and further to 96.3 per cent in 2004-05. Electricity, gas and water supply sector is the only sector which contributes higher percentage organised employment for being perhaps the public sector undertakings.

Another important issue about unorganised workers is the growing informalisation of the formal sector in the industry. The increasing contractualisation in the industry has led the increase in the share of informal workers from 59.84 per cent in 1999-00 to 65.74 per cent in 2004-05 [NCUES (2009)][76] (see Figure.4.4). It is interesting that in the so called formal sector in the industry, the regular salaried formal workers comprise only 35 per cent and its share is shrinking!

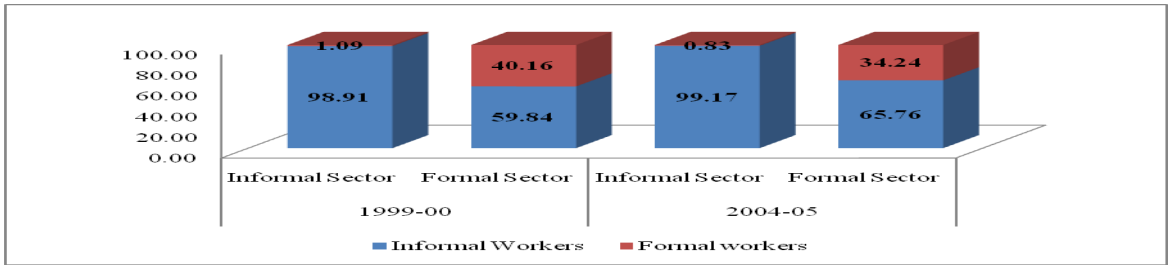
[76] National Commission for Enterprises in the Unorganised Sector (2009), *The Challenge of Employment in India-An Informal Economy Perspective*, Vol-II, New Delhi.

Figure.4.3. Percentage Share of Organised and Unorganised Sector Employment in Industrial Sector



Source: Total employment figures are from various round of NSSO. Organised Sector data are provided by Ministry of Labour & Employment, Director General of Employment Training (DGET).

Figure.4.4.Percentage Distribution of Formal & Informal Sector Workers by Industry in 1999-2000 and 2004-05



Source: NCEUS, 2009

IV.3.2.1.Growth of Employment in the Organised Sector Between 1983-05

In a modern society one looks up for organised employment since is provides a decent living standard, relatively safe working conditions, and stable employment. The share of this segment in Indian industry is only 10 per cent. Even this minute share is under threat. Among the sub-sectors, the share of this segment is coming down in manufacturing and construction sectors, while some compensating increase happenned in mining and electricity sectors in the recent period up to 2004-05 (see Table.4.4). The only positive sign in 2007-08 is that industrial employment recovered from a negative growth of -2.54 to a positive trend of 1.65 per cent. This is happened due to all three industrial sub-sectors, except electricity, gas and water. Faster output growth of manufacturing industry can increase the employment growth and this view also expressed by Goldar (2011) in his article. Mining sector surprisingly absorbs higher rate of employment growth during 2007-08. Despite the negative growth in electricity industry in 2007-08, there is an improvement of employment figure over 2004-05. For the period 1983-04, the aggregate organised employment in industry has declined at a rate of -0.35 per cent, largely because

manufacturing sector declined by -0.54 per cent per annum and in construction sector declined at a rate of -1.01 per cent. There is some growth in mining and electricity, gas and water sector. The decline is fastest during 1999-04, where possibly the disinvestment in public sector could have been the cause. There is some improvement in the organised sector employment last few years during 2004-07, particularly in the private organised sector.

Table.4.4. Percentage Share and Growth Rate of Organised Employment in Industrial Sector

Year	Mining	Manufacturing	Electricity	Construction	Industry
Percentage Share in Organised Sector					
1983	10.87	68.07	8.20	12.86	100.00
1993-94	11.47	65.95	10.06	12.52	100.00
1999-00	10.30	67.81	10.12	11.78	100.00
2004-05	12.74	65.48	10.59	11.19	100.00
2007-08	13.67	66.72	9.40	10.22	100.00
Growth Rate *(in percent)*					
1983-93	1.06	0.20	2.58	0.25	0.51
1993-99	-1.73	0.52	0.15	-0.97	0.05
1999-04	1.69	-3.21	-1.63	-3.53	-2.54
1993-04	-0.19	-1.20	-0.66	-2.14	-1.13
2004-07	4.07	2.29	-2.33	-1.37	1.65
1983-04	0.41	-0.54	0.87	-1.01	-0.35

Source: computed from Ministry of labour & Employment, Director General of Employment Training (DGET)

There are several studies which have confirmed the slow and jobless growth of organised sector in India in the post-reform period [Nagraj (1994)[77], Papola (1994)[78], Bhalotra (1998)[79] and Nagaraj (2000)[80]]. Both Nagaraj and Papola have pointed out that during the 1980s the composition of the organised manufacturing sector changed in favour of less labour intensive industries. There is a faster growth of capital intensive industries and slower growth of labour intensive industries [Nagaraj (2004)[81]] noted that a faster

[77] "Organised Manufacturing Employment." *Economic and Political Weekly*, Vol.35, No. 38, pp. 3445- 3448.
[78] "Structural Adjustment, Labour Market Flexibility and Employment", *Indian Journal of Labour Economics*, Vol. 37, no 1, January- March, pp 3-16.
[79] "The Puzzle of Jobless Growth in Indian Manufacturing", *Oxford Bulletin of Economics and Statistics*, Vol. 60, No. 1, pp 5-32.
[80] "Employment and Wages in Manufacturing Industries: Trends, Hypothesis and Evidence", *Economic and Political Weekly*, Vol. 29, No. 4, pp. 177-186.
[81] "Fall in Organised Manufacturing Employment- A Brief Note", *Economic and Political Weekly*, July 24, pp 3387- 3390.

employment generation in organised manufacturing though happened during 1993-97, but fell sharply in the second half of the 1990s. This did not happen due any discernible rise in relative cost of labour as such, the wage-rental ratio, which in fact, declined. There is a view that the poor growth of employment in India's organised manufacturing is primarily due to labour market rigidities [Panagariya (2005), Bhagwati (2004), World Bank Report (2010)[82]]

IV.3.2.1.1. Organised Employment Growth: Public vs. Private Sector

The deceleration in the organised industrial sector share which we have observed above is entirely due to the slow down in employment in the public sector, which is also reflected in the Table.4.5.

Table4.5. Percentage Share of Employment in Organised Public and Private Industrial Sector

	Mining		Manufacturing		Electricity		Construction		Industry	
Year	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**
1983	88.05	11.95	25.98	74.02	95.12	4.88	94.28	5.72	47.18	52.82
1987-88	91.13	8.87	29.81	70.19	95.39	4.61	96.04	3.96	51.62	48.38
1993-94	90.95	9.05	27.81	72.19	95.91	4.09	95.81	4.19	50.42	49.58
1999-00	91.94	8.06	23.14	76.86	95.85	4.15	95.04	4.96	46.05	53.95
2004-05	92.77	7.23	20.11	79.89	94.61	5.39	94.90	5.10	45.62	54.38
2007-08	90.99	9.01	17.36	82.64	93.98	6.02	92.51	7.49	42.30	57.70

Note: Employment in private sector relates to non-agriculture establishments in private sector employing 10 or more persons. Employment in public sector relate to all establishments irrespective of size.
Source: computed from Ministry of labour & Employment, Director General of Employment Training (DGET)

The table depicts that the work force in industrial activities in public sector has fallen from a peak of 51.62 per cent in 1987-88 to 45.62 per cent in 2004-05 and further declined to 42.30 per cent in 2007-08. On the contrary, private sector has shown an increasing share of 48.38 per cent to 54.38 per cent and further to 57.70 per cent during the same period. The post-reform period witnessed a deceleration share of public sector industrial work force (an decrease of 8.32 per cent point bewteen 1993-94 to 2007-08) where as private sector increases its share of the same per cent point that public sector has lost its share. Out of the industrial sector, except manufacturing industry, all have a higher share in public sectors. In the manufacturing industry, the public sector employment share

[82] *India's Employment Challenge: Creating Jobs, Helping Workers,* Oxford University Press, New Delhi.

has fallen from 27.81 per cent in 1993-94 to 20.11 in 2004-05 and further decline to 17.36 in 2007-08.

IV.3.2.2.Growth and Structure of Employment in the Unorganised Industrial Sector

Table.4.6 depicts the distribution of employment of unorganised workforce among the industry. Out of 85.65 million work forces in the industrial sector, 77.07 million workers are engaged in unorganised sector, in which manufacturing sector holds 65 per cent of work force followed by 33 per cent by construction sector during 2004-05. Despite the declining trend in the manufacturing industry, its still absorbs large chunk of work forces in the industry. But the construction sector has increased its share from 17.19 per cent in 1983 to 32.49 per cent in 2004-05 (an increase of 15.30 per cent point).

Table.4.6. Percentage Share and Growth Rate of Unorganised Industrial Work force

Year	Mining	Manufacturing	Electricity	Construction	Industry
Distribution of Workforce among Industrial Sector					
1983	2.52	80.03	0.26	17.19	100.00
1987-88	3.02	70.45	0.62	25.91	100.00
1993-94	3.36	72.23	0.89	23.52	100.00
1999-00	2.28	67.74	0.11	29.87	100.00
2004-05	1.89	65.23	0.39	32.49	100.00
Growth Rate (*in percent*)					
1983 to 1993-94	6.63	2.54	17.06	6.90	3.60
1993-94 to 1999-00	-3.64	1.73	-12.16	7.01	2.82
1999-00 to 2004-05	3.07	6.20	16.36	8.82	7.00
1993-94 to 2004-05	-0.64	3.74	-1.81	7.83	4.70
1983 to 2004-05	2.76	3.17	6.19	7.38	4.18

Source: computed through residual approach

The unorganised employment in the industry, unlike the organised employment, has shown somewhat faster growth during 1983-05, which grew at 4.74 per cent. We should remember that much of this employment is in self-employed and casual labour. Among the industry, the growth of informal employment is faster in manufacturing sector (3.74 per cent) and construction sector (7.8 per cent) during the same time. It also should be noted that in the recent period the infrastructural sector producing electricity, gas water has contributed a growth 16.36 per cent and even in the preceding period it grew at similar pace. Thus what one can starkly observe is the fact that the growth of output in industry

did produce a growth of employment, but most of it is informal employment, which is poor in terms of quality.

IV.3.3. Labour Productivity in Industrial Sector

We noted earlier that output growth can generate employment, but incremental employment growth depends on growth of productivity and capital-labour ratio. Theoretically, labour productivity can increase or decrease employment depending the nature of technology. Productivity gains can lead to job loss as it allows firms to produce same output at the reduced cost. Reduced cost can reduce prices thereby expand market size. Moreover, technology also creates new products and new processes, new job opportunities. This *creative destruction* of employment means that less productive firms will leave the market, and new more productive ones will take their place, perhaps in different industries, different sectors and even different locations. Eventually, it is then an empirical question whether employment gained or lost with the productivity rise.

Table.4.7.Per Worker Productivity and Growth Rates of Industrial Sector

Year	Mining	Manufacturing	Electricity	Construction	Industry
Per Workers Productivity (*in Rupees*)					
1983-84	89951.82	30599.23	143091.06	61101.81	40405.45
1987-88	90402.90	36389.23	159212.99	42479.52	42997.92
1993-94	114532.49	44270.57	213808.63	58003.53	54781.42
1999-00	184311.48	60277.23	424672.88	58108.71	69923.83
2004-05	206298.91	64630.44	452568.98	60868.38	73186.74
Growth Rate (*in per cent*)					
1983 to 1993-94	2.49	3.81	4.26	-0.59	3.14
1993-94 to 1999-00	8.00	5.34	11.55	0.01	4.23
1999-00 to 2004-05	2.36	1.50	1.34	1.03	0.99
1993-94 to 2004-05	5.47	3.61	6.96	0.47	2.78
1983 to 2004-05	4.08	3.70	5.72	-0.04	2.94

Source: computed

Looking at the trend (see table.4.7), we observe that labour productivity in industrial sector has been significantly improved during 1983-05. The labour productivity for the period 1983-05 increased at 2.94 per cent. Compared to pre-reform period, it has slowed down from 3.14 per cent to 2.78 per cent. There has been considerable increase in labour productivity in mining, electricity and construction sector, while there is almost stagnation in manufacturing sector.

The construction sector placed the top in the rate of growth of capital, followed by manufacturing sector, mining and infrastructure. Within manufacturing, unregistered sector saw a faster inducement of capital compared to registered sector. However, the capital productivity (measured as inverse of ACOR) declined both in absolute reflected in terms of negative growth rates (see Figure.4.5). One observes that except in Electricity, Gas, and Water, the capital-output ratios have been on rise in all the three sectors as well as at the aggregate level. It is interesting to observe that the capital productivity to decline, but labour productivity has gone up. Different studies have pointed out that total factor productivity has gone done in general in pre-reform as well as post-reform period, while in the later half of post-reform, it showed a signs of improvement.

Table.4.8.Growth Rate of Capital, Capital Productivity and Capital-Labour Ratio

Year	Mining	Manufacturing			Electricity	Construction	Industry
		Total	Registered	Unregistered			
Growth of Capital (*in percent*)							
1983-93	10.81	8.03	7.62	8.96	7.78	5.21	8.12
1993-99	3.12	9.16	9.63	8.12	4.17	10.60	7.35
1999-04	1.93	6.68	5.90	8.38	3.80	16.64	5.99
1993-04	2.58	8.03	7.92	8.24	4.00	13.30	6.73
2004-07	4.72	13.28	13.65	12.54	6.34	15.05	11.44
1983-04	6.42	8.03	7.78	8.58	5.78	9.37	7.39
Capital Productivity Growth (*in percent*)							
1983-93	-3.94	-1.91	0.16	-5.13	1.54	0.21	-1.80
1993-99	2.01	-2.07	-2.18	-1.71	2.70	-3.83	-0.68
1999-04	2.82	-0.21	1.26	-3.20	0.40	-6.40	0.71
1993-04	2.38	-1.23	-0.63	-2.39	1.65	-5.00	-0.05
2004-07	0.88	-3.19	-3.66	-2.21	-1.07	-2.06	-1.52
1983-04	-0.68	-1.55	-0.26	-3.71	1.59	-2.55	-0.89
Capital-Labour Growth (*in percent*)							
1983-93	6.65	5.78	7.41	6.26	2.52	-0.73	4.98
1993-99	6.12	7.50	9.07	6.29	9.17	4.01	4.86
1999-04	-0.53	1.62	9.42	2.05	0.87	7.83	0.20
1993-04	3.04	4.79	9.23	4.34	5.32	5.73	2.72
1983-04	4.74	5.26	8.36	5.25	3.98	2.60	3.79

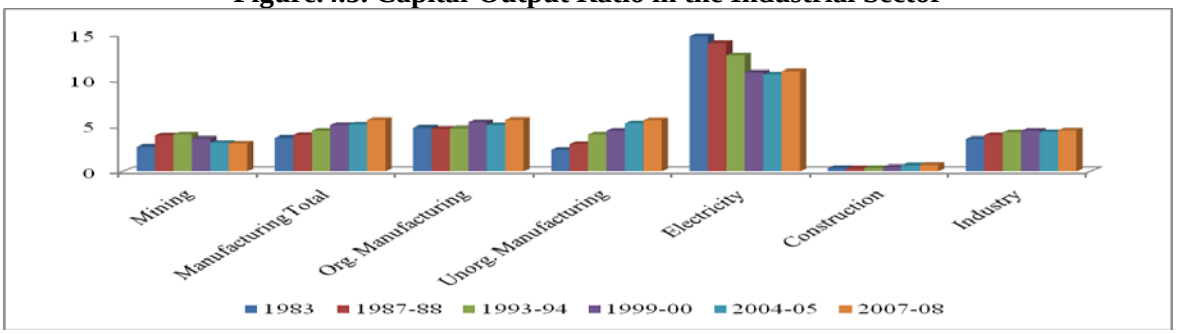
Note: Capital is Net Fixed Capital Stock at 1999-00 prices
Source: National Account Statistics, 2007 & 2009.

The capital-labour ratio has come down from pre-reform period to post-reform period at the aggregate level. However, in the two major sectors namely manufacturing and construction sectors, there is perceptible decline in the ratio. In fact, in registered

manufacturing sector it has marginally gone up, in construction, and electricity it steeply increased. The implication of aggregate capital-labour ratio should be positive on the employment.

Labour productivity has increased over period. This appears to have brought by growth of capital stock in the industry. We observe that capital productivity has declined. Thereby, capital-labour ratio has gone up for half the period and remained stagnant there on after reforms. Capital-output ratio has come down during 2004-05 in the industrial sector as a whole, but sectors like manufacturing particularly un-organised manufacturing and construction industry had a higher capital-labour ratio in 2004-05 compared to 1999-00. In 2007-08, capital-output ratio too increased in the entire industrial sector, except mining, giving an indication to more capital to substitute labour in the sector. Now with the increase in capital-output and capital-labour ratios, the rate of growth of output and employment will depend on the rate of capital accumulation i.e. investment in the future. We can therefore understand why employment growth is slow even industrial investment share have increased to 52 per cent in the total investment.

Figure.4.5. Capital-Output Ratio in the Industrial Sector



Source: National Account Statistics, 2007 & 2009.

Let us see the trends in investment scenario in the Industrial sector. From the table.4.9, it can be seen that investment in the industrial sector has increased its share over the period. Its share has increased from 48.65 per cent in 1983 to 52.58 per cent in 2004-05 and further increases to 54.19 per cent in 2007-08. During the post-reform it has a growth of 8.19 per cent in the share of industrial investment. Further, a share of manufacturing and more particularly registered manufacturing rose in the total industrial investment. After manufacturing, the share of investment is higher for electricity. Construction industry

accounts for only a small fraction of industrial investment from the period 1983 to 2007-08, but the share has increased more particularly in 2004-05.

Industrial sector suffered serious erosion in investment as its growth rate declined from 5.87 per cent in 1987-88 to 3.90 per cent in 1993-94, but registered a high rate of growth in 1999-00 and 2004-05. Mining and quarrying industry has also had a higher growth rate during post-reform period. In case of manufacturing industry, investment growth has declined during 2004-05 compared to 1999-00. This is due to a massive decline in growth occurred in the registered sector. In case of electricity, investment growth increased at a rate of 11.13 per cent in 1987-88, but declined to 1.10 in 1999-00, and it has grown up to 4.03 per cent in 2004-05. For the construction industry, investment growth has gone up at a rate of 35.97 per cent in 2004-05 compared to 11.35 per cent in 1999-00 inspite of low share total industrial investment.

Tabel.4.9. Distribution and Growth Rate of Investment in Industrial Sector

Year	Mining	Manufacturing			Electricity	Construction	Industry*
		Total	Registered	Unregistered			
Percentage Share of Sectoral Investment to Total Industrial Investment							
1983	13.89	57.25	44.56	12.69	25.44	3.42	48.65
1987-88	11.69	54.62	44.85	9.77	30.88	2.81	48.35
1993-94	8.43	61.16	42.88	18.28	28.08	2.32	46.00
1999-00	3.83	77.20	60.23	16.97	16.53	2.44	45.65
2004-05	5.55	76.39	52.00	24.39	11.55	6.51	52.58
2007-08	4.05	76.86	57.81	19.05	11.53	7.56	54.19
Growth Rate *(in percent)*							
1983-93	-0.41	5.38	4.28	8.57	5.72	0.72	4.69
1993-99	-3.18	14.81	16.88	9.08	1.10	11.35	10.44
1999-04	20.38	11.52	8.52	20.17	4.03	35.97	11.76
1993-04	6.90	13.31	13.00	13.99	2.42	21.93	11.04
2004-07	5.92	17.88	21.87	8.33	17.56	23.66	17.64
1983-04	3.35	9.46	8.76	11.38	3.98	11.32	7.97

Note: * percentage share of industrial investment to total investment in the economy
Source: National Account Statistics, 2007 & 2009.

Overall, investment growth has increased during post-reform period where we can see the positive impact of output growth in the sector during the same phase. Now the question is whether investment growth is associated with employment growth or not, that will reflect in the elasticity approaches which will explain in the next section.

IV.3.4.Elasticity of Employment in Industrial Sector

Employment elasticity in the industrial sector and sectoral income elasticity and sectoral own employment elasticity are presented in table.4.10. The employment elasticity in industrial sector has gone up in 2004-05 compared to 1999-00, largely due to a higher absorption in the unorganised sector. The increase in own elasticity in the sector is due to a successive increase in employment to investment elasticity with almost stagnant (very low per cent point) output to investment elasticity (see Table.4.11). In case of mining and quarrying sector, employment elasticity has gone up in 2004-05 in both organised and unorganised sector. While comparing between the reform periods, it found that aggregate industrial sector have shown a marginal increase in elasticity due to a negative growth of employment in organised sector (even all the sector in industry) during post-reform period which allow the overall employment absorption capacity to grow at slow pace.

Table.4.10.Employment Elasticity in Industrial Sector

Year	Mining	Manufacturing	Electricity	Construction	Industry
Sectoral Employment Elasticity					
1983-93	0.61	0.36	0.55	1.11	0.49
1993-99	-0.54	0.23	-0.66	1.00	0.36
1999-04	0.51	0.77	0.68	0.89	0.85
1993-04	-0.09	0.46	-0.22	0.94	0.58
Employment Elasticity in Organised Sector					
1983-93	0.16	0.03	0.28	0.04	0.07
1993-99	-0.35	0.07	0.02	-0.30	0.01
1999-04	0.34	-0.44	-0.43	-0.48	-0.39
1993-04	-0.04	-0.17	-0.11	-0.42	-0.18
Employment Elasticity in Unorganised Sector					
1983-93	1.30	0.75	1.43	1.44	0.90
1993-99	-0.47	0.28	1.33	0.78	0.40
1999-04	0.87	1.26	1.00	0.85	0.97
1993-04	-0.11	0.66	-1.07	0.82	0.66

Source: computed

The Sectoral performances illustrate that except unorganised manufacturing and construction sector all the sub-sector of industry in organised and unorganised had a declining, even a negative, elasticity of employment. Unorganised sector's employment elasticities are clearly more. The temporal trend is that it has declined during 1983-93, and

increased during 1993-04. Given the dominance of unorganised sector, the aggregate industry too had similar trend.

Table.4.11.Decomposition effect of Sectoral Own Employment Elasticity

Year	Mining	Manufacturing			Electricity	Construction	Industry
		Total	Registered	Unregistered			
Sectoral Employment to Investment							
1983-93	-9.65	0.40	0.05	0.30	0.90	8.40	0.65
1993-99	0.88	0.11	0.03	0.19	-4.14	0.56	0.23
1999-04	0.12	0.43	-0.38	0.31	0.71	0.23	0.49
1993-04	-0.07	0.23	-0.09	0.27	-0.52	0.33	0.35
1983-04	0.48	0.28	-0.06	0.28	0.44	0.58	0.44
Sectoral Output to Investment							
1983-93	-15.74	1.11	1.82	0.39	1.65	7.57	1.32
1993-99	-1.64	0.47	0.43	0.69	6.32	0.56	0.63
1999-04	0.24	0.56	0.85	0.24	1.05	0.26	0.57
1993-04	0.73	0.50	0.56	0.40	2.36	0.35	0.60
1983-04	1.70	0.67	0.86	0.40	1.87	0.58	0.81

Source: computed

As shown in table.4.11, the impact of output on employment is more than that of investment. But the effect of output and investment on employment has clearly come down in this post-reforms period in both registered as well as unregistered sectors. The decline is drastic in case of construction. Though mining has improved, overall the employment potential has declined substantially.

IV.4.An Econometric Model of Employment Determination in Indian Industry

We now proceed to estimate the determinants of employment in the industry. We shall survey some of the literatures that justify the set of determinants that we assumed in our model. Bhattacharya, Bhanumurthy, Kar and Sakthivel (2004)[83] suggested that, in a demand and supply equilibrium framework, factors like agricultural output, elasticity use in industry, public investment in industry; and aggregate expenditure determine industrial output. Bhattacharya and Mukherjee (2004)[84] also pointed out that industrial sector output

[83] Bhattacharya, B B , N R Bhanumurthy, Sabyasachi Kar, S Sakthivel (2004), "Forecasting State Domestic Product and Inflation: Macro-econometric Model for A.P, Karnataka and UP", Economic and Political Weekly, July 31, pp. 3541-3550.

[84] Bhattacharya, B.B. and Mukta Mukherjee (2004), "Forecasting of State Domestic Product through Macro econometric Model: Tamil Nadu", Discussion Paper Series No. 92/2004, Institute of Economic Growth, New Delhi.

is a function of lagged agricultural output, industrial production at the national level and electricity consumption in industries. Bhanumurthy and Sinha (2004)[85] established a relationship between growth of industrial output and the growth in agriculture, non-food credit, real public expenditure, real imports and real investment; the study did some useful projection for industrial output. Maiti and Rao (1995)[86] have shown that policy variables like government consumption and investment expenditures have played a crucial role in influencing the industrial production in India; besides growth of the agricultural output has a mixed role on demand and supply side for being wage goods. Sachdev and Ghosh (2009) forecasted the industrial output growth through average capital-output ratio. That average ratio is determined through supply side factors such as non-agricultural imports, oil price index and agricultural output and demand side factors such as government consumption. The impact of liberalisation on industrial sectors efficiency is also allowed through the dummy variable. Narayan and Ghose (2009) used vector error correction methodology to estimate the industrial output growth through industrial capital formation, price deflator in industrial sector, dummy for 1991 reforms, money supply, fuel price index, corporate savings, bank rate, budget deficit, non-agricultural export, agricultural output and price deflator in agricultural sector. Kar and Pradhan (2009) formulated industrial output to be function of the productivity in the sector and capacity utilisation. And the capacity utilisations in the industry are sensitive to change in demand. So the aggregate industrial output growth is determined by capital stock, agricultural output, autonomous expenditure, industrial price, lagged industrial output, partial liberalisation dummy and liberalisation 95 dummy (peak effect of liberalisation in 1995 following large deregulation of the economy in 1994). Bhide and Parida (2009) used OLS technique to estimate the industrial output by categorising specific industry wise analysis. For example in mining and manufacturing industry together, output is determined through capital stock in the sector, foreign direct investment in the sector, capital stock in electricity sector and ratio of compensation to employee by implicit price deflator for overall GDP. In case of construction industry, the determinants of output are depending on capital stock in the sector and electricity sector as

[85] Bhanumurthy, N R and Sapna Sinha (2004), "Industrial Recovery: Can It be Sustained", *Economic and Political Weekly*, January 31, pp-405-407

[86] Maiti, Pradip and R. Kavita Rao (1995), "Demand Side Factors and India's Industrial Growth", *Economic and Political Weekly*, Vol. 30, No. 33, Aug. 19, pp. 2070-2073.

well. For the electricity sector, output is driven by capital stock in the sector, foreign direct investment in the electricity sector and the ratio of compensation to employee by implicit price deflator for overall GDP. Murthy and Soumya (2007)[87] examined that influence of real net capital stock, aggregate demand for domestically produced goods (composition of real private absorption, real government consumption expenditure, real aggregate public investment and net export) on manufacturing output and found a statistically significant relationship.

There are some scholars who estimated determinants of employment particularly in organised manufacturing sector. Like Goldar (1987)[88] who examined the employment for the Indian manufacturing industry (for 20 major industries) as a function of wage rate, output, output price index, lagged employment, industrial dummy and year dummy for the period of 1960 to 1977. He found that despite an increase in real wage rate, employment has comedown; still employment has a positive relation with output. Alessandrini's (2009)[89] studied the jobless growth in Indian manufacturing sector for 15 large states for the period 1980-2004, where he examined the relationship between employment in the sector with some explanatory variable such as capital, wage, output and inter-sectoral terms of trade between agriculture and industry. And he found that, *inter alia*, whenever agricultural prices relative to manufacturing prices have fallen, the employment in organised manufacturing has improved. Further, labour demand is elastic to aggregate output growth rather than to increments in registered manufacturing production. The result also shows that in those states where the share of the unregistered manufacturing has risen over time, the jobless growth problem has worsened. Goldar (2011)[90] empirically examined the determinants of growth of employment in organised manufacturing industry during 2003-08 by taking the panel data analysis of pooled OLS method. He found that an

[87] Murty, K N and A Soumya (2007), "Effects of Public Investment on Growth and Poverty", *Economic and Political Weekly*, January 6, pp. 47-59.
[88] Goldar, Bishwanath (1987), "Employment Growth in Indian Industry", *Indian Journal of Industrial Relations*, Vol. 22, No. 3, Jan, pp. 271-285.
[89] Alessandrini, Michele (2009), "Jobless Growth in Indian Manufacturing: A Kaldorian Approach", Discussion Paper 99, *Centre for Financial & Management Studies*, SOAS , University of London, November.
[90] Goldar, Bishwanath (2011), "Organised Manufacturing Employment: Continuing the Debate", *Economic & Political Weekly* **,** April 2, Vol. XLVI, No, 14, pp. 79-80.

increase in industrial sector employment is positively influenced by real gross value added and the labour reforms index in the sector.

From the survey of above literature, we understand that there is evidence on the proposition that employment has a positive association with output growth. Further, industrial output is determined a variety of factors such as autonomous expenditure, agricultural output, capital formation, capacity utilisation, relative price, government expenditure and so on. We shall use some of these in our model which we specify in the below.

IV.4.1.Model Specification

Considering Keynesian theoretical explanation about the change in the employment which depends on expected output or change in output, the industrial employment will be influence by the volume of industrial output. That volume of output will be determined through the equilibrium mechanism of supply of and demand for output in the market. It means the employment in industrial sector will directly influenced by the market equilibrium mechanism of output. This framework will be presented in an analytical way which is mentioned in below equation. This study estimates the employment for organised, unorganised and aggregate for industrial sector.

$$I = I_{MIN} + I_{MNF} + I_{ELECTRCTY} + I_{CON} \quad \text{..... (4.1)}$$

Where Aggregate Industry is the composition of Mining and quarrying industry (I_{MIN}), Manufacturing industry (I_{MNF}), Electricity, gas and water supply industry ($I_{ELECTRCITY}$) and Construction industry (I_{CON}).

Let Y_I is industrial output and E_I is industrial employment.

$$Y_I = Y_{OI} + Y_{UI} \text{ , and } E_I = E_{OI} + E_{UI} \quad \text{..... (4.2)}$$

Where OI = organised industrial sector, UI= unorganised industrial sector.

Determinants of Organised Industrial Sector:

By putting Keynesian view on determining employment in the sector in an equation format,

$$Ln(E_{OI}) = F[Ln(Y_{OI})] \quad \text{..... (4.3)}$$

Where, Y_{OI} as a function of the discrepancy between the two sides of the market i.e. supply of and demand for output in the sector. So, Supply of output in industrial sector is given by

$$Y_{OI}^{S} = F(NAGIMP, WPIOIL, Y_{OI(t-1)}) \text{ …….. (4.4)}$$

The Demand for output in industrial sector is:

$$Y_{OI}^{D} = F(NIY_{OI}, GEXP, LP_{0I}, GCF_{OI}, K/L_{OI}, NAGEXP) \text{ …… (4.5)}$$

The equilibrium condition S_{OI}= D_{OI} will yield industrial output as:

$$Y_{OI} = Y_{OI}^{S} \cong Y_{OI}^{D} \text{ …….. (4.6)}$$

$$Y_{OI} = F(NAGIMP, WPI, NIY_{OI}, Y_{OI(t-1)}, GCEXP, LP_{OI}, GCF_{OI}, K/L_{OI}, NAGEXP) \text{ ….. (4.7)}$$

Putting Y_{OI} component in the equation 4.3, the final equation will be;

$$Ln(E_{OI}) = \alpha + \beta_1 Ln(NAGIMP) + \beta_2 Ln(WPI) + \beta_3 \ln(NIY_{OI}) + \beta_4 Ln(Y_{OI(t-1)}) + \beta_5 Ln(GCEXP)$$
$$+ \beta_6 Ln(LP_{OI}) + \beta_7 Ln(GCF) + \beta_8 Ln(K/L)_{OI} + \beta_9 Ln(NAGEXP) + \beta_{10} L_{91} + \mu \text{.....(4.8)}$$

Like wise, *for Unorganised Industrial Sector*,

$$Ln(E_{UI}) = F[Ln(Y_{UI})] \text{ …… (4.9)}$$

Supply of output is given by;

$$Y_{UI}^{S} = F(NAGIMP, WPI, Y_{UI(t-1)}) \text{ …… (4.10)}$$

Demand for output is a function of;

$$Y_{UI}^{D} = F(NIY_{UI}, LP_{UI}, GCF, K/L_{UI}, NAEXP) \text{ ……. (4.11)}$$

Equilibrium now requires S_{UI}=D_{UI}

$$Y_{UI} = Y_{UI}^{S} \cong Y_{UI}^{D} \text{ ……. (4.12)}$$

$$Y_{UI} = F(NAGIMP, WPI, NIY_{UI}, Y_{UI(t-1)}, LP_{UI}, GCF, K/L_{UI}, NAGEXP) \text{ ….. (4.13)}$$

Putting Y_{UI} variables in equation 4.9;

$$Ln(E_{UI}) = \alpha + \beta_1 Ln(NAGIMP) + \beta_2 Ln(WPI) + \beta_3 Ln(NIY)_{UI} + \beta_4 Ln(Y_{UI(t-1)}) + \beta_5 Ln(LP)_{UI}$$
$$+ \beta_6 Ln(GCF)_{UI} + \beta_7 Ln(K/L)_{UI} + \beta_8 Ln(NAGEXP) + \beta_9 L_{91} + \mu \text{.....(4.14)}$$

Where, NAGIMP= Non-Agricultural Import
WPI= Relative Price
NIY= Non-Industrial Output (addition of agriculture and services output)
$Y_{(t-1)}$= Last year Industrial Output
GCEXP= Government Consumption Expenditure,
NAGEXP= Non-Agricultural Export
LP= Labour productivity

GCF= Gross capital formation
K/L= Capital-labour ratio

The expected relationships in the above equation are employment to be positively related to imports, prices, income, and capital formation and negatively to labour productivity, and technology.

IV.4.2.Data Sources and Methodology:

The data for the estimation is drawn from three different sources. Firstly, the National Account Statistics published by the Central Statistical Organisation (CSO) for output, investment, net fixed capital and government consumption expenditure. Second, data on oil price index, export and import are collected from Handbook of Statistics on Indian Economy published by Reserve Bank of India. And finally, total employment figure are provided by National Sample Survey Organisation (NSSO) and Census Data and for the organised sector, employment data is collected from the Employment Market Information (EMI) series of the Director General of Employment and Training publishing in the Annual Employment Reviews. The residual method to get unorganised sector employment has been used by subtracting the total employment data to organised sector employment data. Then, aggregate Industrial sector were clubbed by adding mining and quarrying; manufacturing; electricity, gas and water supply; and construction sector figure. The data period for covering to estimate the employment determinants are from 1972-73 to 2007-08. The data which are collected from NAS are in real value at 1999-00 prices. The data on export and import at 1999-00 prices are derived through GDP deflator.

In order to examine the above model specification equation, simple Ordinary Least Square (OLS) technique is employed. We used Dicky-Fuller and Augmented Dicky- Fuller test for testing stationarity of the variables to be used in regression.

IV.4.3.Empirical Results

Using the standard unit root test with the help of Dicky Fuller/Augmented Dicky Fuller Test, it is found that all of the variables are of first order, thereby attained stationarity after taking first difference (see Annexure-4.1). The estimation results for organised and unorganised sector of determinants of employment growth in the industry are presented in table.4.12 and 4.13 respectively. The predicted and actual employment

values for organised and unorganised industrial employment (converted into million numbers) are plotted in figure.4.6 and 4.7 respectively.

IV.4.3.1. *Organised Industrial Sector Employment*

Let's first look at the estimation of organised employment determinants for the industry. The overall estimation is satisfactory with an R-square of 0.70. All the variables have expected signs and eight out of ten explanatory variables are statistically significant. Due to its insignificant value, the variables namely prices and government expenditure are dropped from the final estimation. And we found that industrial lagged output has the highest elasticity of 0.122, followed by non-industrial income i.e. 0.52. Gross Capital formation does have increased by 0.025 per cent to the employment, where elasticity of non-agricultural import is 0.021. It is surprising to see that non-agricultural export have shown a positive elasticity of 0.008 to employment but it is very minimal. On the negative side, one per cent increase in capital-labour ratio displaces 0.625 per cent decline in employment, where labour productivity and liberalisation policy dummy displaces labour by 0.117 and 0.030 per cent respectively. The overall result suggests that it is the income and investment in organised sector which has some deterministic influence on employment transformation in the economy.

Table.4.12. Regression Results on Employment Determination in Organised Industrial Sector

Dependent Variable: Δ *Ln (E)*	**Organised Sector**		
Independent Variable Name#	**Step-I**	**Step-II**	**Step-III**
Constant	0.049 (6.01)*	0.044 (5.62)*	0.042 (5.32)*
Δ *Ln* (NAGIMP)	0.023 (2.46)*	0.023 (2.45)*	0.021 (2.23)*
Δ *Ln* (WPIOIL)	-0.001 (-1.67)	---	---
Δ *Ln* $(NIY)_{org}$	0.058 (2.01)*	0.061 (2.21)*	0.052 (1.96)*
Δ *Ln* $(Y_{t-1})_{org}$	0.104 (3.14)*	0.121 (3.87)*	0.122 (3.91)*
Δ *Ln* (GCEXP)	-0.052 (-1.76)	-0.036 (-1.32)	---
Δ *Ln* $(LP)_{org}$	-0.106 (-2.87)*	-0.127 (-3.62)*	-0.117 (-3.12)*
Δ *Ln* $(GCF)_{Pub}$	0.018 (1.96)*	0.025 (2.11)*	0.025 (2.10)*
Δ *Ln* $(K/L)_{org}$	-0.655 (-5.99)*	-0.635 (-5.19)*	-0.625 (-4.89)*
Δ *Ln* (NAGEXP)	0.008 (1.99)*	0.012 (2.14)*	0.008 (1.96)*
L_{91}	-0.027 (-5.01)*	-0.031 (-5.67)*	-0.030 (-5.34)*
R^2	0.70	0.69	0.68
Durbin-Watson (DW) Test	1.74	1.67	1.65
Prob (F-Statistics)	0.000	0.000	0.000
Number of Observation	35	35	35

Note: * at 5% significant level, Δ is at first difference

IV.4.3.2. *Unorganised Industrial Sector Employment*

The results of estimation of determinants of employment of unorganised labour in industry are given in table 4.13. The estimated equation has a considerable explanatory power, and all the variables have expected signs. Seven out of nine variables have significant coefficients and two did not. The equation performed better when price and non-agricultural import variables are dropped. The employment in unorganised industry is positively influenced by non-industry income, lagged output, and gross capital formation. It is negatively influenced by capital-labour ratio, labour productivity, and non-agricultural export. From the result, we found that first, last year output in industrial sector has the highest and positive elasticity of 0.311. Second, non-industry income has an elasticity of 0.070 and capital formation has an elasticity of 0.025. On the other hand, Capital-labour ratio exhibited largest and negative elasticity of 0.87. Employment has a negative elasticity with respect to labour productivity and non-agricultural export at 0.085 and 0.014 individually. Liberalisation dummy is found to be positive and significant, but the value is very minimal. It is suggested that for employment to grow, the capital formation had to rise faster than rise in productivity and capital-labour ratio.

Table.4.13. Regression Results on Employment Determination in Unorganised Industrial Sector

Dependent Variable: Δ *Ln (E)*	**Unorganised Sector**		
Independent Variable Name#	**Step-I**	**Step-II**	**Step-III**
Constant	0.059 (7.16)*	0.059 (7.17)*	0.061 (7.41)*
Δ *Ln* (NAGIMP)	0.006 (1.66)	0.006 (1.65)	---
Δ *Ln* (WPIOIL)	0.000 (1.62)	---	---
Δ *Ln* $(NIY)_{unorg}$	0.075 (4.03)*	0.073 (3.77)*	0.070 (3.48)*
Δ *Ln* $(Y_{unorg})_{t-1}$	0.302 (5.03)*	0.308 (5.51)*	0.311 (5.73)*
Δ *Ln* $(LP)_{unorg}$	-0.061 (-1.97)*	-0.072 (-2.07)*	-0.085 (-2.29)*
Δ *Ln* $(GCF)_{unorg}$	0.025 (2.12)*	0.025 (2.12)*	0.025 (2.11)*
Δ *Ln* $(K/L)_{unorg}$	-0.847 (-8.76)*	-0.867 (-9.21)*	-0.870 (-9.45)*
Δ *Ln* (NAGEXP)	-0.009 (-2.03)*	-0.011 (2.11)*	-0.014 (-2.19)*
L_{91}	-0.001 (-1.86)*	0.001 (1.96)*	0.001 (1.96)*
R^2	0.79	0.79	0.79
Durbin-Watson (DW) Test	1.52	1.61	1.62
Prob (F-Statistics)	0.000	0.000	0.000
Number of Observation	35	35	35

Note: * at 5% significant level, Δ is at first difference

Figure.4.6. Actual vs Estimated Employment in Organised Industrial Sector

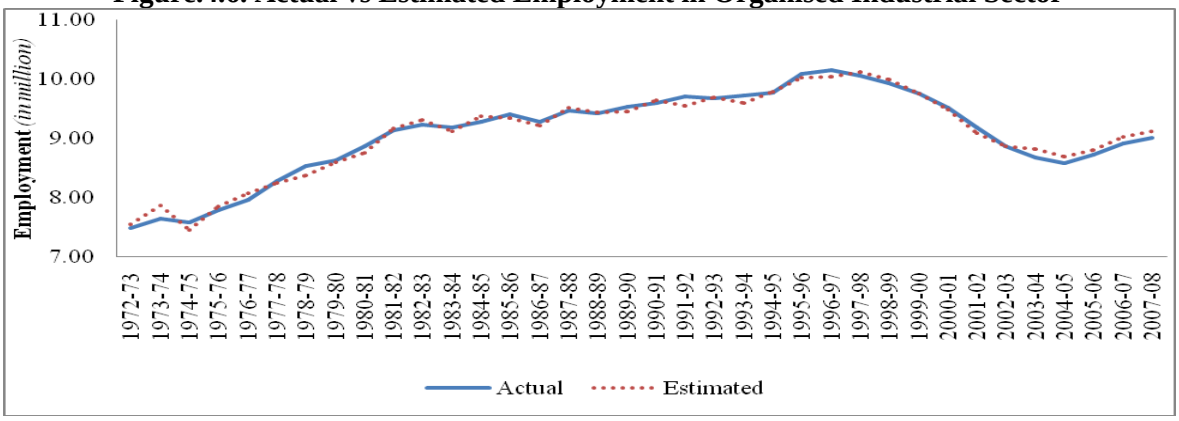
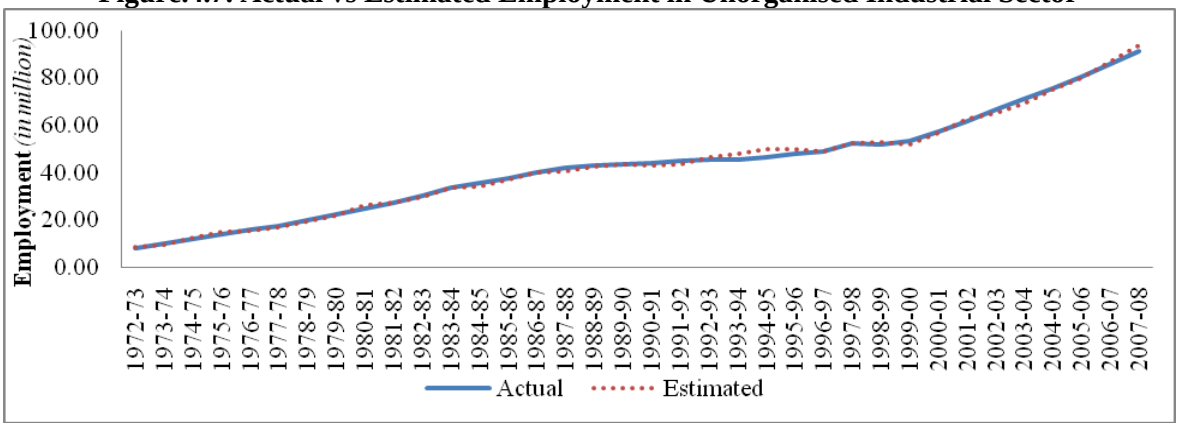


Figure.4.7. Actual vs Estimated Employment in Unorganised Industrial Sector



IV.5. Conclusion

In terms of growth, industrial sector only contributes 26 per cent of total GDP in the economy, but provides employment to 19 per cent of the workforce. Though there is some growth of employment in the recent period, the rate of growth of employment in the sector is fluctuating in the medium run and not increasing in the long run. This has reflected in terms of falling employment elasticities. Not only employment elasticities with respect to output are falling, the employment elasticities of investment are turning negative. Thereby, faster growth of output alone can raise employment in the sector. The structure of the employment in the sector is such that 90 per cent of employment is informal. Among these, 80 per cent constitute self-employed and casual labour. It is disheartening to note that even in the so called organised industry, informal labour constitute 60 per cent. Given the preponderance of self-employed and casual labour, the incidence of disguised unemployment could be prevailing in considerable measure, but no estimates are available. Further, we observe that the labour productivity and capital labour

ratio in aggregate as well at disaggregate level has been increasing. Capital productivity has been falling. This would necessitate greater factor substitution to sustain growth which eventually can erode employment; the growth of employment then is sustained by an increase in capital accumulation over period.

What we observe at disaggregate level in industry is that between the pre and post-reform period, there has been an increase in employment in the latter. However, all the growth occurred in unregistered sector while in registered sector there has been a decline in employment. Our econometric estimations have lent support to the above surmises that labour productivity and capital labour ratios have negatively influenced the employment creation and employment is driven by demand factors such as income and capital formation. Our estimations have been robust and the estimated and actual values have remarkable overlapping.

Chapter-V
Growth and Determinants of Employment in Services Sector

V.I. Introduction

From the historical experience of developed nations, it is presumed that the industrialisation leads the structural transformation of the traditional societies and eventually service sector emerges as the dominant sector. This structural change is accompanied not only by a rise in per capita income but also in an improvement in many other development indicators. It involves an upward mobility of individual occupations and incomes and a shift in rural-urban composition of the population (Kuznets, 1966)[91]. The late entrants like India are, however, seem to deviate from this path. The classical structural transformation is certainly happening the way Clark and Kuznets have postulated, but with certain difference. The transformation is led by the service sector, instead of industry. The service sector in India today contributes 56 per cent of national income, but supports around 25 per cent of work force in the country. If service sector becomes the leads the growth process, the pertinent questions are what is its potential to generate employment, what is its nature and structure? Can we assume it as the emerging sector to accommodate the surplus labour? This chapter proceeds to inquire into these concerns.

The turn around in service sector as an engine of growth in the India's growth process is noted to have occurring since as early as late seventies [Balakrishnan (2005)][92]. The gradual absorption of labour in the sector is acknowledged in the literature like Mitra (1988)[93], Nagraj (1991)[94], Bhattacharya and Mitra (1991[95], 1997)[96], Kuldeep and Dhindsa

[91] Kuznets, S. (1966), *Modern Economic Growth, Rate, Structure and Spread,* New Haven: Yale University Press.
[92] Balakrishnan, Pulapre (2005), "Macroeconomic Policy and Economic Growth in the 1990s", *Economic and Political Weekly*, Vol. 40, No. 36, September 3-9, pp. 3969-3977.
[93] Mitra, A (1988), "Disproportionality and the Service Sector: A Note", *Social Scientist*.
[94] Nagaraj, R (1991), "Excess Growth of Tertiary Sector", *Economic and Political Weekly*, February, 2.
[95] Bhattacharya, B.B and Arup Mitra (1990), "Excess Growth of the Tertiary Sector", *Economic and Political Weekly*, June 1-8.
[96] Bhattacharya, B.B and Arup Mitra (1997), "Changing Composition of Employment in Tertiary Sector: A Cross-Country Analysis", *Economic and Political Weekly*, March15, pp. 529-534.

(2000)[97], Balakrishnan, Pulapre (2005), Madheswaran and Dharmadhikary (2000)[98], D'Souza (2000)[99], Gandhi and Gansan (2002)[100], Joshi (2004)[101], Mazumdar and Sandip Sarkar (2007)[102], Papola (2008) etc. have pointed out that there is strong evidence of disproportionate growth in terms of output and employment in the services sector.

Service sector world over has emerged as the largest and fastest-growing sector in the global economy in the last two decades, providing more than 60 per cent of global output and, in many countries, an even contributing to large share of employment. The growth in services has also been accompanied by the rising share of services in world transactions, in fact that trade in services has grown as fast as trade in goods in the period 1990- 2003 (Banga, 2005)[103]. Along with this, worldwide there has been a marked shift of FDI away from manufacturing sector towards services sector. In line with the above global trend of services-led growth, services sector in India has also grown rapidly in the last one and a half decades. Its growth has, in fact, been higher than the growth in other commodity-producing sectors such as agriculture and manufacturing sectors. Before we examine the pattern of growth in India's service sector, it is important to first conceptualise services and discuss in what respect they differ from goods sector.

V.2. Conceptualisation of Services

Many studies adopt a broader and simple definition of services which distinguished them from goods. The first attempt to define services as they are known conventionally was made by Fisher (1935[104], 1939[105]) and Clark (1940)[106]. They defined the primary

[97] Kaur, Kuldeep and Paramjeet Dhindsa (2002), "Growth of Tertiary Sector Employment in India" in Mathur, A and Raikhy, P S., (ed.) *Economic Liberalisation and its Implications for Employment*, Deep and Deep, New Delhi.
[98] Madheswaran, S and A Dharmadhikary (2000), "Income and Employment Growth in Service Sector in India", *The Indian journal of Labour Economics*, Vol. 43, No. 4, PP. 835 – 864.
[99] D'Souza, Errol (2000), "What Explains Service Sector Growth?", *Indian Journal of Labour Economics*, Vol. 43, No. 4.
[100] Jagadish Gandhi, P. and P. Ganesan (2002), "Service Sector and Employment Generation: Is It Real?" in Mathur, A and Raikhy, P S., (ed.) *Economic Liberalization and its Implications for Employment*, Deep and Deep, New Delhi.
[101] Joshi, Seema (2004), "Tertiary Sector-Driven Growth in India: Impact on Employment and Poverty", *Economic and Political Weekly*, September, 11, pp. 4175-4178.
[102] Mazumdar, Dipak and Sandip Sarkar (2006), "Growth of Employment and Earning in Tertiary Sector, 1983-2000", *Economic and Political Weekly*, March.17, pp. 973-981.
[103] Banga, Rashmi (2005), "Critical Issues in India's Service-Led Growth", *ICRIER Working Paper No. 171*.
[104] Fisher, A.G.P (1935), "Economic Implications of National Progress", *International Labour Review*.

sector as comprising mainly agriculture and fishery, secondary sector comprising of mining and manufacturing and the remaining has been designated as the tertiary/ services sector comprising activities of trading, transportation, communication, finance and real estates. Services are essentially economic activities that are either used in the production of material goods, add value to already produced goods or provide utility to consumers. There is so far no universally accepted definition of services due to the heterogeneous nature of services. Griliches (1992)[107] defined services as anything that is the result of labour does not produce a tangible commodity. The most of the classifications of services are based on non-transferability, non-storability, heterogeneity, perishability, flexibility in production and imperfect competition. Bhagwati (1984)[108] argued that services can be divided into two classes: those that require physical proximity of the user and provider; and those that don't. Services that require physical proximity can be further divided into three groups; first, mobile provider and immobile user, e.g., transporting labor to a construction site, second, mobile user and immobile provider, e.g., a patient going to a hospital, Third, mobile user and mobile provider, e.g., students and professors meeting in a university for lectures. Further, Bhagwati (1985)[109] argued that services for which physical proximity is inessential, i.e., the long distance services, are on a rise due to technical progress, e.g., banking and insurance. However, unlike in the case of goods where factor mobility and trade are distinct phenomena, in the case of services the distinction vanishes as factor mobility and trade in services are two integral aspects of service transaction. For the purpose of classifying international transaction in services, the most commonly used classification is provided by Sampson and Snape (1985)[110] and modified by Sapir and

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[105] Fisher, A.G.P (1939), "Production, Primary, Secondary and Tertiary", *Economic Record*, Vol. 15, pp.24-38.

[106] Clark, C (1940), *The Conditions of Economic Progress*, Macmillan, London.

[107] Griliches, Z, ed. (1992), "Output Measurement in the Service Sectors", *Studies in Income and Wealth* # 56 (Chicago: University of Chicago Press and National Bureau of Economic Research).

[108] Bhagwati, Jagdish, N (1984), "Splintering and Disembodiment of Services and Developing Nations", *World-Economy*, 7(2), June, 133-43.

[109] Bhagwati, Jagdish, N (1985), 'Why are Services Cheaper in the Poor Countries?', *Wealth and Poverty*, edited by Gene Grossman *Essays in Development Economics Series*, vol. 1 Cambridge, MIT Press, England, Blackwell 82-91.

[110] Sampson, Gary. P; Snape, Richard H (1985), 'Identifying the Issues in Trade in Services', *World-Economy. June;* 8(2):171-82.

Winter (1994)[111]. This classification, which is based on the constraints on the physical location of producer and consumer in realising the transaction, has been adopted by World Trade Organisation (WTO) under the General agreement on Trade in Services (GATS). The Agreement applies to four "modes of supply" Mode 1: cross-border supply of service (i.e., not requiring the physical movement of supplier or customer); Mode 2: Provision implying movement of the consumer to the location of the supplier; Mode 3: services sold in the territory of a Member by (legal) entities that have established a presence there but originate in the territory of another Member; and Mode 4: provision of services requiring the temporary movement of natural persons. Alternatively, many studies adopt a broader and simpler definition of services that help in distinguishing services from goods. One such broad definition of services is: 'services form a diverse group of economic activities not directly associated with the manufacture of goods, mining or agriculture'. Thus, studies have put forward alternative definitions and classification schemes depending on the purpose of their study. However, the basic characteristics of services on which most of the classifications are based are: *non-transferability and non-storability*. Other associated characteristics of services that need to be noted are *services are heterogeneous and flexible in production* and *imperfect competition* is highly relevant for services.

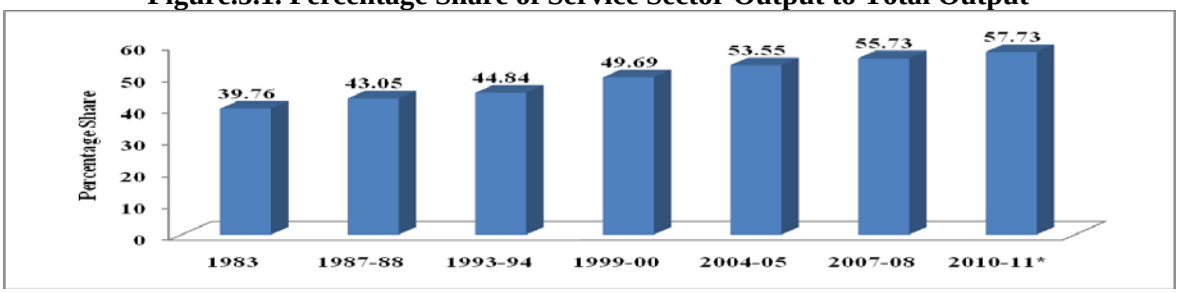
V.2.1.Growth of Service Sector Output in India

In India, in the National Income Accounting of CSO in India, service sector presents under four sub-sectors such as: First, Trade, Hotel and Restaurant (THR); second, Transport, Storage and Communication (TSC) which includes railways, transport by other means, storage and communication; third, Financing, Insurance, Real Estate and Business Services (FIRB) that composes Banking and Insurance, Real Estate, ownership of dwelling and business services; and fourth, Community, Social and Personal Services (CSP) that holds public administration, defense, personal services, community services and other services. The relative shares of sub-sectors are FIRB constitute 29.97 per cent, THR holds 28.61 per cent, CSP constitute 23.68 per cent and TSC holds 17.74 per cent in 2009-10.

[111] Sapir, A. & C. Winter (1994): 'Services Trade', in D. Greenaway and L. Winters (eds.), *'Surveys in International Trade, Blackwell Economic Theory and the Role of Government in East Asian Industrialization'*, Princeton University Press, Princeton.

The analysis of the sectoral composition of GDP and employment for the period 1950-2010 brings out the fact that there has taken place 'tertiarisation' of the structure of production and employment in India. During the process of growth over the years 1950-51 to 2009-10, the Indian economy has experienced a change in production structure with a shift away from agriculture towards industry and towards tertiary sector. The share of agricultural sector in real GDP at 1999-00 prices declined from 55.53 per cent in the 1950's to 17.80 per cent in 2007-08.The share of industry from 16 per cent to 26.4 per cent and services increased from 28.09 per cent to 55.7 per cent respectively during the same period. During the 1950's it was the primary sector which was the dominant sector of the economy and accounted for the largest share in GDP. But the whole scenario changed subsequently, and especially in the 1980's. The share of Services in India increased rapidly over the period (see Figure.5.1). Further we find that increase in the share of services in GDP has not been the same across the board for different services in India (see Table.5.1). The shares of different sectors in services GDP have quite changed over period. The most important services in terms of their share in GDP in 1983 were community, social and personal services (13.2 per cent to total GDP and 33.34 per cent to services GDP) followed by trade (11.8 per cent to total GDP and 29.68 per cent to services GDP), finance and insurance (8.54 per cent to total GDP and 21.5 per cent to services GDP), and transport services (6.16 per cent to total GDP and 15.49 per cent to services GDP), but in 2007-08 we find that the sectoral contributions have changed. Share of trade has increased to 15.9 per cent, financial services to 14.6 per cent and transport services to 12.07 per cent. But share of community and social and personal services has successively declined from 1999-00 and contributed 13.14 per cent in 2007-08.

Figure.5.1. Percentage Share of Service Sector Output to Total Output



Note: 2010-11 share is calculated by the new base price 2004-05
Source: Computed from Central Statistical Office Data

Looking at the performance of the growth, this sector grew at 7.06 per cent in 1993-94 which is increased to 10.89 per cent in 2007-08. The increase in high growth is also reflected that post-reform period, it has shown a little higher growth i.e. 8.0 per cent in 1993-94 to 2004-05 from 7.06 per cent in 1983 to 1993-94. The remarkable sectoral performance of the services sector as a whole has been reflected in the select lead indicators of the services sector.

The two fast-growing broad services categories are (a) financing, insurance, real estate and business services (FIRB); and (b) transport, storage, and communication (TSC). The latter overtook the former in 2007-08 with a high growth of 15.57 per cent. A third category, growth of trade, hotels, and restaurants (THR), slowed in 2004-05 and has recovered in 2007-08. The fourth category, community, social, and personal services (CSP), saw an increase of 4.99 per cent in 1999-00 to 2004-05 to 6.53 per cent in 2004-05 to 2007-08. This is also suggests that post-reform period has witnessed a higher growth in all sub-sectors except financial sector. Among the sub-sectors in services, transport sector recorded a higher growth followed by trade sector instead of finance sector. While looking at the segments of output in the services, it is found that unorganised services grew at a higher rate during post-reform period than that of pre-reform period (see Figure.5.2).

Among the sub-sectors in the services, it is found that both organised and unorganised segments of trade, hotel and restaurant industry growth are having higher output growth in post-reform period. For transport, storage and community sector, organised segments of output declined during post-reform period where unorganised segments of output had shown an increasing trend. In case of finance, insurance, real estate and business services, both segments of output growth has declined during post-reform phase. For unorganised segments of community, social and personal services; output growth has only performed an increasing trend.

According to the new base year (2004-05), the service sector grew at 6.63 per cent in 2009-10 which is expected to increase at 9.4 per cent in 2010-11 (Revised Estimate). Among the sub-sectors, trade and transport sector will grow at 10.3 per cent due to a high growth in passengers handled in civil aviation, air cargo handled, telephone connections and sale of commercial vehicles. The sector, financing, insurance, real estate and business

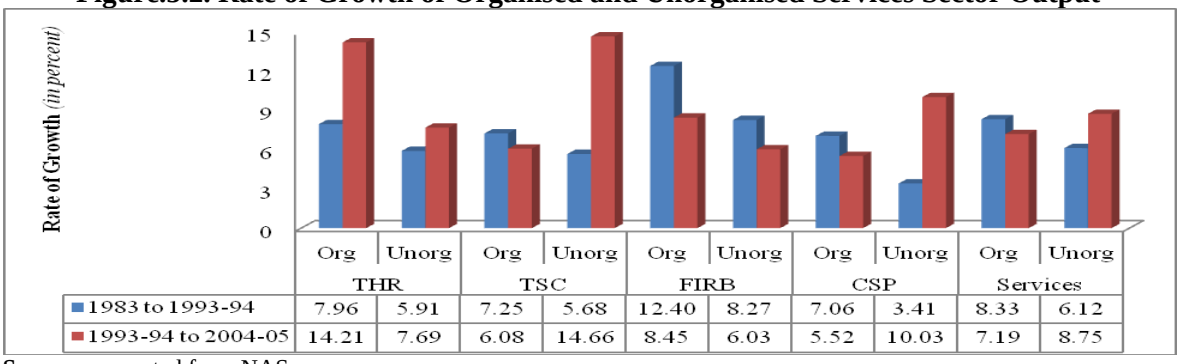
services, has grown at 9.9 per cent during 2010-11. The growth rate of community, social and personal services during 2010-11 is estimated to be 7.0 per cent due to rise in total expenditure of Central Government.

Table.5.1. Percentage Share and Growth Rate of Service Sector Output in India

Year	THR	TSC	FIRB	CSP	Services
Percentage Share					
1983	11.80 (29.68)	6.16 (15.49)	8.54 (21.49)	13.26 (33.34)	39.76
1987-88	12.26 (28.48)	6.64 (15.42)	9.94 (23.09)	14.21 (33.01)	43.05
1993-94	12.18 (27.17)	6.62 (14.77)	12.17 (27.15)	13.86 (30.92)	44.84
1999-00	14.23 (28.63)	7.47 (15.02)	13.07 (26.31)	14.93 (30.04)	49.69
2004-05	15.54 (29.01)	10.24 (19.13)	13.52 (25.26)	14.24 (26.60)	53.55
2007-08	15.90 (28.53)	12.07 (21.65)	14.62 (26.23)	13.14 (23.58)	55.73
2009-10*	16.39 (28.61)	10.16 (17.74)	17.17 (29.97)	13.57 (23.68)	57.30
Growth Rate (*in percent*)					
1983 to 1993-94	6.12	6.54	9.59	6.25	7.06
1993-94 to 1999-00	9.29	8.66	7.78	7.83	8.35
1999-00 to 2004-05	7.87	12.90	6.71	4.99	7.58
1993-94 to 2004-05	8.64	10.57	7.29	6.53	8.00
2004-05 to 2007-08	10.27	15.57	12.30	6.52	10.89
1983 to 2004-05	7.43	8.63	8.38	6.40	7.55

Note: THR: Trade, Hotel and Restaurant; TSC: Transport, Storage and Communication; FIRB: Financing, Insurance, Real estate and Business Services; CSP: Community, Social and Personal Services.
* is computed by the new base price 2004-05. Bracketed values are percentage share of output to total services output.
Source: Computed from Central Statistical Office (CSO) Data.

Figure.5.2. Rate of Growth of Organised and Unorganised Services Sector Output



	THR		TSC		FIRB		CSP		Services	
	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg
1983 to 1993-94	7.96	5.91	7.25	5.68	12.40	8.27	7.06	3.41	8.33	6.12
1993-94 to 2004-05	14.21	7.69	6.08	14.66	8.45	6.03	5.52	10.03	7.19	8.75

Source: computed from NAS

V.3. Employment Profile in Service Sector in India

From table.5.2, in pre-liberalisation phase, services contributed around 17.6 per cent in 1983-84, it has increased to 24.8 per cent in 2004-05 by 7.2 percentage points in employment, while its income share has gone up by 22 percentage points. In 2004-05, share of trade, hotels and restaurant was 43.7 per cent, followed by the community, social

and personal services (33.1) and then by transport, storage and communication services (16.4 per cent) and finance, insurance, real estate and business services (6.9 per cent).

The rate of growth in the service sector shows that employment trend has declined to 3.33 per cent in post-reform period from 4.06 per cent in pre-reform phase. Though the growth rate has accelerated (i.e. 3.89 per cent) during 1999-04, but the compensation of fall in employment growth (i.e. 2.86 per cent) in 1993-99 has not made any more employment addition during post-reform. The decline in services employment in post-reform phase is accounted by a massive fall in growth of community, social and personal services.

Table.5.2.Percentage Share and Rate of Growth in Service Sector Employment

Sector	THS	TSC	FIRB	CSP	Services*
Percentage Share					
1983	6.31 (35.87)	2.48 (14.09)	0.70 (3.98)	8.10 (46.06)	17.59
1987-88	7.11 (37.30)	2.66 (13.94)	0.80 (4.20)	8.49 (44.56)	19.06
1993-94	7.61 (35.98)	2.88 (13.59)	0.98 (4.62)	9.69 (45.81)	21.16
1999-00	10.28 (43.67)	3.68 (15.64)	1.24 (5.29)	8.33 (35.41)	23.54
2004-05	10.83 (43.66)	4.06 (16.36)	1.70 (6.85)	8.22 (33.12)	24.80
Growth Rate *(in percent)*					
1983 to 1993-94	4.09	3.68	5.61	4.00	4.06
1993-94 to 1999-00	6.23	5.29	5.20	-1.47	2.86
1999-00 to 2004-05	3.89	4.84	9.41	2.52	3.89
1993-94 to 2004-05	5.16	5.08	7.10	0.32	3.33
1983 to 2004-05	4.65	4.41	6.39	2.06	3.67

Note: * the percentage share of services employment to total employment in the economy. Bracketed figures are percentage share of sub-sector of services employment to total services employment.
Source: computed from NSSO report no. 515 on Employment and Unemployment Situation in India, 2004-05

During the phase of post-reform as well as the year 2004-05, it is important to point out that, within the service sector employment growth is highest in finance, insurance, and business services, followed by trade, hotels and restaurants and transport etc. The community social and personal services occupy the last rank in growth rates of employment. The only difference between the post-reform and the year 2004-05 is that community, social and personal services shows an initial decline in growth from -1.47 per cent recovered to a positive 2.52 per cent growth in latter half of the post-reform period. If we look at the finance, insurance, real estate and business services, it can be said

that despite the low share of employment among other sub-sector, this sector registered twice higher growth than the average service sector during 2004-05.

V.3.1. Status of Employment in Service Sector

The composition of employment status in service sector is presented in table 5.3. It can be observed that like in other sectors, service sector too has a high share self-employed labour accounting for 52.04 per cent in 2004-05. After self-employed, it is the regular-wage/salaried category that holds 40.82 per cent of services workforce. Such a large share is also due to existence of public sector which employs huge number. At he same time all regular/salaried workers are in organised/formal workers. Self-employed category constituted around 10 per cent of the labour and it is located more in the rural areas.

Table.5.3. Percentage Share of Services Employment by Status

Year		1993-94	1999-00	2004-05
Rural	**SE**	56.86 (11.28)	51.92 (11.59)	56.67 (12.88)
	RW	33.33 (58.62)	32.69 (60.71)	33.33 (64.52)
	CL	9.80 (3.21)	13.46 (4.52)	10.00 (4.20)
	Total	100.00 (11.49)	100.00 (12.47)	100.00 (13.67)
Urban	**SE**	44.56 (58.50)	44.72 (62.68)	47.37 (59.64)
	RW	46.63 (65.69)	46.73 (64.58)	46.89 (68.06)
	CL	8.54 (26.98)	8.54 (28.81)	5.74 (21.82)
	Total	100.00 (55.62)	100.00 (59.05)	100.00 (57.26)
Total	**SE**	50.00 (18.70)	48.31 (20.48)	52.04 (21.34)
	RW	40.70 (63.64)	41.57 (66.07)	40.82 (66.67)
	CL	9.30 (6.02)	10.11 (6.82)	7.14 (5.79)
	Total	100.00 (20.48)	100.00 (22.42)	100.00 (23.33)

Note: Bracketed figures are percentage share of services employment by status to total employment by status.
Source: computed from NSSO reports no. 409, 458 & 515 on Employment and Unemployment in India.

V.3.2. Nature of the Employment in Service Sector

The services sector comprises a wide spectrum of low productivity activities (mainly in the informal sector like repair and maintenance services, transport, shoe-shine, cobblers, hawkers, personal services like hair dresser, washer men, etc) and high productivity activities (mainly professional) or new services like software, information technology (IT), IT enabled services (like call centers, design, business process outsourcing), cellular phone services (telecommunication), ATMs and credit cards, etc, (financial services) as well. As per the latest NSS quinquennial round in 2004-05, only 14.4 per cent of the total labour force in the services is employed in the organised sector and the remaining 85.6 per cent are employed in the unorganised sector.

We observe that even service sector, like organised manufacturing has considerable informal labour (see Figure 5.3). The informal labour in trade, hotel and restaurant and Transport, storage and communication sectors are the two sectors, whose combined share is 95 per cent to total services employment, which remained stable between 1983 and 1993-94 at 98 per cent. In the post-reform period, this share marginally increased to 98.9 per cent in 2004-05. In transport, storage and commutation sector too, the share of unorganised sector employment has increased from almost 61.7 per cent in 1983 to 70.8 per cent in 1993-94. And in post-liberalisation period, this share has further risen to 84.7 per cent (an increase of 23 per cent point between 1983 and 2004-05). In finance, insurance, real estate and business sector, the share of unorganised sector employment has gone up from 49.3 per cent in 1983 to 75.2 per cent in 2004-05. This category of services has experienced the highest informalisation of the labour employed particularly after liberalisation. Community, social and personal services also absorbed work force in unorganised sector with an increase of 7.5 per cent point between 1983 and 2004-05. But the share is quite low in post-reform compared to pre-reform, due to a significant in presence of public sector. Even this is getting reversed in the post-reform period, which is manifesting in the rise of informal workers in this sector too. This is confirmed by the National Commission for Enterprises in the Unorganised Sector (NCEUS).

Figure.5.3. Percentage Share of Organised and Unorganised Sector Employment in Services Sector

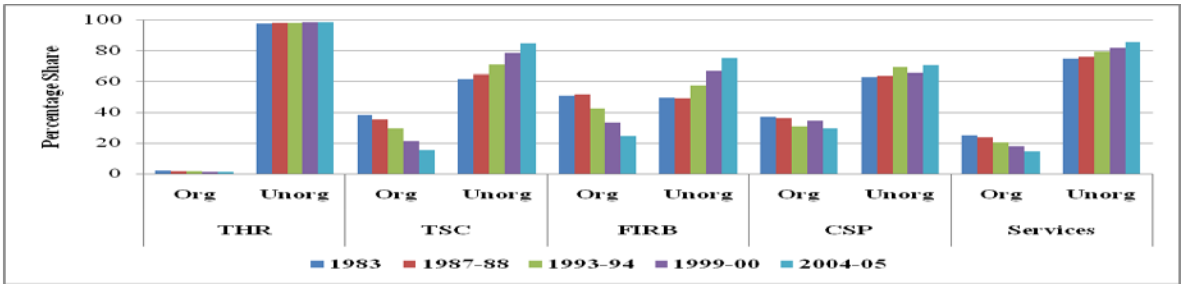
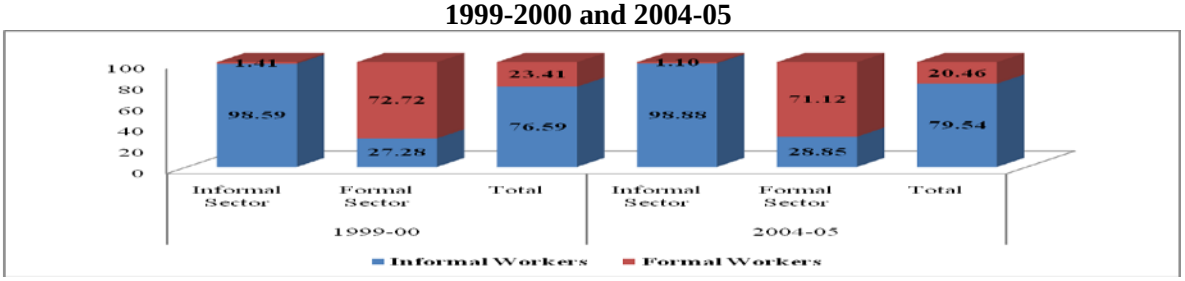


Figure.5.4.Percentage Distribution of Formal & Informal Sector Workers by Services in 1999-2000 and 2004-05



Source: NCEUS, 2009

V.3.2.1.Growth and Structure of Employment in the Organised Sector

In the service sector, organised segment of employment is only 14 per cent, which is one-sixth of unorganised segements of employment, is also declining over period.Table 5.4 gives the share of employment in organised by servces division. It shows that the share in all sub-sectors of services except finance, insurance, real estate and business services, are showing declining figure over the period. It can also be seen that among the sectors, community, social and personal service holds majoirty of share which absorb 2/3rd of the entire organised services. During the post-reform phase, transport, storage and communication and community, social and personal services affects more particularly in post-reform period. The fast gaining sub-sector in services are trade, hotel and restaurant and finance, insurance, real estate and busniess services which show an increasing share during post-reform phase. The year 2007-08 provides more organised services in terms of finace, insurance, real estate and busniess sector, where the rest of services are loosing their share.

Table.5.4. Percentage Share and Growth Rate of Organised Employment in Service Sector

Year	THR	TSC	FIRB	CSP	Services
Percentage Share to Organised Sector					
1983	2.92	21.46	8.02	67.60	100.00
1987-88	2.84	20.62	8.98	67.56	100.00
1993-94	2.85	19.36	9.59	68.20	100.00
1999-00	2.94	18.75	9.85	68.47	100.00
2004-05	3.41	17.29	11.78	67.52	100.00
2007-08	2.63	16.45	14.68	66.25	100.00
Growth Rate *(in percent)*					
1983-87	1.80	1.50	5.43	2.50	2.51
1987-93	1.56	0.42	2.60	1.64	1.48
1993-99	1.05	0.04	1.03	0.64	0.57
1999-04	2.54	-2.06	3.15	-0.75	-0.47
2004-07	-7.88	-1.17	8.16	-0.14	0.50
1983-93	1.65	0.85	3.72	1.98	1.89
1993-04	1.73	-0.92	1.99	0.01	0.10
1983-04	1.69	-0.08	2.81	0.94	0.95

Source: computed from Ministry of labour & Employment, Director General of Employment Training (DGET)

In terms of growth of employment in the sectors, post-reform period witnessed a massive decline in growth in the total organised services. The growth rate was around 1.89

per cent in 1983 in 1993-94 it declined to 0.10 per cent duirng 1993-94 to 2004-05. Except trade, hotels and resturant sector, all the three sub-sectors in services registered a decline in growth, where transport, storage and communication had even negative growth. In case of trade, hotel and resturant, the growth has increased from 1.65 per cent in pre-reform period to 1.73 per cent in post-reform phase with an increase in 0.8 per cent point between the two, largely due to growth in tourism sector.

Overall, in the long-run the trends in organised sector in services employment has come down due to slow down in employment in the pubic sector. The faster growth in private sector employment did not offset the effect of the decline of employment in public sector employment. The more detailed analsis of both public and private sector in organised segments is done in the following.

Table.5.5 illustrates that out of total organised sector employment, except trade, hotels and restaurants, in all other sectors, public sector employes lion's share. The share of organised sector employment in services has declined significantly after liberalisation period. The composition of public sector employment shows that community, social and personal services constitute almost 68 per cent to total. Though there was a declining tendency in the share of this activity too in total public sector employment over the period, there seems to be a mild increase in the recent past. On the other hand, the composition of the organised private sector employment is indicative of a decelerating share of community, social and personal services and rise in share of finance, insurance, real estate and busniess services. Even the recent data 2007-08 reveals that finance, insurance, real estate and busniess services continue to increase their share.

Within the organised sector, barring trade, hotels and retail, in rest of the sectors lion's share of employment is provided by the public sector. However, in all these sectors, the public sectors's share is coming down, it particularly came down very sharply in finance, insurance and banking, while it came down marginally in transport, storage and communication and community & social services. As far as wholesale trade, hotels and retail sector is concerned, private sector provided 62 per cent of organised employmen, but is share too is coming down [see Table 5.5].

Table.5.5. Percentage Share and Growth Rate of Employment in Organised Public and Private Service Sector

Year	THR		TSC		FIRB		CSP		Services	
	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
Percentage Share of Employment in Public & Private Sector to Total Organised Sector Employment by Services										
1983	30.03	69.97	97.95	2.05	80.82	19.18	85.88	14.12	86.43	13.57
1987-88	32.94	67.06	98.33	1.67	82.15	17.85	86.07	13.93	86.74	13.26
1993-94	34.77	65.23	98.22	1.78	81.86	18.14	85.67	14.33	86.28	13.72
1999-00	33.06	66.94	97.78	2.22	78.36	21.64	85.01	14.99	85.22	14.78
2004-05	32.92	67.08	97.00	3.00	72.92	27.08	83.56	16.44	82.91	17.09
2007-08	37.76	62.24	96.20	3.80	55.14	44.86	80.29	19.71	78.10	21.90
Percentage Share of Employment in Public & Private Sector to Total Public & Private Sector Employment										
1983	1.02	15.08	24.32	3.23	7.50	11.35	67.17	70.34	100.00	100.00
1987-88	1.08	14.37	23.38	2.59	8.50	12.09	67.04	70.95	100.00	100.00
1993-94	1.15	13.57	22.03	2.52	9.10	12.67	67.72	71.24	100.00	100.00
1999-00	1.14	13.30	21.51	2.82	9.06	14.43	68.30	69.45	100.00	100.00
2004-05	1.35	13.38	20.24	3.03	10.36	18.66	68.05	64.93	100.00	100.00
2007-08	1.27	7.46	20.26	2.85	10.36	30.07	68.11	59.62	100.00	100.00
Growth Rate (*in percent*)										
1983-93	3.16	0.94	0.88	-0.52	3.86	3.14	1.96	2.14	1.88	2.01
1993-99	0.21	1.49	-0.04	3.79	0.30	4.06	0.51	1.40	0.37	1.83
1999-04	2.45	2.59	-2.21	3.96	1.67	7.88	-1.09	1.10	-1.02	2.47
1993-04	1.22	1.99	-1.03	3.87	0.92	5.78	-0.22	1.26	-0.26	2.12
2004-07	-3.57	-10.15	-1.44	6.96	-1.47	27.97	-1.45	6.09	-1.48	9.15
1983-04	2.14	1.49	-0.13	1.75	2.31	4.51	0.81	1.68	0.75	2.07

Note: Employment in private sector relates to non-agriculture establishments in private sector employing 10 or more persons. Employment in public sector relate to all establishments irrespective of size.
Source: computed from Ministry of labour & Employment, Director General of Employment Training (DGET)

In terms of growth rates, public sector employment has grown at a rate of 0.75 and private sector employment grew at 2.07 per cent during 1983-04 in the organised industry. This used to be other wise during pre-reform period. In most sub-sectors, public sector growth rates have come down by more than half, while in transport, storage and communication, they became even negative. There is no compensating rise in the growth rate of private sector in the organised sector, making the overall employment rate negative.

V.3.2.2. Structure of Employment Growth in the Unorganised Sector

Out of 113.52 millions of unorganised labour in services, fifty per cent of the labour are employed in wholesale trade, hotels and retailing, slightly more than a quarter (27.32 per cent) is located in community and social services. When looked at employment growth in unorganised service sector, there is a clear declining trend in the post-reform

period. The decline largely accounted by a massive fall in growth of community, social and personal services. The employment in finance, insurance, real estate and business services has grown at the rate of around 4.8 per cent, but it employs lesser labour (see Table.5.6). The growth rate sharply declined in trade, hotel and restaurant; and in transport, storage and communication sector. The more employment intensive sub-sectors are rising slowly and lesser ones are rising faster, the future employment potential in service sector seems to be low, unlike the optimism expressed by some.

Table.5.6.Distribution and Growth Rate of Unorganised Services Work force

Year	THR	TSC	FIRB	CSP	Services
Percentage Share					
1983	46.95	11.61	2.62	38.82	100.00
1987-88	48.17	11.84	2.69	37.30	100.00
1993-94	44.51	12.11	3.34	40.04	100.00
1999-00	52.56	14.96	4.29	28.19	100.00
2004-05	50.46	16.21	6.02	27.32	100.00
2007-08					
Growth Rate (*in percent*)					
1983 to 1993-94	4.09	5.09	7.21	4.97	4.65
1993-94 to 1999-00	6.28	7.09	7.79	-2.50	3.38
1999-00 to 2004-05	3.93	6.47	12.12	4.12	4.78
1993-94 to 2004-05	5.21	6.81	9.74	0.46	4.01
1983 to 2004-05	4.67	5.99	8.53	2.58	4.32

Source: computed through residual approach

V.3.3. Labour Productivity in Service Sector

Labour productivity and its growth rate in services sector for the period 1983 to 2004-05 is given in the table.5.7. The labour productivity in services has grown at a rate of 3.88 per cent during 1983-04. There is a marked improvement in the post-reform period compared to previous period. The two sectors that employ three quarters of the labour, namely community, personal and social services and wholesale trade, hotels and restaurants recorded higher growth of 4.34 and 2.78 per cent, respectively. There, improvement in labour productivity has risen in all sub-sectors except, finance, insurance and banking. The acceleration in growth rate of output per worker in community, social and personal services might have resulted from the downsizing of the public sector because of privatisation and hikes in the salaries of the central and state government employees from time to time (i.e. due to accounting reasons). Where as, productivity growth in trade,

hotel and restaurant have derived stimuli from surge in demand for such services with a subsequent expansion in these activities[112]. The only declining growth is occurred in case of finance, insurance, real estate and business services due to a greater investment has been done in new technology (especially IT) in services sector and this may take time to lead to productivity enhancement.

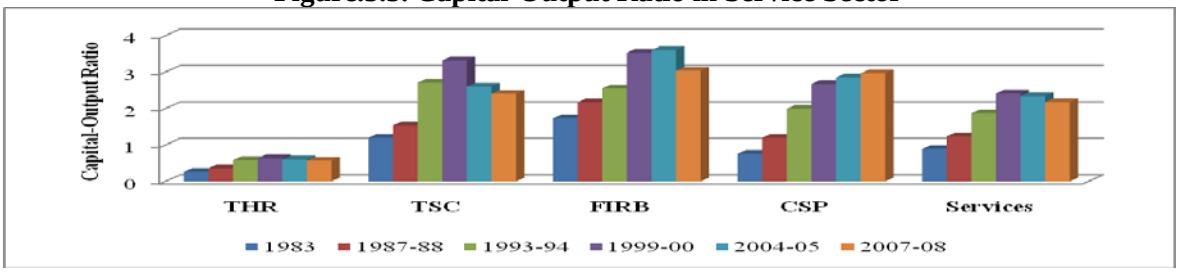
Table.5.7.Per Worker Productivity and Growth Rates of Service Sector

Year	THR	TSC	FIRB	CSP	Services
Per Workers Productivity (*in Rupees*)					
1983	43120	57311	281354	37727	52118
1987-88	46796	67791	337225	45416	61297
1993-94	52303	75231	407075	46738	69254
1999-00	62031	90915	470817	80289	94626
2004-05	74860	131698	415348	90463	112652
Growth Rate (*in percent*)					
1983 to 1993-94	2.03	2.86	3.98	2.25	3.00
1993-94 to 1999-00	3.06	3.37	2.58	9.3	5.49
1999-00 to 2004-05	3.98	8.06	-2.70	2.47	3.69
1993-94 to 2004-05	3.48	5.49	0.19	6.21	4.67
1983 to 2004-05	2.78	4.22	1.99	4.34	3.88

Source: computed

The capital growth in the services has declined progressively during 1983-04 (see Table.5.8). This decline growth of capital is uniform in all the sub-sectors. The capital productivity in services also declined over period, reflecting a rise in average capital-output ratio. However, this decline in capital-productivity has slowed down in the post-reform period. The capital-labour ratio has increased at a quite rapid pace over period. The pace of the growth of this ratio, however, declined in the post-reform period.

Figure.5.5. Capital-Output Ratio in Service Sector



[112] Joshi, Seema (2008), "Service Sector in India's Economy: Performance, Problems and Prospects", Country paper, submitted to Asian Productivity Organisation, Project No. 08-RP-38-GE-STM-B: study Meeting on Expansion and Development of the Service Industry in Asia.

Table.5.8.Growth Rate of Capital, Capital Productivity and Capital-Labour Ratio

Year	THR	TSC	FIRB	CSP	Services
Growth of Capital *(in percent)*					
1983 to 1993-94	14.90	15.62	13.90	17.01	15.30
1993-94 to 1999-00	10.85	12.42	13.82	13.23	13.09
1999-00 to 2004-05	6.69	7.53	7.12	6.37	6.93
1993-94 to 2004-05	8.94	10.17	10.72	10.06	10.24
1983 to 2004-05	11.74	12.73	12.23	13.31	12.62
Capital Productivity Growth (*in percent*)					
1983 to 1993-94	-7.64	-7.85	-3.79	-9.19	-7.15
1993-94 to 1999-00	-1.41	-3.34	-5.30	-4.76	-4.19
1999-00 to 2004-05	1.10	5.00	-0.39	-1.29	0.61
1993-94 to 2004-05	-0.27	0.36	-3.10	-3.20	-2.04
1983 to 2004-05	-3.85	-3.63	-3.43	-6.10	-4.51
Capital-Labour Growth (*in percent*)					
1983 to 1993-94	10.39	11.51	7.85	12.51	10.81
1993-94 to 1999-00	4.35	6.78	8.19	14.91	9.95
1999-00 to 2004-05	2.70	2.57	-2.10	3.76	2.92
1993-94 to 2004-05	3.60	4.84	3.39	9.70	6.70
1983 to 2004-05	6.78	7.96	5.49	11.03	8.63

Note: Capital is Net Fixed Capital Stock at 1999-00 prices
Source: National Account Statistics, 2007 & 2009.

To read an overall picture from these statistics, one can conclude that given the capital productivity falling, necessitating capital substitution, reflected in terms of faster rise in capital, the labour absorption can be the casuality, unless informalisation of labour lowering the wage cost recedes, that can induce some employment.

Role of Investment

Let us now turn into investment scenario in the Service sector, where it is an important determinant of economic growth which in turn indirectly generates employment growth in the sector. This capital formation has two components such as Gross Domestic Capital Formation (GDCF) and Foreign Direct Investment (FDI). While domestic investments add to the capital stock in an economy, FDI can play a complementary role in overall capital formation by filling the gap between domestic savings and investment. First let us discus about the significance role of domestic investment in the sector.

The sector which is growing fastest warrants commensurate investment share in the total investment in the economy. Service sector in India commands 39 per cent of total

investment, which has grown from 35 per cent in pre-reform period to 39 per cent in post-reform period (see Table.5.9). There is a considerable fluctuation in the investment share of the service sector.

Table.5.9. Distribution and Growth Rate of Investment in Service Sector

Year	THR	TSC	FIRB	CSP	Services*
Percentage Share in GDCF?					
1983-87	12.44	20.38	19.71	47.47	35.57
1987-88	5.25	26.72	26.99	41.03	37.55
1993-94	8.73	27.80	33.21	30.27	43.59
1999-00	9.46	26.57	38.44	25.53	44.20
2004-05	8.80	27.43	30.49	33.28	39.68
2007-08	7.38	36.07	27.34	29.21	39.10
Growth Rate (*in percent*)					
1983 to 1993-94	3.63	10.76	13.12	2.65	7.37
1993-94 to 1999-00	12.34	10.01	13.57	7.74	10.84
1999-00 to 2004-05	4.82	7.00	1.51	12.12	6.33
2004-05 to 2007-08	9.26	26.98	11.76	10.95	15.89
1993-94 to 2004-05	8.85	8.63	7.92	9.71	8.76
1983 to 2004-05	6.33	9.64	10.37	6.29	8.10

Note: * percentage share of industrial investment to total investment in the economy
Source: National Account Statistics, 2007 & 2009.

Among the sub-sectors, transport, storage and communication command maximum share followed by community, economic and personal services and finance, insurance and banking. The least investment share belongs to wholesale trade, hotels and restaurants which command maximum share of employment. In terms of growth rates, the investment has grown at a rate of 8.1 per cent during 1983-05, it has in rapidly accelerated during 2005-07 to 15.89 per cent. In this recent growth, wholesale transport, storage and communication have recorded maximum growth of 26.78 per cent during last few years, while in other sectors it crossed double digit.

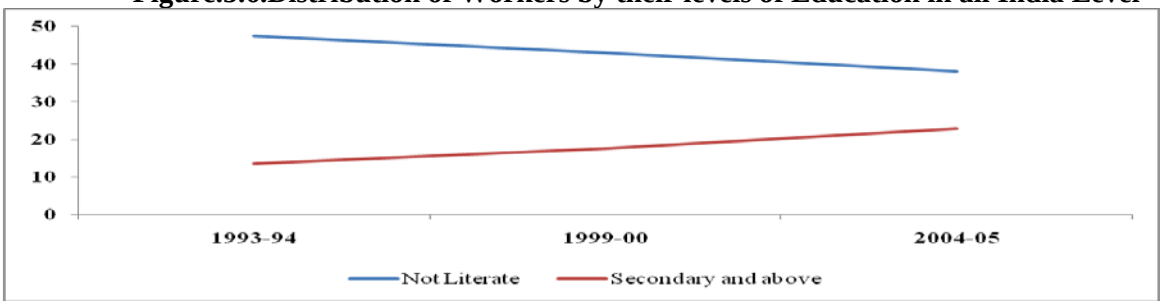
Role of Human Capital

Another influencing factor in the context of low productivity is the role of human capital. Generally, service sector is associated with labour intensive technique than capital-intensive. Therefore, skill development does play a crucial role for determining the employment growth in the sector to enhance more productivity in the sector. The low productivity growth in services might be a reason of slower growth of human capital in the

sector. As argued by Mahendra Dev (2000), the scope for the absorption of labour in services would depend on skill acquired and educational attainment. A part of unemployment problem emanates from the mismatch between the skill requirements and of employment opening and the skill bases of job-seekers. Therefore, it is necessary to direct the educational and training resources towards improving its capability to supply the requirement in both organised and unorganised sector over the medium and long run.

Taking the issue of educational and skill attainment, Bosworth, Collins and Virmani (2007)[113] pointed out that India has recently reached an average level of schooling compared to other Asian countries. In terms of the educational attainment of the work force, their estimates indicate that nearly 40 per cent of the workforce is illiterate and those who have completed secondary schooling account for 14 per cent of the workers, while an additional 6 per cent have a university degree. The 61st NSS round survey found that in India, among the persons of age 15 years and above, the proportion of the illiterate workers has declined, in varying proportion, firstly during 1993-94/1999-00 and then during 1999-00/2004-05 (see Figure.5.6).

Figure.5.6.Distribution of Workers by their levels of Education in all India Level



Source: Various NSSO round reports.

Irrespective of role of low human capital in services which can affect low productivity, there are also other reasons for declining productivity growth in the sector. Education, health, freedom of expression, cultural development and democratic environment are also important for productivity. It is also argued that technological changes are as important in service sectors (such as health care) as in commodity sectors which vary according to income level of the country. Therefore, productivity of service sector is expected to be relatively low in a poor country. Low productivity of services can

[113] "Sources of Growth in the Indian Economy", NBER Working Paper series, No.12091

also be product of measurement errors of output in services since an incremental output is not captured in the basic statistics. A key problem in measuring productivity relates to obtaining a suitable measure of output of services over time.

V.3.4.Employment Elasticities in Service Sector

The estimated employment elasticities for service sector output are given in the table.5.10. The overall employment elasticity of output in the service sector is 0.49, which is higher than the other two sectors in the economy. We further observe that there is a substantial decrease in elasticity in the post-reform period.

Table.5.10.Employment Elasticity of Output in Service Sector

Year	Trade	Transport	Finance	Community	Services
Sectoral Employment Elasticity of output					
1983-93	0.67	0.56	0.58	0.64	0.58
1993-99	0.67	0.61	0.67	-0.19	0.34
1999-04	0.49	0.38	1.40	0.51	0.51
1993-04	0.60	0.48	0.97	0.05	0.42
1983-04	0.63	0.51	0.76	0.32	0.49
Employment Elasticity in Organised Sector					
1983-93	0.21	0.12	0.30	0.28	0.23
1993-99	0.07	0.01	0.12	0.09	0.08
1999-04	0.20	-0.23	0.38	-0.19	-0.07
1993-04	0.12	-0.15	0.24	0.00	0.01
1983-04	0.15	-0.01	0.27	0.15	0.12
Employment Elasticity in Unorganised Sector					
1983-93	0.69	0.90	0.87	1.46	0.76
1993-99	0.75	0.51	1.12	-0.22	0.37
1999-04	0.57	0.41	2.46	0.49	0.58
1993-04	0.68	0.46	1.62	0.05	0.46
1983-04	0.68	0.58	1.20	0.38	0.58

Source: computed

Among the sub-sectors, finance, insurance and banking has the highest employment elasticity (this sector has the lowest employment share), followed by trade, hotels and restaurants at 0.6, and transport, storage and communications at 0.51. The employment elasticity in organised sector is as low as 0.12, while in unorganised sector it is 0.58. The state of sub-sectors in organised segments reflects low elasticities. It is only in the unorganised segments, we find some what better figures of elasticities. Once again, in

finance, insurance and banking highest elasticities are found, followed by trade, hotels and restaurants and transport, storage and communication. There is a clear trend towards declining labour absorptive capacity of growth in the services during the post-reform period. The organised sector absorptive capacity has virtually touched zero, while for unorganised sector too it has declined in the post-reform period.

V.4.An Econometric Model on Aggregate Employment in India's Service Sector

There is a sizeable literature on growth and issues of service sector in India. Studies like, Sastry et.al. (2003)[114] established the sectoral linkages in the economy, where output of the service sector has been decomposed into two components viz comprising trade, hotel and restaurants and transport, storage and communication denoted by GS1, and another comprising finance, and community, social and personal services denoted by GS2. In this framework, GS1 is endogenised as a function of the output in agriculture, industrial sector and output of the finance and community services (i.e, GS2). As regards GS2, the same is treated as an exogenous variable. They found that all the components positively influence the service output in the economy. More particularly, industrial output growth influences services output more than the agricultural. They concluded that the sustainability of a relatively high GDP growth in recent years driven by growth of the services sector alone would be difficult to maintain over a long horizon. This is because in the absence of incommensurate growth in other sectors of the economy in the long run would be adversely affected services. Also, as production of services requires inputs from other sectors, there could be supply constraints due to slow down in the growth of productive capacity in the rest of the economy. Rath and Rajesh (2006)[115] examine the growth complementarities between the services and industrial sector of the Indian economy through regression analysis for the period 1985-86 to 2004-05. They considered services output is determined through industrial output, services export and price of services. The results indicate a positive and significant coefficient value for industrial output and services export, where it shows a negative sign for price of services. They

[114] D V S Sastry, Balwant Singh, Kaushik Bhattacharya, N K Unnikrishnan (2003), "Sectoral Linkages and Growth Prospects Reflections on the Indian Economy", *Economic and Political Weekly*, June 14, 2003, pp. 2390-2397.

[115] Deba Prasad Rath and Raj Rajesh (2006), "Analytics and Implications of Services Sector Growth in Indian Economy", *The Journal of Income and Wealth*, Volume 28, No.1, January-June.

found that one per cent rise in industrial output results in 0.68 per cent rise in services output, which shows the sectoral linkages in the economy. Banga (2005)[116] explains the growth in India's service by considering both demand and supply side factors operation that leads to higher growth in the sector as compared to the other sectors and also leads to a larger share of service sector in total employment. From demand side, high-income elasticity of demand for final product services, slower productivity growth in services leads to higher employment potential, and structural changes within the manufacturing sector, which make contracting out services more efficient than producing them in the firm or household are determined the growth of services. From supply side, output in the services is influenced by increased trade, higher foreign direct investments in services and improved technology. Deepita Chakravarty (2006)[117] study 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 neighbouring regions can promote the expansion of services in any region under favourable demand and supply conditions.

Some of the macro-econometric models on determinants of services sector output are estimated by various economists. Bhattacharya et.al (2004)[118] suggested that services output can be determined by both demand side and supply-side factors. The demand-side contains agricultural and industrial output and real public expenditure. The other variables included are electricity consumption in this sector (which is a supply-side constraint) and the macro scale effect. The regression results indicate that services growth is explained by both commodity growth (elasticity: 0.35) and growth of services at the national-level

[116] Rashmi Banga (2005), "Critical Issues in India's Service-Led Growth", *Working Paper No. 171*, Indian Council for Research on International Economic Relations, New Delhi.
[117] Deepita Chakravarty (2006), "Growing Services in India: An Inter-Sectoral Analysis Based on State-Level Data", *Economic and Political Weekly*, July 8-15, pp. 3061-3067.
[118] Bhattacharya, B. B; N. R. Bhanumurthy; Sabyasachi Kar and S. Sakthivel (2004), "Forecasting State Domestic Product and Inflation: Macroeconometric Model for AP, Karnataka and UP", *Economic and Political Weekly*, Vol. 39, No. 31, July 31 - August 6, pp. 3541-3550.

(elasticity: 1.26). A structural dummy indicates that there has been an increase in the services growth rate after economic liberalisation was initiated. The fourth sector, public administration is determined by past trends. Sachdev and Ghosh (2009) forecasted the services output growth through average capital-output ratio. That average ratio is determined through demand side factor only, such as: real non-services output, trade balance on merchandise goods, real invisible exports and liberalisation dummy. They found that there is a negative impact of real-non services output, but the coefficient is seen to be minimal. The trade balance and invisible export does have positive and significant effect on average capital-output ratio of services where as liberalisation dummy influences negatively. Narayana and Ghose (2009) used vector error correction methodology to estimate the services output growth through three major components such as lag output of services, services capital formation, price deflator in services, and along with some other variables such as: money supply, fuel price index, invisible exports and imports, non-services output, industrial capital formation, industrial price deflator, budget deficit, bank rate, net non-agricultural export and liberalisation dummy. Kar and Pradhan (2009) postulate services output as a function of the productive capacity in the industrial sector and capacity utilisation rate. The productivity capacity is determined by the capital stock while large pools of unemployed labour ensure that there are no labour constraints in the sector. And the capacity utilisations in the services are sensitive to change in demand. So the aggregate services output growth is determined by commodity output, and two dummies such as: partial liberalisation dummy and pay commission dummy (representing the impact of large hikes in the salaries and wages of public administration that inflate the value added in the service sector). The result indicates that the output in the service sector is largely determined by capital stock, which has an impact on current as well as future services output. The demand factor i.e. the output from the commodity producing sectors also affects the output in this sector. Bhide and Parida (2009) used OLS technique to estimate the industrial output by categorising specific industry wise analysis. For example in transport, storage and communication services, output is determined through the average of lagged and current capital stock in the sector, foreign direct investment in the sector, ratio of compensation to employee by implicit price deflator for overall GDP. In case of other services, the determinants of output are the average of lagged and current capital

stock in the sector, foreign direct investment in the sector, ratio of compensation to employee by implicit price deflator for overall GDP, real capital stock in electricity, gas and water supply and transport, storage and communication services. Murthy and Soumya (2007)[119] examined the output determinants of services using lagged net capital stock and ratio of money supply to price index. Both the components are found to be positive and statistically significant for services growth in the economy.

The above literature is instructive about various determinants of services output growth in India. And it is highly useful in formulating the specifications for employment determination in our scheme. We now proceed to estimate the determinants of employment through determining output.

V.4.1.Model Specification

As stated earlier on our approach on employment determination predicted on a Keynesian framework in which aggregate output determines labour demand, we proceed to evolve the specification of employment function. When volume of output is determined through the equilibrium mechanism of supply of and demand for output in the market, in turn determines services employment in the economy.

First, Let Y_S is services output and E_S is Services employment.

$$Y_S = Y_{OS} + Y_{US} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.1)$$

and, $$E_S = E_{OS} + E_{US} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.2)$$

Where OS = organised service sector, US= unorganised service sector.

Determinants of Organised Services Sector:

By putting Keynesian view on determining employment in the sector in an equation format,

$$Ln(E_{OS}) = F[Ln(Y_{OS})] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.3)$$

Where, Y as a function of the discrepancy between the two sides of the market i.e. supply of and demand for output in the sector. So, Supply of output in services sector is given by

$$Y_{OS}^{S} = F(Y_{OS(t-1)}, HC) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.4)$$

[119] Murthy, K.N and Soumya, A (2007), "Effects of Public Investment on Growth and Poverty", *Economic and Political Weekly*, January 6, pp.47- 59.

The Demand for output in service sector is:

$$Y_{OS}^{D} = F(NSY_{OS}, LP_{OS}, GCF_{OS}, K/L_{OS}, NINVEXP, PFCE) \ldots\ldots\ldots\ldots\ldots\ldots (5.5)$$

The equilibrium condition S_{OI}= D_{OI} will yield services output as:

$$Y_{OI} = Y_{OI}^{S} \cong Y_{OI}^{D} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.6)$$

$$Y_{OS} = F(Y_{OS(t-1)}, HC, NSY_{OS}, LP_{OS}, GCF_{OS}, K/L_{OS}, NINVEXP, PFCE) \ldots\ldots\ldots\ldots (5.7)$$

Putting Y_{OS} component in the equation 5.3, the final equation will be;

$$Ln(E_{OS}) = \alpha + \beta_1 Ln(LP_{OS}) + \beta_2 Ln(GCF_{OS}) + \beta_3 \ln(K/L)_{OS} + \beta_4 Ln(NSY_{OS}) + \beta_5 Ln(Y_{t-1})_{OS}$$
$$+ \beta_6 Ln(NINVEXP) + \beta_7 Ln(HC) + \beta_8 Ln(PFCE) + \beta_9 D_{91} + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.8)$$

Like wise, *for Unorganised Industrial Sector*,

$$Ln(E_{US}) = F[Ln(Y_{US})] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.9)$$

Supply of output is given by;

$$Y_{US}^{S} = F(Y_{US(t-1)}, HC) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.10)$$

Demand for output is a function of;

$$Y_{US}^{D} = F(LP_{US}, GCF_{US}, K/L_{US}, NSY_{US}, NINVEXP, PFCE) \ldots\ldots\ldots\ldots\ldots\ldots (5.11)$$

Equilibrium now requires S_{US}=D_{US}

$$Y_{US} = Y_{US}^{S} \cong Y_{US}^{D} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.12)$$

$$Y_{US} = F(Y_{US(t-1}, HC, LP_{US}, GCF_{US}, NSY_{US}, K/L_{US}, NINVEXP, PFCE) \ldots\ldots\ldots\ldots (5.13)$$

Putting Y_{US} variables in equation 5.9; the final equation will be;

$$Ln(E_{US}) = \alpha + \beta_1 Ln(LP_{US}) + \beta_2 Ln(GCF_{US}) + \beta_3 \ln(K/L)_{US} + \beta_4 Ln(NSY_{US}) + \beta_5 Ln(Y_{US})_{t-1}$$
$$+ \beta_6 Ln(NINVEXP) + \beta_7 Ln(HC) + \beta_8 Ln(PFCE) + \beta_9 L_{91} + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.14)$$

Where, E= Employment
LP= Labour Productivity i.e. output per labour
GCF= Gross Capital Formation
K/L= Capital-Labour ratio
NSY= Non-Services Output (addition of agriculture and services output)
Y_{t-1}= Last year services output
NINVEXP= Net Invisible Exports i.e. invisible export minus invisible imports
HC= Human Capital i.e. literacy rate
PFCE= Private Final Consumption Expenditure

Given this argument, one would expect each variable to have a positive effect on employment in the sector.

V.4.2.Data Sources and Methodology

The data is drawn from three different data sources. Firstly, National Account Statistics published by the Central Statistical Organisation (CSO) for output, investment, net fixed capital and private consumption expenditure at 1999-00 prices. Secondly, data on invisible exports and imports are collected through Reserve Bank of India which latter converted into 1999-00 prices through GDP_{MP} deflator. Third, literacy data are collected through various sources such as Census data, selected education statistics and NSSO report on literacy rate. And finally employments are constructed through NSSO and census data. And some of the sub years' data, where data are not available, have been extrapolated by using the growth rate of two annual periods. The period for analysis is from 1972-73 to 2007-08.

In order to examine the above model specification equation, as we did in the earlier chapter, simple Ordinary Least Square (OLS) technique has been employed. We used Dicky-Fuller and Augmented Dicky- Fuller test for testing stationarity of the variables to be used in regression.

V.4.3.Empirical Results

The method used in the estimation is that of Ordinary Least Square (OLS) technique. The first step we check the order of each variable, using the standard unit root test with the help of Dicky Fuller/Augmented Dicky Fuller Test. It is found that all of the variables have first order difference to attain stationarity (see Annexure-5.1). The estimation results for organised and unorganised sector of determinants of employment growth in the industry are presented in table.5.11 and 5.12 respectively.

V.4.3.1. *Organised Service Sector Employment*

Let's first look at the estimation of organised employment determinants for the Services. The estimated results indicate that all the coefficients, namely that of non-service output, human capital, net exports, labour productivity, and lag output are statistically significant and have expected signs. Coefficients of Investment, private final consumption expenditure and capital-labour ratio are not statistically significant. It is quite plausible that gross capital formation does not influence the employment growth in the sector. In

iteration, we dropped those insignificant variables from the final equation and re-estimated employment function in the sector. Estimated results corroborate the view that performance of services determines the capacity to generate employment in the sector where employment is positively influenced by non-services output, last year services income, human capital and net export and variable like productivity displace labour in the sector.

Table.5.11. Regression Results on Employment Determination in Organised Services Sector

Dependent Variable: Δ Ln (E)	**Organised Sector**		
Independent Variable Name	**Step-I**	**Step-II**	**Step-III**
Constant	0.027 (5.87)*	0.023 (5.11)*	0.024 (5.28)*
Δ *Ln* (NSY)	0.007 (2.56)*	0.034 (4.87)*	0.030 (4.01)*
Δ *Ln* (HC)	0.008 (3.01)*	0.007 (2.87)*	0.006 (2.67)*
Δ *Ln* $(Y)_{t-1}$	0.049 (2.47)*	0.044 (2.12)*	0.037 (1.96)*
Δ *Ln* (LP)	-0.136 (-4.02)*	-0.134 (-3.83)*	-0.122 (-3.12)*
Δ *Ln* (GCF)	-0.012 (-1.67)	---	---
Δ *Ln* (K/L)	0.079 (1.62)	0.041 (1.12)	---
Δ *Ln* (NINVEXP)	0.01 (-2.32)*	0.01 (-2.31)*	0.01 (2.31)*
Δ *Ln* (PFCEXP)	-0.001 (-1.34)	---	---
L_{91}	-0.015 (-5.63)*	-0.017 (-5.92)*	-0.017 (-5.91)*
R^2	0.78	0.74	0.73
Adjusted R^2	0.69	0.67	0.67
Durbin-Watson (DW) Test	2.01	1.74	1.74
Prob (F-Statistics)	0.000	0.000	0.000
Number of Observation	35	35	35

Note: * at 5% significant level, Δ is at first difference

From the result, we found that, first: last year output in service sector has the highest and positive elasticity of 0.037. Second, non-services output has the second highest elasticity of 0.030, suggesting a per cent employment increase for one per cent rise in non-services output. Third, at one per cent increase in net exports in services, employment in organised services will increase by 0.01 per cent. Fourth, human capital does influence employment positively by increasing 0.01 per cent. It is suggested that the role of human capital does play a significant role to determine the employment growth in services. It is the skilled based job which requires quality of persons to be engaged in the services. Therefore, those with more skilled power, they intend to work in organised sector. Fifth, employment exhibited largest and negative elasticity with respect to labour productivity at 0.122, suggesting one percent increase in labour productivity, labour will displace by 0.122

per cent in organised services. Liberalisation dummy is found to be negative. Overall, the fitted model explains 73 per cent of the variation in organised services employment where the 'F' statistics signifies the strength of the relationship between the variables in the model.

It can be observed that it is the output in services along with non-services output, and human capital have some deterministic influence on employment generation in the organised services sector.

V.4.3.2. *Unorganised Service Sector Employment*

For unorganised service sector, whose share of employment in the service sector is much higher than organised sector, the estimated model is much more fruitful. The results of estimation of determinants of employment of unorganised labour in services are given in table 5.12.

The estimated equation has a considerable explanatory power, and most of the variables have expected signs. Four out of nine variables have significant coefficients and five did not. The equation performed better when gross capital formation, net export and private final consumption expenditure variables are dropped. The employment in unorganised service is positively influenced by non-services income, lagged output, and liberalisation dummy and negatively influenced by capital-labour ratio, labour productivity, and human capital. From the result, we found that, first, non-services income has the highest and positive elasticity of 0.105. Second, last year services output has the second highest elasticity of 0.050. On the other hand, labour productivity has the largest and negative elasticity of 0.374. Employment has a negative elasticity with respect to capital-labour at 0.124. And employment will decrease by 0.014 per cent to one per cent increase in human capital. It means with the increase in human capital, people will prefer to work in organised services rather than unorganised services. Finally, employment in unorganised service sector does provide a significant and positive impact from liberalisation policy effect.

Table.5.12. Regression Results on Employment Determination in Unorganised Services Sector

Dependent Variable: Δ Ln (E)	**Unorganised Sector**		
Independent Variable Name	**Step-I**	**Step-II**	**Step-III**
Constant	0.032 (6.89)*	0.036 (7.74)*	0.036 (7.73)*
Δ *Ln* (NSY)	0.106 (7.32)*	0.109 (7.97)*	0.105 (7.01)*
Δ *Ln* (HC)	-0.013 (-1.85)	-0.014 (-2.18)*	-0.014 (-2.18)*
Δ *Ln* $(Y)_{t-1}$	0.007 (1.57)	0.050 (1.99)*	0.050 (2.00)*
Δ *Ln* (LP)	-0.372 (-8.71)*	-0.370 (-8.53)*	-0.374 (-8.92)*
Δ *Ln* (GCF)	0.025 (1.48)	0.023 (1.31)	---
Δ *Ln* (K/L)	-0.122 (-2.31)*	-0.126 (-2.46)*	-0.124 (-2.45)*
Δ *Ln* (NINVEXP)	-0.003 (-0.53)	---	---
Δ *Ln* (PFCEXP)	0.101 (0.66)	---	---
L_{91}	0.023 (3.50)*	0.024 (4.15)*	0.023 (4.30)*
R^2	0.66	0.66	0.67
Durbin-Watson (DW) Test	2.00	1.98	1.95
Prob (F-Statistics)	0.000	0.000	0.000
Number of Observation	35	35	35

Note: * at 5% significant level, Δ is at first difference

Figure.5.7. Actual vs Estimated Employment in Organised Service Sector

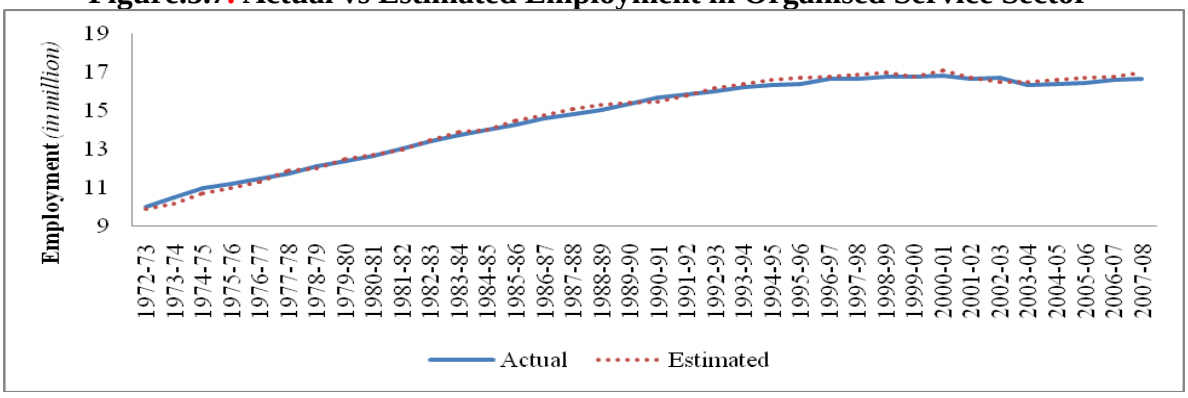
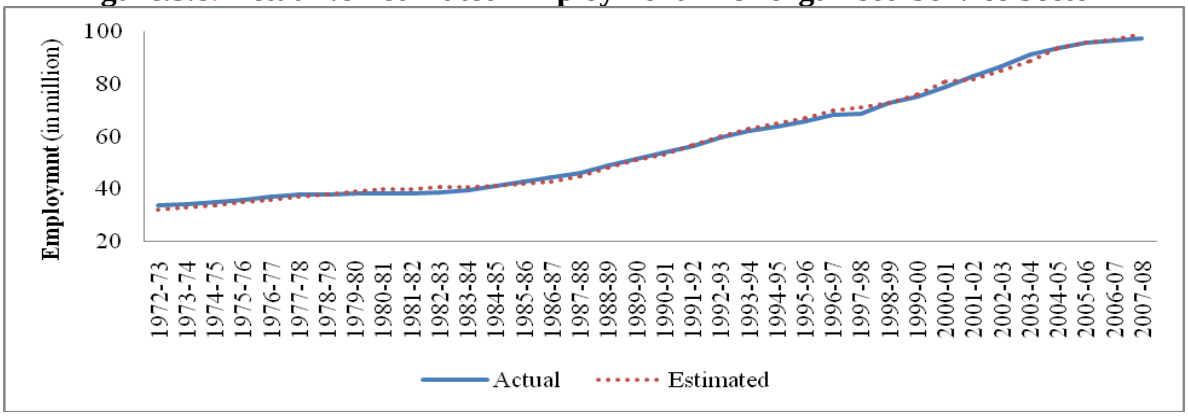


Figure.5.8. Actual vs Estimated Employment in Unorganised Service Sector



V.5. Conclusion

To summarise, we found that compared to the commodity sectors, service sector accounts for 54 per cent of its output to total GDP, but absorbs only 25 per cent of work force to the sector. It reflects that there has been a disproportional growth between income share and employment share in the sector. In terms of growth, though output in the sector is increasing, the rate of growth of employment is declining during post-reform period. This has reflected in terms of falling employment elasticities. The structure of employment in the sector is such that nearly 86 per cent workers are engaged in unorganised sector which constitute highest share of informal workers in the economy. Further, we observe that the labour productivity and capital-labour ratio in aggregate as well at disaggregate level has been increasing. Capital productivity has been falling. This would necessitate greater factor substitution to sustain growth, which eventually can erode employment.

The study estimated the determinants of employment in the sector for both organised and unorganised. And we found that for organised sector, non-services output, lagged output of services, human capital and net export do have positively affect the employment where labour productivity displaces labour. For unorganised services, employment is positively determined by non-services output and lag services output, but negatively influenced by productivity, technology and human capital. We also found that gross capital formation does not influence the employment growth in the sector. Finally, our estimations have been robust and the estimated and actual values have remarkable overlapping.

Chapter-VI

Sectoral Employment and Overall Employment Growth in India

VI.1.Introduction:

The notion of aggregate employment is a macroeconomic abstraction. For an economy characterised by diversity across as well as within sectors, such an aggregative abstraction is partial and even runs the risk of being simplistic. However, it could be useful to some extent if there are some regularities in disaggregates, and then aggregation may become useful. In this chapter, we undertake two exercises, one, we shall describe the trends in disaggregate sectoral level and also in aggregate employment and output in the Indian economy. Second, we shall present a model of estimation aggregate employment from estimated employment at sectoral level and identify the broad determinants of the growth of employment.

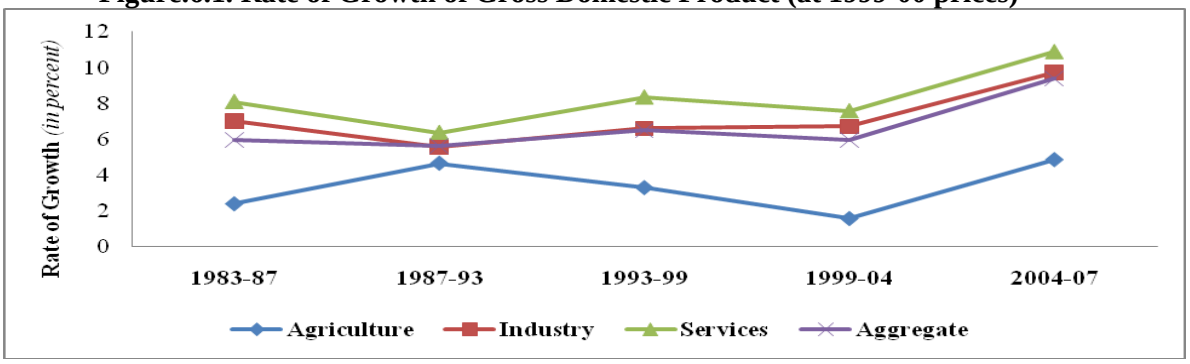
VI.2. Sectoral and Aggregate Output and Employment in the Indian Economy

VI.2.1.Trends in Aggregate Output in India (1983-05)

It is well known that the long term growth rate of GDP in India has been steadily increasing in the past five decades. The GDP growth rate that stood at 'Hindu rate' of 3.5 per cent during 1950-81, has come out age It has increased to average growth rate of 5.6 per cent during 1980s, declined to 5.4 per cent during 1990s, but managed to increase up to 6.8 per cent average rate during 2000s. The growth rate during 11th Five Year plan has even gone up to 7.5 per cent. The long term average GDP growth rate is growing at a growth of 8.3 per cent during 1983 to 2007-08. The growth of output has peaked at a rate of 6.94 per cent during post-reform period over 5.78 per cent in pre-reform phase. A major development in after 2004-05 is that growth in agriculture recovered from earlier slump. This is accompanied by much higher growth in the non-agricultural sectors, thereby leading to a declining share of agriculture in the total output (see Figure.6.1). Among the non-agricultural sector, service sector grew at a faster rate than that of industry. During post-reform period, service sector accounts for nearly 56 per cent share, registered 8.61 per cent growth where as industrial sector grew at a rate of 7.33 per cent with a share of less than 20 per cent. The higher and increasing contribution of the service sector in gross domestic product over the decades is more than evident. For the year 2010-11, industrial

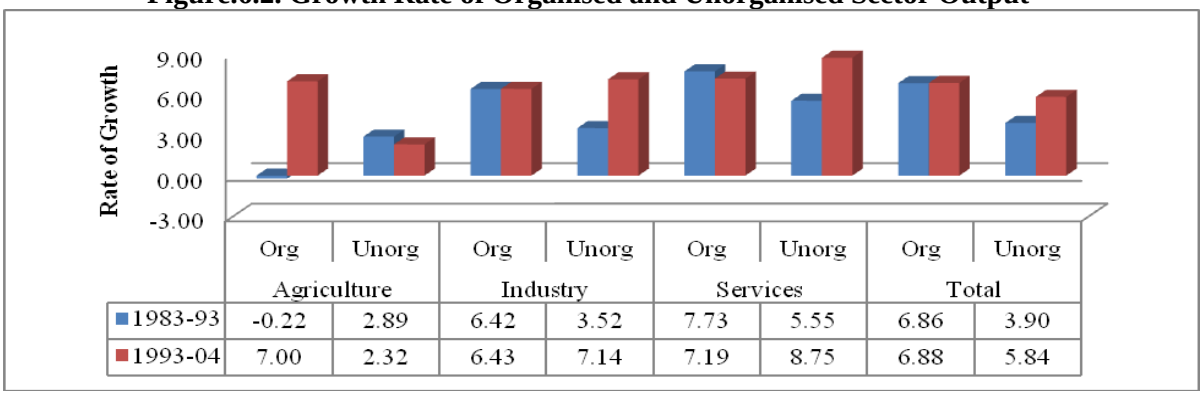
and services sector grew at 8.1 and 9.6 per cent respectively over previous year under a scenario of overall annual economic growth rate of 7.8 per cent[120].

Figure.6.1. Rate of Growth of Gross Domestic Product (at 1999-00 prices)



Source: Calculated from NAS, 2007 and 2009

Figure.6.2. Growth Rate of Organised and Unorganised Sector Output



	Agriculture		Industry		Services		Total	
	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg
1983-93	-0.22	2.89	6.42	3.52	7.73	5.55	6.86	3.90
1993-04	7.00	2.32	6.43	7.14	7.19	8.75	6.88	5.84

Source: Calculated from NAS, 2007 and 2009

In spite of being smaller in share, the organised sector that had a higher growth rates in both pre and post-reform period. At the same time, the unorganised sector's growth rate has also picked up in the post-reforms period (see Figure.6.2). It is interesting to observe that the organised sector that generates lesser employment compared to unorganised sector, has been growing faster.

[120] Press Note on "Advance Estimate of National Income, 2010-11" released on 7th February, 2011 by Central Statistic Office, Ministry of Statistics and Programme Implementation, Government of India forecasts that the agricultural sector is likely to show a growth of 5.4 percent in its GDP during 2010-11, as against the previous year's growth rate of 0.4 percent with an expectation of more production of foodgrains, oilseeds, cotton, sugarcane and fruits and vegetables along with normal rainfall. The industrial and services sector would grow at 8.1 and 9.6 percent respectively over previous year under a scenario of overall annual economic growth rate of 8.6 per cent. Hence the compositions of three sectors are equally important for generating an overall economic growth. The actual growth rate remained at 7.8 percent and impact of global financial crisis continues to slow down the India's growth.

While looking at components of expenditure of output at market price in the economy, it is found that the growth process remains significantly domestic driven, engendered by both domestic consumption and investment. Even though the share of exports has risen, the import share has risen even more (see Table no.6.1). There is a decline in the share of consumption from 75 per cent to 57 per cent during 1983-08, which is expected when the investment share has gone up from 18 per cent to 36 per cent. The share of unorganised sector's investment has risen faster than that of organised sector in the post-reform sector. The share of government expenditure has come down during post-reform period. Even though the share of exports is increased to 20.25 per cent, imports have gone up to 24.6 per cent, which mean a higher current account deficit. From macroeconomic point of view, some key observations are, first, the growth in Indian economy is basically driven by domestic demand. Second, it is an investment-led growth with informal sector dominance. Third, it is led by private investment in the post-reform period. Finally, India's external dependence has increased than earlier. While the first one is the strength of the economy, the last three aspects can have implications for sustainability of growth.

Table.6.1. Share of Different Components of Demand to GDP *(in Per cent)*

Year	**1983**	**1987-88**	**1993-94**	**1999-00**	**2004-05**	**2007-08**
Consumption	75.07	72.45	67.41	64.22	60.51	57.18
Investment	18.88	21.08	21.48	25.93	30.50	36.18
Organised Sector	*14.96*	*13.29*	*15.07*	*15.12*	*17.75*	*24.60*
Unorganised Sector	*3.92*	*7.79*	*6.41*	*10.81*	*12.75*	*11.58*
Government Expenditure	11.11	12.77	11.73	12.95	10.61	9.76
Export	6.96	6.45	8.24	11.66	18.20	20.25
Less Import	6.81	7.31	8.89	13.61	17.14	24.60
Discrepancies	-5.20	-5.44	0.03	-1.16	-2.68	1.23

Note: Organised Sector Investment is the sum of public and private corporate sector investment, where Unorganised Sector Investment is only household sector investment.

The question is whether such high growth will also lead to a job-led growth of employment or job-less growth in the economy? We shall discuss the trends and structure in employment situation in India, before we undertake an exercise to look into the determinants of aggregate employment.

VI.2.2. Aggregate and Sectoral Composition in Employment Growth in the Economy (1983-05):

Growth of aggregate employment in India during the twenty years between 1983-04 shows some ups and downs. Employment has grown at a rate of 1.99 per cent per annum during the period 1983-05 (see Table.6.2). There is a clear deceleration between 1993-05 compared to 1983094, from 2.15 per cent 1.84 per cent. Such deceleration of employment growth is due to a massive fall in agricultural employment growth followed as well as in services particularly in medium term phase i.e. 1993-94 to 1999-00. This is a phase of high growth in income for the country.

Table.6.2.Percentage Share and Rate of Growth of Employment in the Indian Economy

Year	Agriculture	Industry	Services	Aggregate
Percentage Share *(in percent)*				
1983	68.4	13.9	17.7	100.0
1993-94	63.9	15.0	21.1	100.0
1999-00	60.4	16.2	23.4	100.0
2004-05	56.5	18.7	24.8	100.0
Growth Rate *(in percent)*				
1983 to 1993-94	1.47	3.03	4.06	2.15
1993-94 to 1999-00	0.10	2.39	2.86	1.05
1999-00 to 2004-05	1.47	5.75	3.89	2.81
1993-94 to 2004-05	0.72	3.90	3.33	1.84
1983 to 2004-05	1.08	3.49	3.67	1.99

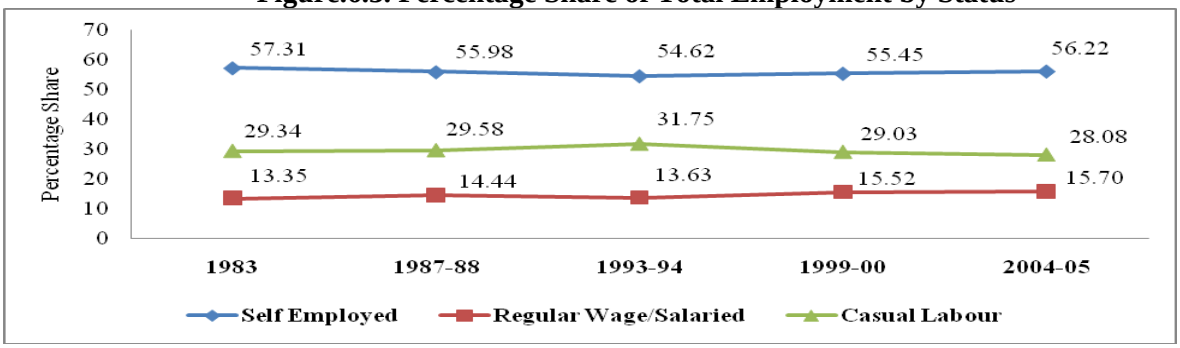
Source: computed from NSSO report no. 515 on Employment and Unemployment Situation in India, 2004-05.

The growth in post-reform period is often described as job-less growth. We have seen in the earlier chapters that much of the employment generated in post-reform period is in the informal sector. The Task Force on Employment (Planning Commission, 2001), the Special Group (Planning Commission, 2002) suggested the need to look at employment quality, and Eleventh Five Year Plan too reiterated the necessity to generate decent work.

An analysis of employment data status-wise from 1983 to 2004-05 throws light on changes in the structure of employment during post-reform period. In India, bulk of employment (approximately 57 per cent) falls in the category of self-employed followed by casual labourer (almost 28 per cent) and regular wage/salaried category (almost 15 per cent). From the figure.6.3, it shows that during 1983 to 1993-94 the number of casual

labour had increased significantly (with the successive decline in the proportion of self-employed group) followed by a small proportion of increase in regular wage salaried workers. But, during the post reform period i.e. 1993-94 to 2004-05, it is the self-employed group constituted 95 per cent increase. The recent increase in self-employment has taken place mainly in the place of casual labour. Even though there is some increase in regular wage/salaried employment in absolute terms, but that is very negligible in terms of percentage change in their share. What is quite stark is the largest share of employment is situated in informal sector of all the three sub-sectors of the economy which amounts to 94 per cent to total employment (see Figure.6.4) in the economy. The present trend that began some twenty years ago suggests that the unorganised sector will only continue to expand further in the years to come.

Figure.6.3. Percentage Share of Total Employment by Status



Source: computed from NSSO report no. 515 on Employment and Unemployment Situation in India, 2004-05.

Figure.6.4. Percentage Share of Total Employment by Nature

Source: Organised sector employments are computed from Ministry of labour & Employment, Director General of Employment Training (DGET) and unorganised sector employments are computed through residual approach.

With regard to productivity in the economy, we have seen that there has been an increasing productivity growth during the post-reform phase compared to pre-reform

period (see Table.6.3). The growth in productivity is also evident in all the three sectors between the two periods. Advocates of reforms take this an evidence for success of reforms which is supposed to have pushed-up the long terms growth rate[121]. Expectedly, productivity growth is the largest in service sector which also explains its faster growth. But how far has this productivity contributed to greater employmnet? We have noted earlier that such positive effects of productivity could be nullified if the capital-labour ratio rises faster. The employment elasticities also indicate that the slowing down of employment creation in the economy during post-reform period. The employment elasticity of output in agriculture has declined drastically, where the largest share of workers is concentrated. Even the industry and service sectors registered decline in elasticities, which made the overall elasticity to drop.

Table.6.3. Rate of Growth in Per Workers Productivity and Employment Elasticity in the Indian Economy

Year	Agriculture	Industry	Services	Total
Per Workers Productivity Growth (*in percent*)				
1983 to 1993-94	2.29	3.14	3.00	3.55
1993-94 to 1999-00	3.21	4.23	5.49	5.40
1999-99 to 2004-05	0.12	0.99	3.69	3.09
1993-94 to 2004-05	1.80	2.78	4.67	4.35
1983 to 2004-05	2.03	2.94	3.88	3.97
Employment Elasticity				
1983 to 1993-94	0.39	0.49	0.58	0.37
1993-94 to 1999-00	0.03	0.36	0.34	0.16
1999-99 to 2004-05	0.93	0.85	0.51	0.47
1993-94 to 2004-05	0.29	0.58	0.42	0.29
1983 to 2004-05	0.35	0.54	0.49	0.33

Source: computed

To concluded, there is little change in the structure of employment in the post-reform period. The employment growth in fact has declined. Besides this, the quality of employment had also deteriorated.

[121] However, this is a much debated issue in the literature that whether long-term growth rates have ever been significantly influenced by economic reforms. For eg., Nagaraj (2005), Nayyar (2007), and Balakrishnan et al (2006) have all argued from their econometric studies that there is no structural break in the long term growth rates 1991, while there are two structural breaks one during 1951 and the other in 1981. Studies on total factors productivity by Goldar (2005), Subramanian et al (2003), Balakrishnan and Pushpangadan (2004) and others have argued that there is no improvement in TFPG. While advocates of reforms such as Panagariya (2009), Tendulkar and Bhavani (2008), Krueger and Bhagawati (2003) argued that productivity improvements in the post-reform period has positive effect on growth rates.

VI.3.A Model of Aggregate Employment:

In the last three chapters we have estimated the determinants of employment in three different sectors, for organised and unorganised segments. Having seen the determinants of employment and its nature at sectoral level, we now aggregate the estimated employment in order to explain the changes in the aggregate employment at the economy level.

In our sectoral approach, we estimated the influence of different factors on employment growth in the organised and unorganised segments. The determinants of employment in agricultural sector were- non-agricultural output, lagged agricultural output, public investment in agriculture, technology i.e. capital-labour ratio, labour productivity and agricultural terms of trade. In the industry, the determinants were non-agricultural imports, wholesale price index, non-industrial output, lagged industrial output, government consumption expenditure, labour productivity, technology and investment for organised and unorganised segments respectively. For services, the determinants of employment were trade in services, private final consumption expenditure on services, non-services output, lagged services output, productivity, technology, investment and human capital are the factors that determine employment growth in the sector for the organised and unorganised segments respectively. In order to derive the aggregate level of employment in the different sectors, we have taken the weighted average of estimated sectoral employment.

VI.3.1.Sectoral and Aggregate Employment: A Model for Estimation

In this section, we present the system of sectoral equations of employment as well as aggregate employment and we see the changes in employment growth in the pre and post-reform phases. The specifications of the employment equations for organised and unorganised sectors for the three sectors, namely, agriculture, industry and services sectors are as follows[122]:

[122] E= employment, OA= organised agriculture, UA= unorganised agriculture, OI=organised industrial sector, UI=Unorganised industrial sector, OS=organised services sector, US=unorganised services sector, NAY=non-agricultural output, LP=labour productivity, GCF_{PUB}= public investment, K/L= capital-labour ratio, Y_{t-1}= lagged output, HYVPRP= proportion of high yielding verities, ATOT= agricultural terms of trade. NAGIMP=non-agricultural import, NIY=non-industrial output, GCF=gross capital formation i.e.

For Agricultural Sector

1. Organised Sector:

$$E_{OA} = F(NAY_{OA}, LP_{OA}, GCF_{PUB}, (K/L)_{OA}, Y_{OA(t-1)}) \ldots\ldots\ldots\ldots\ldots\ldots 6.1$$

2. Unorganised Sector:

$$E_{UA} = F(HYVPRP, NAY_{unorg}, Y_{UA(t-1)}, LP_{unorg}, GCEF_{PUB}, ATOT, (K/L)_{unorg}) \ldots\ldots 6.2$$

3. Aggregate Sector:

$$\Delta Ln(E_A) = \omega_1 \Delta Ln(E_{OA}) + \omega_2 \Delta Ln(E_{UA}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6.3$$

For Industrial Sector

1. Organised Sector:

$$E_{OI} = F(NAGIMP, NIY_{OI}, Y_{OI(t-1)}, LP_{OI}, GCF_{OI}, K/L_{OI}, NAGEXP) \ldots\ldots\ldots\ldots 6.4$$

2. Unorganised Sector:

$$E_{UI} = F(NIY_{UI}, Y_{UI(t-1)}, LP_{UI}, GCF, K/L_{UI}, NAGEXP) \ldots\ldots\ldots\ldots\ldots\ldots 6.5$$

3. Aggregate Sector:

$$\Delta Ln(E_I) = \omega_1 \Delta Ln(E_{OI}) + \omega_2 \Delta Ln(E_{UI}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6.6$$

For Service Sector

1. Organised Sector:

$$E_{OS} = F(Y_{OS(t-1)}, HC, NSY_{OS}, LP_{OS}, NINVEXP) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6.7$$

2. Unorganised Sector:

$$E_{US} = F(Y_{US(t-1)}, HC, LP_{US}, NSY_{US}, K/L_{US}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6.8$$

3. Aggregate Sector

$$\Delta Ln(E_S) = \omega_1 \Delta Ln(E_{OS}) + \omega_2 \Delta Ln(E_{US}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6.9$$

For Total Sector

1. Organised Aggregate Sector:

To arrive at the overall employment in the organised sector, we have used the weighted average of three organised sectors.

$$\Delta Ln(E_{ORG}) = \lambda_1 \Delta Ln(E_{OA}) + \lambda_2 \Delta Ln(E_{OI}) + \lambda_3 \Delta Ln(E_{OS}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots 6.10$$

---

investment, NAGEXP=non-agricultural export, HC=human capital, NSY=non-services output, NINVEXP=net invisible export,

2. Unorganised Aggregate Sector:

To arrive at the overall employment in the unorganised sector, we have used the weighted average of three unorganised sectors.

$$\Delta Ln(E_{UNORG}) = \eta_1 \Delta Ln(E_{UA}) + \eta_2 \Delta Ln(E_{UI}) + \eta_3 \Delta Ln(E_{US}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6.11$$

3. Aggregate Employment:

To arrive at the overall employment in the economy we used the weighted average of aggregate employment for three sectors.

$$\Delta Ln(E_{TOTAL}) = \varpi_1 \Delta Ln(E_A) + \varpi_2 \Delta Ln(E_I) + \varpi_3 \Delta Ln(E_S) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6.12$$

In our sectoral approach, we have identified and estimated the different factors that have already analysed in the respective sectoral chapters which determine the employment in organised and unorganised segments of the economy. Here, we reproduce the results of the estimated employment in each sector for organised and unorganised segments of employment and then provide the estimated aggregate employment for the economy as whole. Aggregate employment is taken as the weighted average of five years moving average of estimated organised and unorganised sector employment. The results of the above specifications of the employment equations for three major sectors are presented in table.6.4.

Table.6.4.Estimates of Sectoral and Aggregate Employments

1. Agricultural Employment:

A. Organised Sector:

$$\Delta \textbf{\textit{Ln}}\ (\textbf{\textit{E}}_{\textbf{\textit{OA}}}) = 0.060 - \underset{(-2.52)}{0.217}\Delta\ Ln\ (\mathrm{NAY})_{\mathrm{OA}} - \underset{(-1.81)}{0.011}\ \Delta\ Ln\ (Y_{t-1})_{OA} - \underset{(-1.98)}{0.011}\ \Delta\ Ln\ (LP)_{OA} + \underset{(9.40)}{}$$

$$\underset{(3.16)}{0.057}\ \Delta\ Ln\ (GCF)_{PUB} - \underset{(-12.75)}{0.925}\ \Delta\ Ln\ (K/L)_{\mathrm{OA}} - \underset{(-8.90)}{0.034}\ \mathrm{L}_{1991} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1.1)$$

R^2=0.90, DW=1.73

B. Unorganised Sector:

$$\Delta \textbf{\textit{Ln}}\ (\textbf{\textit{E}}_{\textbf{\textit{UA}}}) = 0.018 + \underset{(2.98)}{0.038}\Delta\ Ln\ (\mathrm{HYVRP}) - \underset{(-2.67)}{0.115}\Delta\ Ln\ (\mathrm{NAY})_{\mathrm{UA}} - \underset{(-1.97)}{0.003}\ \Delta\ Ln\ (LP)_{UA} + \underset{(3.23)}{}$$

$$+ \underset{(2.02)}{0.012}\ \Delta\ Ln\ (GCF)_{PUB} + \underset{(2.09)}{0.021}\ \Delta\ Ln\ (K/L)_{\mathrm{UA}} + \underset{(1.98)}{0.002}\ \Delta\ Ln\ (ATOT) - \underset{(-1.96)}{0.005}\ \mathrm{L}_{1991} \ldots (1.2)$$

R^2=0.73, DW=1.65

C. Aggregate Agricultural Sector:

$\Delta\ Ln\ (E_A) = 0.006\ \Delta\ \mathbf{Ln\ (E_{OA})} + 0.994\ \Delta\ \mathbf{Ln\ (E_{UA})}$ …… (1.3)

2. Industrial Employment:

A. Organised Sector:

$$\Delta\ \mathbf{Ln\ (E_{OI})} = \underset{(5.32)}{0.042} + \underset{(2.23)}{0.021}\ \Delta\ \text{Ln (NAGIMP)} + \underset{(1.96)}{0.052}\ \Delta\ \text{Ln (NIY)}_{OI} + \underset{(3.91)}{0.122}\ \Delta\ \text{Ln (Y}_{t-1})_{OI}$$

$$-\underset{(-3.12)}{0.117}\ \Delta\ \text{Ln (LP)}_{OI} + \underset{(2.10)}{0.025}\ \Delta\ \text{Ln (GCF)}_{PUB} - \underset{(-4.89)}{0.625}\ \Delta\ \text{Ln (K/L)}_{OI} +$$

$$\underset{(1.96)}{0.008}\ \Delta\ \text{Ln (NAGEXP)}_{OI} - \underset{(-5.34)}{0.030}\ L_{1991} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ (2.1)$$

R^2=0.68, DW=1.65

B. Unorganised Sector:

$$\Delta\ \mathbf{Ln\ (E_{UI})} = \underset{(7.41)}{0.061} + \underset{(3.48)}{0.070}\ \Delta\ Ln\ (NIY)_{UI} + \underset{(5.73)}{0.311}\ \Delta\ Ln\ (Y_{t-1})_{UI} - \underset{(-2.29)}{0.085}\ \Delta\ Ln\ (LP)_{UI} +$$

$$\underset{(2.11)}{0.025}\ \Delta\ Ln\ (GCF)_{UI} - \underset{(-9.45)}{0.870}\ \Delta\ Ln\ (K/L)_{UI} - \underset{(-2.19)}{0.014}\ \Delta\ Ln\ (NAGEXP) + \underset{(1.96)}{0.001}\ L_{91} \ldots(2.2)$$

R^2=0.79, DW=1.62

C. Aggregate Industrial Sector:

$\Delta\ Ln\ (E_I) = 0.199\ \Delta\ \mathbf{Ln\ (E_{OI})} + 0.799\ \Delta\ \mathbf{Ln\ (E_{UI})}$ ……... (2.3)

3. Services Employment:

A. Organised Sector:

$$\Delta\ \mathbf{Ln\ (E_{OS})} = \underset{(5.28)}{0.024} + \underset{(4.01)}{0.030}\ \Delta\ Ln\ (NSY)_{OS} + \underset{(2.67)}{0.006}\ \Delta\ Ln\ (HC) + \underset{(1.96)}{0.037}\ \Delta\ Ln\ (Y_{t-1})_{OS} -$$

$$\underset{(-3.12)}{0.122}\ \Delta\ Ln\ (LP)_{OS} + \underset{(2.31)}{0.010}\ \Delta\ Ln\ (NINVEXP) - \underset{(-5.91)}{0.017}\ L_{1991} \quad \ldots\ldots\ldots\ldots(3.1)$$

R^2=0.73, DW=1.74

B. Unorganised Sector:

$$\Delta\ \mathbf{Ln\ (E)_{US}} = \underset{(7.73)}{0.036} + \underset{(7.01)}{0.105}\ \Delta\ Ln\ (NSY)_{US} - \underset{(-2.18)}{0.014}\ \Delta\ Ln\ (HC) + \underset{(2.00)}{0.050}\ \Delta\ Ln\ (Y_{t-1})_{US} -$$

$$\underset{(-8.92)}{0.374}\ \Delta\ Ln\ (LP)_{US} - \underset{(-2.45)}{0.124}\ \Delta\ Ln\ (K/L)_{US} + \underset{(4.30)}{0.023}\ L_{1991} \quad \ldots\ldots\ldots\ldots\ldots..(3.2)$$

R^2=0.67, DW=1.95

C. Aggregate Services Sector:

$\Delta\ Ln\ (E_S) = 0.221\ \Delta\ \mathbf{Ln\ (E_{OS})} + 0.779\ \Delta\ \mathbf{Ln\ (E_{US})}$……. (3.3)

4. Estimated Aggregate Employment in the Economy:

A. Estimated Aggregate Employment for Organised Sector:

$$\Delta Ln\,(E_O) = 0.054\Delta Ln\,(E_{OA}) + 0.362\Delta Ln\,(E_{OI}) + 0.584\Delta Ln\,(E_{OS}) \ldots\ldots\ldots\ldots \quad (4.1)$$

B. Estimated Aggregate Employment for Unorganised Sector:

$$\Delta Ln\,(E_{UO}) = 0.685\Delta Ln\,(E_{UA}) + 0.134\Delta Ln\,(E_{UI}) + 0.181\Delta Ln\,(E_{US}) \ldots\ldots\ldots\ldots \quad (4.2)$$

C. Estimated Aggregate Employment for the Aggregate Economy:

$$\Delta Ln\,(E_{TOTAL}) = 0.650\,\Delta Ln\,(E_A) + 0.145\,\Delta Ln\,(E_I) + 0.205\,\Delta Ln\,(E_S) \ldots\ldots\ldots \quad (4.3)$$

$$\Delta Ln\,(E_{TOTAL}) = 0.073\,\Delta Ln\,(E_O) + 0.927\,\Delta Ln\,(E_U) \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.4)$$

To recall, in the agricultural sector, we have seen that public investment has positively influenced the employment in organised sector, whereas non-agricultural income, last year income, productivity and technology of this segment have adversely affected employment. But we know that the organised sector in agriculture is insignificant. It is the unorganised sector which employs 99 per cent of workforces, there the employment growth is positively influenced by adoption of high-yielding varieties, public investment, capital-labour ratio and terms of trade; and negatively influenced by non-agricultural income and labour productivity. The estimate of overall employment in agriculture is given by the weighted average of estimated employment of the two segments (as given in equation.1.3). The estimated and actual employment plot shows a remarkable overlap. On aggregate, the demand from non-agriculture seems to have some perverse effect, possibly due to market imperfections. According to estimates, the negative trend in the overall employment is certainly due to increasing labour productivity. In a sector which is believed to house surplus labour, employment tends to be supply-driven than the demand. Therefore, factors such public investment, technology and relative price stability largely determine the production, hence employment. It is possible to conclude that institutional and policy variables are crucial in determining employment growth in agriculture.

For the organised segment of industrial sector (see eq.2.1), non-agricultural imports, non-industrial output, lagged industrial output, investment and non-agricultural exports have positively associated with employment; where as and labour productivity and capital-labour ratio (technology) influence the negatively. The demand sides as well supply

side variable coefficient have expected signs. In spite of positive impact of demand side variables, the labour-displacing factor substitution clearly is more dominant, can perhaps explain the shrinking employment growth in organised sector. Thus the demand and supply side factors have the expected direction of influence. Similarly, in case of unorganised sector employment (see eq.2.2), the non-industrial output, the lagged industrial output and the investment have positively affects the employment; and labour productivity, technology and non-agricultural exports have negative effect on employment. The aggregate is taken as the weighted average of the two. On aggregate, employment growth is positively influenced by the demand variables such as non-industrial output, lagged industrial output and investment and negatively influenced by supply side factors like labour productivity and technology. When capital-labour ratio rose faster, the positive impact of labour productivity is perhaps nullified, thereby employment creation effect seems to be missing.

In service sector (see eq.3.1 to 3.3), we observe that non-services output, lagged services output, human capital and invisible exports have positively affect on employment growth; and labour productivity and technology have negatively affect for organised sector. Similarly, for unorganised sector, variables like non-services output and lag services output have positively influenced on employment; human capital, technology and productivity have negatively associated with employment on the other. Human capital has some perverse sign for unorganised sector. By combining the estimated employment in the two segments, using the weighted averages, we arrived at estimated aggregate employment for service sector. The actual and estimated employments are plotted in the fig no.6.7 to 6.10 and there is a significant overlap between the two. Hence, the estimates are reasonably good. Thus we conclude that on aggregate, the demand side variables namely income outside the service sector and inside has a positive influence[123].

We have noted that it is the unorganised sector which is the leading employer of workers, the rate of growth of employment is slowing down. The trend in the estimated employment in the two segments clearly indicates this. To broadly conclude, at the sectoral level as well as aggregate level, the supply side variables like technology and labour

[123] The growth of agriculture and industry is crucial for the growth of service sector.

productivity are pulling down the employment creation, while demand-side variables are responsible for the positive growth. The influence of demand-side variables is apparently weaker than the supply-side factors on the employment in general.

Figure No.6.5 to 6.10

Figure.6.5. Aggregate Agricultural Employment

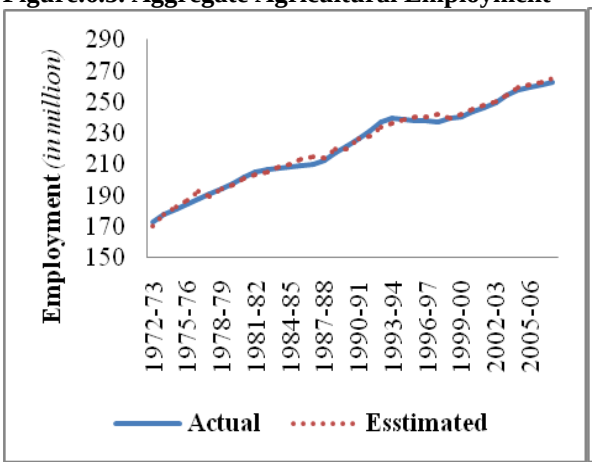


Figure.6.6. Aggregate Industrial Employment

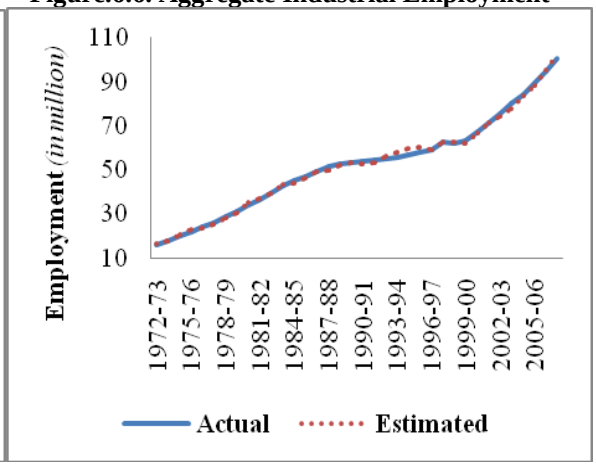


Figure.6.7. Aggregate Services Employment

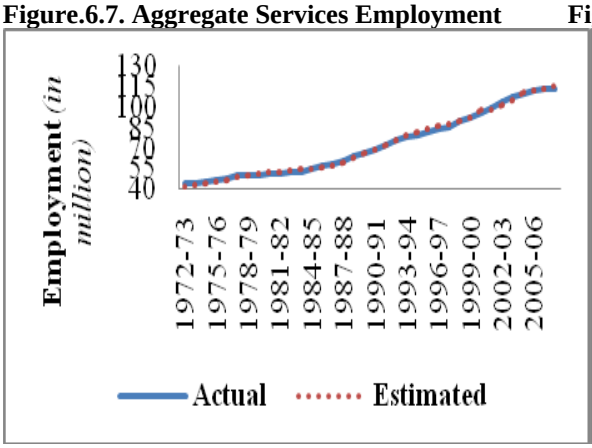


Figure.6.8. Aggregate Organised Sector Employment

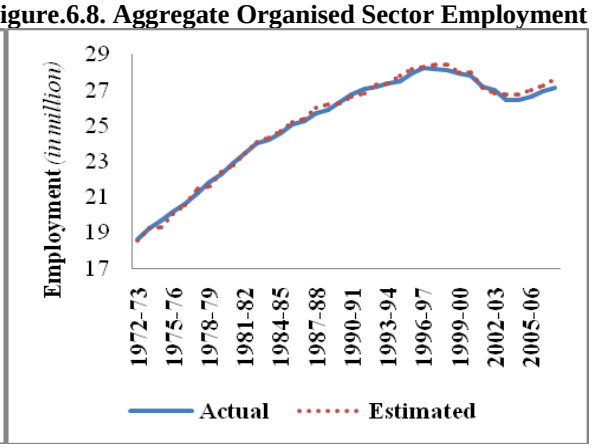


Figure.6.9. Aggregate Unorganised Sector Employment

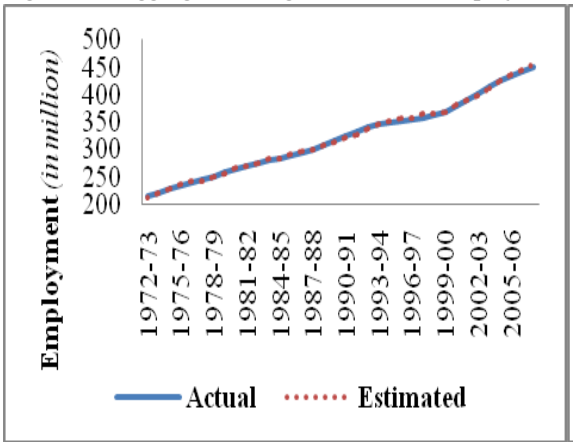
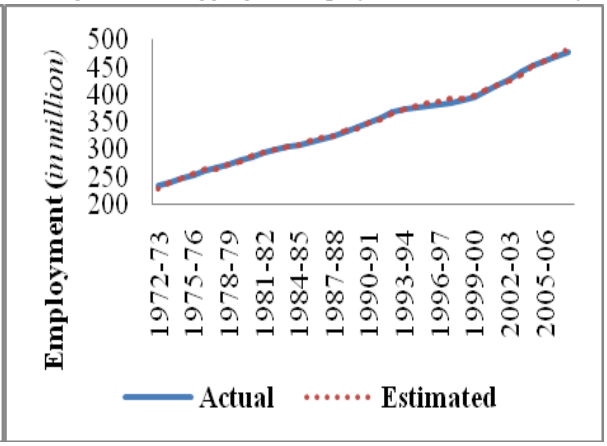


Figure.6.10. Aggregate Employment in the Economy



Chapter-VII

Structural Transformation in Indian Economy

VII.1. Introduction

As argued in the beginning, structural transformation is central to the idea of modern economic development. The pattern of employment growth is a key factor in facilitating the structural transformation of the economy as it happened in the developmental experience of the developed economies. In case of India, there are three apparent observations at the outset regarding the nature of structural transformation. First, there is a significant structural transformation in terms of income, but no commensurate change in the occupational structure happening. Second, even while there is some occupational transformation, it is led by service sector, instead of the industrial sector. Third, an overwhelming share of modern sector is informal economy, whose contribution to quality of work conditions and social security is extremely marginal. But, empirically, what is the magnitude of the transformation, vertically and horizontally? What are the broad determinants of this transformation? How do we understand and explain the process of transformation? In this chapter, we undertake the empirical exercise on structural transformation and to estimate the magnitude and determinants of structural transformation in the Indian economy.

VII.2.Structural Transformation: An Indian Experience

Indian economy when it embarked on the development process after Independence in 1950, with about 60 per cent of GDP accounted for by agriculture, industry contributing about 13 and services about 27 per cent, it was structurally comparable to the economy of the Great Britain in late eighteenth century, and of Germany at the beginning of the nineteenth century, of the United States and Italy of mid-nineteenth century and of Japan in 1900. Similar comparisons hold in respect of the share of labour force in different sectors: agriculture accounted for about 75 per cent, industry for about 11 and services 16 per cent of total employment in 1950, in India. This is comparable with the United States of 1841, with 72 per cent workers in agriculture, 12 per cent in industry and 16 per cent in services,

or Japan of 1880 with the respective shares of employment in the three sectors being 65, 15 and 20 per cent (Papola, 2005)[124].

What India has achieved in terms of structural transformation in sectoral shifts in income in the span of sixty years is much quicker than what developed countries have taken in the historical course. The share of agriculture in GDP in India has declined from around 60 per cent in 1950-51 to 36.38 per cent in 1983 and further declined to 14 per cent in 2010-11. That of industry increased from 13 to 24 and reaches to 28 per cent and of services from 28 to 40 and further rises to 58 per cent. The difference is while most developed countries entered the phase of predominance of services in their economies after going through a phase of industrialisation, India's industry failed to show similar growth and it arrived into service sector dominance straight away. The growth transition of China, when we compare, is much more in traditional route to modernisation than that of India.

The acceleration in growth of GDP in India is not accompanied by a commensurate growth in employment. This asymmetry is noted by a number of studies [like Rao (1979)[125], Bhattacharya and Mitra (1997)[126], Kuldeep and Dhindsa (2000)[127], Gandhi and Gansan (2002)[128], Papola (2005), and Dev (2008)[129]] which is also evident from the data (see Table.7.1). However, there is some increased movement in the structural transformation in the last two decades, as 12 per cent shift of labour registered away from agriculture. This is much higher magnitude of shift compared to what was achieved in the first 30 years after Independence where only 4.7 per cent could come out of agriculture. Hence in quantitative terms one needs to acknowledge the change. But there are two issues

[124] Papola (2005), "Emerging Structure of Indian Economy: Implications of Growing Inter-sectoral Imbalances", *Presidential address of 88th Conference of the Indian Economic Association*, Andhra University, Visakhapatnam, December, 27-29.

[125] Rao, V.K.R.V (1979), "Changing Structure of Indian Economy: As seen through National Accounts Data", *Economic and Political Weekly*, December 15, pp. 2049-2058.

[126] Bhattacharya, B.B and Arup Mitra (1997), "Changing Composition of Employment in Tertiary Sector: A Cross-Country Analysis", *Economic and Political Weekly*, March15, pp. 529-534.

[127] Kaur, Kuldeep and Paramjeet Dhindsa (2002), "Growth of Tertiary Sector Employment in India" in Mathur, A and Raikhy, P S., (ed.) *Economic Liberalization and its Implications for Employment*, Deep and Deep, New Delhi.

[128] Jagadish Gandhi and P. Ganesan (2002), "Service Sector and Employment Generation: Is It Real?" in Mathur, A and Raikhy, P S., (ed.) *Economic Liberalisation and its Implications for Employment*, Deep and Deep, New Delhi.

[129] Dev, S. Mahendra (2008), "Employment: Trends, Issues and Policies", in *Inclusive Growth: Agriculture, Poverty and Human Development* (eds.), Oxford University Press, New Delhi.

regarding this change. One, it is the service sector that absorbed more labour than the industrial sector[130]. Second, the shift of labour has taken place from informal sector of agriculture to informal sector of the non-agriculture.

Table.7.1. Percentage Share of Employment and Income in Agriculture and Nonagricultural Sector

Year	Employment				Shift in Labourforce away from Agriculture	Income			
	Agriculture	Non-agriculture				Agriculture	Non-agriculture		
		Industry	Services	Total			Industry	Services	Total
1983	68.51	13.83	17.67	31.49		36.24	24.15	39.61	63.76
1987-88	64.97	15.93	19.10	35.03	3.53	31.72	25.23	43.05	68.28
1993-94	63.84	15.01	21.16	36.16	1.14	30.01	25.15	44.84	69.99
1999-00	60.27	16.22	23.50	39.73	3.56	24.99	25.31	49.69	75.01
2004-05	56.50	18.70	24.79	43.50	3.77	20.22	26.23	53.55	79.78

Source: computed from various rounds of NSS reports and various issues of NAS.

Table.7.2. Growth Rate of GDP, Employment, Labour Productivity and Capital-Labour Ratio (at 1999-00)

Year		1983-93		1993-04	
		Agriculture	**Non-Agriculture**	**Agriculture**	**Non-Agriculture**
GDP		3.76	5.78	2.52	6.27
Employment		1.47	3.62	0.72	3.57
Labour Productivity		2.29	2.16	1.80	2.70
Capital-Labour Ratio		0.78	4.67	1.90	6.80
Real Wages*	Casual	2.78	4.19	1.31	0.76
	Regular	5.38	0.56	5.01	0.21

Note: * for 1993-99 and 1999-04
Source: computed from various rounds of NSS reports and various issues of NAS.

In terms of employment growth, there has been a remarkable growth in employment of non-agricultural sector during 1983-04, compared to agricultural sector. There is a marginal slow down in employment growth of non-agriculture in the post-reform perdiod of 1994-04, while there is a drastic decline in agricultural employment (see Tabel.7.2). There is also a faster growth of labour productvity in non-agricultural sector (2.70 per cent in post-reform phase) associated with an increase in higher output growth

[130] The fact that the earnings level in the tertiary sector has been significantly above that in manufacturing, suggesting that growth in the services sector has been productivity-led rather than employment-led (Mazumdar and Sarkar, 2009).

(6.27 per cent), but with marginal decline in employment growth (3.57 per cent) in the sector compared to its previous decade.

While looking at factor composition[131], it is observed that capital-labour ratio has gone up from 4.67 per cent in pre-reform period to 6.8 per cent during post-reform period. The real wage in agriculture is way below the non-agriculture (casual) which is perhaps logical, given the productivity differences. The decline in labour productivity in agriculture in post-reform period is in consonance with a decline in real wage[132].

VII.2.1. Factors behind Slow Transformation of Employment in India:

There were several explanations for such a slow transformation. At a simple level we can approximate at least some of the factors that can have positive or negative effect on transformation, which we shall discuss some in them in the following.

VII.2.1.1. Effect of Population Growth on Employment in India

One of the important factors that can slow down the rate of transformation is the growth of backlog of labour on the supply side which is to be accommodated in the modern sector, which in turn depends on population growth rate. On the supply side, population growth rate and the associated factors, *inter alia*, is an important factor determining labour supply. The size of net working population is directly determined by age, sex, fertility, mortality, and migration patterns, and work participation rates, these tend to determined economically, socially and culturally.

The interrelationship between population growth and labour supply can be characterised as:

1. Population growth tends to have a lagged effect on labor supply: If population growth is due to high fertility rate or of an age distribution that is heavily concentrated in the childbearing year, the growth in any year will have its impact focused at age 0 of the age distribution. Thus, it will take at least 10 to

[131] Technology, which is assumed to be neutral in the Lewisian model, has a greater role to play for the development of modern sector. As we know that the capital-labour ratio is associated with a unique saving ratio and a unique capital-output ratio and hence with a unique rate of output growth, then with the increase in capital-labour ratio will increase the output growth much faster rate with the increase in saving ratio. But on the other hand, with the introduction of more and efficient capital, there will be more substitution of labour for capital.

[132] However, changes in average level of real wages will help little in understanding more complex nature of labour market in rural and urban areas.

15 years before the effects of a particular year's population growth even begin to be felt in the labor force. On the hand, if population growth is mainly the result of substantial in-migration, its principal effect on labor supply will not be lagged since the propensity to migrate tends to be relatively low before the teenage years. Population growth resulting from an excess of births over deaths in rural portions of an economy may create pressures for migration to urban areas, then the migrants tend to be of working age population growth in the urban areas will have an immediate effect on labor force growth. [Bloom and Freeman, 1986]

2. Fertility and mortality levels are important determinants of labor supply. Both can affect the population growth, but tend to have different implications. In other words, with the increase in fertility rate, dependency rate will grow by increasing the particular age group which led to high population growth. But if mortality rate declines, there will be an increase in dependency rate, effects of mortality decline are not concentrated at one point on the age distribution but, rather, are spread out across that distribution. [Bloom and Freeman, 1986]

3. Fertility increase and mortality decline are likely to have an immediate effect on labor supply through their "behavioral" effects on labor force participation rates: fertility changes may have an effect on labour force. For example, in some high-fertility populations, it is rare for women to work away from the home. By contrast, in other high-fertility populations women are able to spend a great deal of time working outside the home by having older children take care of their young children. On the other hand, women have relatively more freedom to work, at least for a greater portion of their lives, in low-fertility populations. Thus, a decline in fertility may have an immediate impact on the size of the labor force because of its effect on the participation rates of women. On the other, mortality changes may also have an effect on the labor force. In this case, the effect does not operate entirely through the impact of mortality decline on age-specific participation rates; rather, it also operates through the positive impact of declining morbidity on the quality and productivity of the

labor force. In such case, individuals perceive a decline in mortality as extending their work life horizons, it may also provide greater incentives for human capital investments. While such investments will contribute to the overall quality of the labor force, they will also tend to delay the entry of individuals into the labor force and therefore reduce aggregate participation rates. [Bloom and Freeman, 1986]

4. Participation rate may also be influenced through economical, social and cultural factors: economic factors are per capita GNP, average earning level for workers, employment opportunities and their geographical distribution, industrial structure, occupational structure, organisation of production, and so forth. Social factors that can influence fertility rates are educational opportunities, educational attainment, urbanisation, marital laws and characteristics, and so forth. Cultural factors are traditional attitudes towards participation of different groups, particularly women, in economic activity, religious influences on attitudes to work, and so forth.

In case of India, we find that the decline in the death rate has been faster than the fall in birth rate which increases the population growth till 1981s. Since 1951 to 1971, the population growth has significantly increased in the country for the bottom segment[133]. Partly due to family programming and partly to natural transition, decline in birth more than death rate became possible by 1981. And after 1981, the population rate has declined successively from 2.2 per cent in 1981 to 1.95 per cent in 2001 and further declined to 1.62 per cent in 2011[134](see Table.7.3). The urban population rates rose due to the growth of urbanisation and increasing migration from rural areas. The urban population share has

[133] In order to reduce the poverty so as to control the population pressure, Sanjay Gandhi believed that India's problems of poverty could be solved by corrective sterilization of the poor. The resulting civil resistances provoked by mass sterilization camps and by the emergency declare by his mother, Prime Minister Indira Gandhi, in the mid 1970's led to the virtual abandonment of `forced' family planning programmes in India. See Lal, Deepak (2006), "India: Population Change and Its Consequences", *Population and Development Review*, Vol. 32, pp. 145-182.

[134] Such decline in population growth is well supported by the introduction of different socio and economic planning in the country, such as: rise in the mean age at marriage and decline in the age-specific marital fertility rate due to the spread of contraceptive practices, specific incentive for female child, free education for single child etc. With successive decline in death rate due to better health and more access to medical services, life expectancy has been increasing. Particularly, female life expectancy has been rising with the rising in sex ratio where historical sex bias towards male child has been declining.

increased from 24 per cent during 1981 to 31 per cent during 2011. It is believed that more than half of all India's population growth by 2026 is likely to end up living in the urban sector. This has important ramifications for transformation. Gender specific interstate migration trends reveal that females are becoming increasingly represented in all types of migratory movements. Apart from the large exodus observed due to marriage, younger females are also seen to be migrating to urban areas for educational purposes. The prime reason for male migration remains employment and business (Perveen, 2004)[135].

Tabel.7.3. Demographic Trends in India, 1951-2011

Year	Population Growth	Birth Rate	Death Rate	Net-Migration	Infant Mortality Rate	Life Expectancy	
						Female	Male
1951	1.25	40.9	22.8		146	31.7	32.4
1961	1.96	40	17.6		129	40.6	41.9
1971	2.22	37.8	15.4		110	44.7	46.4
1981	2.20	34	13		92	54.7	54.1
1991	2.14	30	10		75	60.9	59.7
2001	1.95	26	9	-0.08	70	61.8	60.4
2011	1.62	22.5*	7.3*	-0.05*	30*	72.6*	67.5*

Note: Birth Rate: the average annual number of births during a year per 1,000 persons in the population; Death Rate: the average annual number of deaths during a year per 1,000 persons in the population; Infant Mortality Rate: the number of deaths of infants under one year old in a given year per 1,000 live births in the same year; Net-Migration: is the difference of immigrants and emigrants of an area in a period of time, divided (usually) per 1,000 inhabitants (considered on midterm population). A positive value represents more people entering the country than leaving it, while a negative value mean more people leaving than entering it; Life expectancy: the number of years that an individual is expected to live.

***** year 2009 data.

Source: Lal (2005) and SRS (2011), Census of India.

VII.2.1.2.Labour Force Participation Rate and Work Force Participation Rate

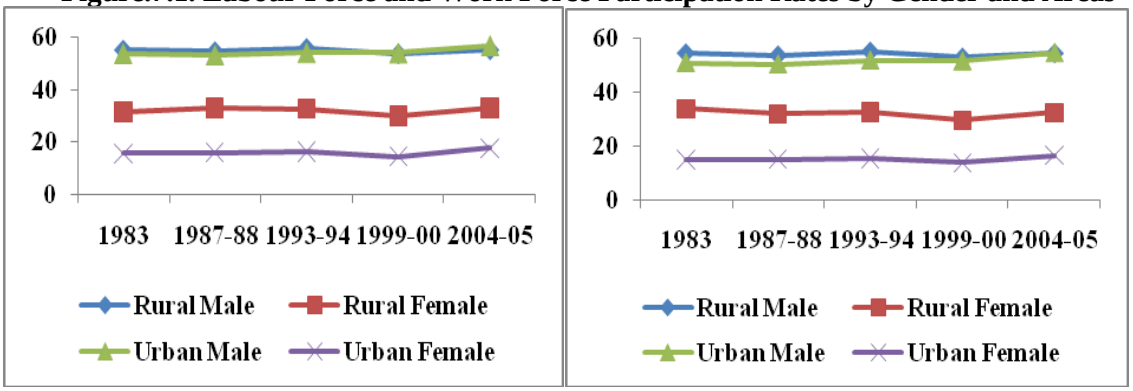
From the above explanation, it can be understood that even though the pace of population growth has declined, but with the successive increase in the absolute number of working-age population (age 15-59) and urbanisation[136], the participation rate in the labour market has increased. Figure.7.1 depicts about the labour force and work force participation rate in the India, and we see that both labour force participation rates (LFPRs) and work force participation rates (WFPRS) have increased in males and females irrespective of the location of residence. During post-reform phase, LFPRs has increased in

[135] Sharma, Praveen (2004), "Population Growth and Sustainable Development", *Economic and Political Weekly*, February, 14, pp. 629-633.

[136] The working age population for each group has been increasing over the period. The NSS provides that rural male working age population has increased from 51.4 percent share of total population in 1983 to 56.4 percent in 2004-05. For rural female, the share has increased from 53.5 percent to 58.2 percent during the reference period. For urban areas, male and female working age populations have increased from 58.1 and 56.6 to 64.9 and 63.7 percent respectively.

both urban males and females and only rural females; where WFPRs was declined for both males and females in rural areas whereas there is an increasing WFPRs in males and females in urban areas. Urban female WFPRs have remained markedly lower than the rural. This difference partly reflects the greater difficulty of combining work with household duties in urban areas instead of in villages where work on the family farm or in the family enterprise tends to be the predominant activity. An important implication for transformation is that there is an increased need to create urban employment.

Figure.7.1. Labour Force and Work Force Participation Rates by Gender and Areas



VII.2.1.3. Status of Employment Structure

As we noticed that with the increase in working-age population, labour participation rate has increased which led to the increase in work force participation rate. But this is not accompanied by an equal increase in the employment transformation rate from agricultural sector to non-agricultural. This is partly due to the status of employment structure in the economy. As we knew that majority of work force in the labour market is in the agricultural sector, 37.62 per cent are self employed and 20.24 per cent are casual labourer in 2004-05 (see Table.7.4). As it can be seen from the above table, after a sharp decline in share of self-employed category in agriculture in 1999-00, it has shown an increasing share by 2004-05. With an increase in self-employed workers, share of casual labour has declined in agricultural sector. But in the non-agricultural sector, though all three category of work force have increased their share in 2004-05 compared to the previous years, but the regular salaried work force that has increased only marginally.

Table.7.4. Percentage Share of Employment by Status to Total Employment

Category	1993-94		1999-00		2004-05	
	Agriculture	Non-agriculture	Agriculture	Non-agriculture	Agriculture	Non-agriculture
Self Employed	38.90	15.75	35.70	17.22	37.62	19.52
Casual Labour	25.06	6.92	25.32	7.59	20.24	8.33
Regular Salaried	0.95	12.41	1.01	13.16	0.71	13.57

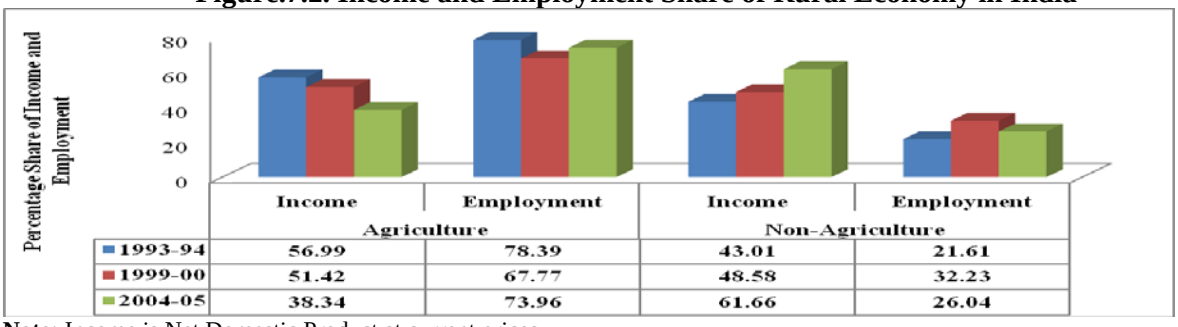
Source: computed from various round of NSSO report.

During 1993-93 to 2004-05, the rural self-employed seem to have declined in between and increased once again. While the casual labour also declined in rural sector. There is no evidence of increased share in non-agiculture. Some of them could have opted cultivation in rural areas. All this suggests a slow process of transformation from agriculture to non-agriculture.

VII.2.1.4. Role of Rural Non-Farm Employment

There is an increasing trend of non-farm sector in India in general, but the increase in non-agricultural work has been much less than the decline in agricultural employment. So there is a need for much faster growth of non-agricultural employment, even within rural areas. It is because, majority of population are in rural areas and costs of migration would be much less (see Figure.7.2). However, the evidence in current trends does not seem to suggest this. The increased share of self-employed can imply that more workers are opting cultivation; with small and marginal farm households dominating, this structure can also house lot of disguised unemployment.

Figure.7.2. Income and Employment Share of Rural Economy in India



Note: Income is Net Domestic Product at current prices.
Source: Income data are from various period of NAS, and employment data are from various round of NSS

VII.2.1.5. Informal Sector

As we have seen, with increased out-migration from agriculture, there is some movement in the urban sector. But what is the nature of non-agricultural employment?

From the point of status of work force, share of regular salaried employment is low, where as majority of work forces are in self employed or casual labour. Most of it what otherwise described as informal sector[137] in the economy. Further, migration driven by distress in agriculture may result in large informal sector.

From the data on non-agricultural employment, by taking industry and services together, which constituting mining, manufacturing, fuel, water, construction, trade, hotels, transport, storage, finance, communications and social and personal services, we see that informal sector (unorganised sector) employment is increasing its share over the period (see Table.7.5). Each of the non-agricultural industry except electricity is dominated by a larger share of work force in informal sector. Among the industry, trade, construction and manufacturing sectors absorb more than 85 per cent of employment in informal sector. Thus as far as non-agriculture employment is concerned, it is predominantly situated in informal sector.

Table.7.5. Percentage Share of Employment by Nature in Non-Agricultural Sector

Sector	Organised Sector			Un-Organised Sector		
	1983	**1993-94**	**2004-05**	**1983**	**1993-94**	**2004-05**
Mining & Quarrying	54.96	41.65	42.88	45.04	58.35	57.12
Manufacturing	19.41	16.04	10.06	80.59	83.96	89.94
Electricity, Gas and Water	89.9	70.38	75.15	10.1	29.62	24.85
Construction	17.48	10.03	3.69	82.52	89.97	96.31
Trade, Hotel & Restaurant	2.05	1.62	1.13	97.95	98.38	98.87
Transport, Storage and Communication	38.32	29.16	15.27	61.68	70.84	84.73
Finance, Insurance, Real Estate and Business Services	50.72	42.51	24.83	49.28	57.49	75.17
Community, Social and Personal Services	36.92	30.49	29.44	63.08	69.51	70.56
Total Non-Agriculture	**23.80**	**19.16**	**12.54**	**76.20**	**80.84**	**87.46**
Total Sector	**7.93**	**7.31**	**5.78**	**92.07**	**92.69**	**94.22**

Source: Organised Sector Employment data are computed from Ministry of labour & Employment, Director General of Employment Training (DGET); unorganised sector Employment are computed through residual approach

By status of employment in agriculture and non-agricutural sector, the share of informal employment in agriculture constitutes 97.6 per cent of total workers in the sector, consisting mainly self-employed and casual labour (see Table.7.6). It is 71.6 per cent of

[137] Keith Harth (1970, 1973) a social anthropologist was the first person to bring the term informal sector into the academic literature. He introduced the concept of the informal sector to describe a part of the urban labour force, which works outside the formal labour market.

non-agriculture are unorganised and 28.4 per cent in organised sector. Out of the unorganised employment, about 60 per cent in both are self-employed, where the regular salaried employment is about 18 per cent for both.

Table.7.6. Size and Distribution of Organised and Unorganised Sector Workers by Industry and Status during 2004-05 (%)

	Agriculture			Non-Agriculture			All		
	Org	**Un-org**	**Total**	**Org**	**Un-org**	**Total**	**Org**	**Un-org**	**Total**
SE	38.1	64.8	64.2	5.1	62.8	46.4	8.3	64.1	56.5
RW	20.1	0.6	1.1	74.3	17.4	33.6	69	6.7	15.2
CL	41.8	34.6	34.7	20.7	19.8	20	22.7	29.2	28.3
TOTAL	100	100	100	100	100	100	100	100	100
% to Total	2.4	97.6	100	28.4	71.6	100	5.8	94.2	100

Source: National Commission for Enterprises in the Unorganised Sector, 2007

What transpires from reading the structure of employment is that overwhelming share of workers is in lowly paid, insecure informal sector sans any social security. Hence quality of employment in India is generally very poor. If the transformation that is taking place is from agricultural-informal sector into non-agricultural-informal sector, then substantial value addition of this process can only be poor.

From the above explanation, we say that the structural transformation of employment is not just about from agriculture to non-agricultural sector, but is about shifting from low productive-low wage sector to high productivity-high wage sector (with reasonable social security). It is all about the kind of job he/she is getting into the non-agricultural sector. For example, if a fisherman willing to move out from his work and will involve as a rickshaw puller in urban areas, does it mean that there is a transformation in the economy? The same thing is visible in case of India's modern non-agricultural sector which is completely dominated by informal sectors where majority of workers are self-employed and casual labourers. This is really an issue of the structural problem on employment transformation in the economy.

VII.2.2.Estimating Rate of Structural Transformation in India

The dynamic change in structural transformation can captured more rigorously from estimating the rate of change of structural transformation (RST)[138]. If L_t is the total

[138] Cownie, John (1974), "Agriculture, Domestic Manufacturing and Structural Transformation: Assessing Economic Development", African Studies Review, Vol. 17, No.1, April, pp.123-132.

workforce of the economy and L_n is the non-agricultural (sum of industry and services) workforce, then the share of the non-agriculture is given by L_n/L_t , which is also a measure of the degree to which a developing economy has diversified its production base. The rate of structural transformation may then be defined as the increment in L_n/L_t ratio per annum. Then the rate of structural transformation is:

$$RST = \frac{L_n}{L_t}(L_n^{'} - L_t^{'}) \quad \text{..... (7.1)}$$

The above equation has derived as in the following:

Let `t' is the time period, and then the first difference of L_n/L_t with respect to time will be;

$$\frac{d(\frac{L_n}{L_t})}{d\tau} = \frac{L_t \frac{dL_n}{d\tau} - L_n \frac{dL_t}{d\tau}}{L_t^2} \quad \text{..... (7.2)}$$

Using the approximation $\partial\tau = \Delta\tau = 1$ year, the above equation will be rewrite as;

$$\Delta(\frac{L_n}{L_t}) = RST = \frac{\Delta L_n}{L_t} - \frac{L_n \Delta L_t}{L_t^2} \quad \text{..... (7.3)}$$

$$RST = \frac{L_n}{L_t}(\frac{\Delta L_n}{L_n} - \frac{\Delta L_t}{L_t}) \quad \text{..... (7.4)}$$

$$RST = \frac{L_n}{L_t}(L_n^{'} - L_t^{'}) \quad \text{..... (7.5)}$$

Thus the rate of transformation contemplated as rate of change of ratio of non-agricultural employment to total employment over period, is the ratio multiplied by the difference between the incremental change in non-agricultural and total employment. We have estimated the RST for two types of transformation: (a) from agricultural to non-agricultural and (b) from informal sector to formal sector[139].

The estimated rate of structural transformation is given in table 7.7. Looking at the rate of employment transformation, it can be seen that one unit increase in total employment, the structural shift of employment from agriculture to non-agriculture increases by 0.578 for the period between 1983-04. In the pre-reform period, the RST for employment is 0.59 compared to RST for output which stood at 0.57. In the post-reform period, the RST of output increased to 0.83, while RST for employment declined to 0.56.

[139] The classical notions of structural transformation implicitly assume it as transformation from a traditional to modern where the latter is a formal sector. However, if the labour transition is happening from informal agricultural to informal modern sector, then the qualitatively this transformation is deferent. To capture the qualitative dimension, we estimate the transformation from informal to formal sector.

For the overall period between 1983-04, the RST of output is 0.708 compared to RST of employment being 0.578.

Table.7.7.Rate of Structural Transformation in India

STR	**Pre-reform Period** (1983-93)	**Post-Reform Period** (1993-04)	**Overall Period** (1983-04)
Rate of Transformation on Output			
Agricultural output to Total Non-agricultural output	0.570	0.838	0.708
Rate of Transformation on Employment			
Agricultural workers move to Organised Non-agricultural Sector	-0.020	-0.106	-0.064
Agricultural workers move to Unorganised Non-agricultural Sector	0.618	0.680	0.650
Agricultural workers move to Total Non-agricultural Sector	**0.593**	**0.565**	**0.578**

Source: computed

However, when we estimated the RST of employment between informal and formal sectors, we found that formal sector has declined at -0.064 for the period as whole. For the sub-periods, it has worsened during the post-reform period compared the pre-reform period. It declined at a rate of -0.106 compared to previous rate of -0.02 (a five fold deceleration). In case of informal sector, RST of employment from agriculture to non-agriculture has increased from 0.618 to 0.68 from pre-reform to post-reform period. Thus these empirical estimates have more sharply brought the trends in the nature of transformation.

To conclude, first of all, output transformation is lot quicker than in employment for the past quarter century in India. This has further got strengthened in the post-reform period. Second, the occupational transformation from agriculture to non-agriculture has improved. Third, the quality of such transformation in fact deteriorated, there is addition to organised employment instead there is shift from formal to informal sector.

VII.3.An Econometric Analysis of Rate of Structural Transformation in India

From the above analysis, we have found that there is a declining transformation of employment during the post-reform period. This suggests that the shift of work force from agriculture to non-agricultural sector has been slow. It would be interesting to estimate the

determinants of the rate of transformation to understand the direction of influence of various factors. We have used simple OLS technique to estimate the same.

The important variables taken to have impact on employment transformation are urbanisation, non-agricultural income, non-agricultural investment, technology used in non-agricultural sector, non-agricultural informal employment, rural-urban wage differential (Todaro model hypothesis), and skilled labour. Such variables are now presented in the following equation format i.e.

$$STR_{AE\rightarrow NAE} = \alpha + \beta_1(UP) + \beta_2(Y)_{NA} + \beta_3(GCF)_{NA} + \beta_4(K/L)_{NA} + \beta_5(UE)_{NA} + \beta_6(RW) + \beta_7(HC) + \beta_8(L_{91}) \quad \text{.....7.6}$$

Where, STR= Structural Transformation i.e. share of non-agricultural employment to total Employment.
UP= Urbanisation i.e. share of urban population to total population
Y= share of Non-agricultural sector GDP i.e. non-agricultural GDP to total GDP
GCF= share of gross capital formation in non-agricultural sector, i.e. non-agricultural total investment to total investment
K/L= share of capital-labour ratio in non-agricultural sector
UE= share of unorganised sector employment in non-agricultural sector, i.e. total unorganised sector employment in non-agricultural sector to total
RW= Rural-Urban real wage differential, i.e. difference between real wages in casual workers between rural and urban areas at 1999-00 prices.
HC= Human capital i.e. literacy rate
L_{91}= liberalisation dummy
NA= Non-agricultural sector
AE= employment in agricultural sector
NAE= employment in non-agricultural sector

The equation in 7.6 is for structural transformation on employment which can be estimated for both the categories, first, for agriculture to non-agricultural sector, and second from informal to formal sector. The specification for the latter is as in the following.

$$STR_{UE\rightarrow OE} = \alpha + \beta_1(UP) + \beta_2(LP)_{Org} + \beta_3(GCF)_{Org} + \beta_4(K/L)_{Org} + \beta_5(HC) + \beta_6(L_{91}) \quad \text{..... (7.7)}$$

Where, STR= Structural Transformation i.e. share of organised sector employment to total employment.
UP= Urbanisation i.e. share of urban population to total population
LP= share of labour productivity in organised sector
GCF= share of gross capital formation in organised sector

K/L= share of capital-labour ratio in organised sector
HC= Human capital i.e. literacy rate
L_{91}= liberalisation dummy

VII.3.1. Data Sources and Methodology

To estimate the above model, for the period 1972-73 to 2007-08, the data required for estimation are collected from various sources. Population and employment data are compiled from various periodic estimates of NSSO and Census data. Output, gross capital formation and net fixed capital stock at 1999-00 prices data are collected from National Account Statistics, Central Statistical Office, Government of India. Wage data are compiled initially from rural labour enquiry and latter merged with the quinquennial employment and unemployment surveys conducted by the NSS.[140] Literacy data is collected through various sources such as Census data, selected education statistics and NSSO report on literacy rate. Some of the mid year values of certain variables has been calculated by interpolation method to fill the data set for making it into time series framework. In order to examine the above model specification equation, simple Ordinary Least Square (OLS) technique is employed.

VII.3.2.Empirical Results

The estimation results for agricultural to non-agricultural employment transformation and unorganised sector to organised sector employment transformation are presented in table.7.8 and 7.9. The predicted and actual employment transformations for the both the segments are plotted in figure 7.3 A and B respectively.

VII.3.2.1. *Employment Transformation from Agriculture to Non-agricultural Sector*

Let's first look at the estimation of quantitative employment transformation from agriculture to non-agricultural sector.

[140] Initial rural labour enquiries were conducted by the ministry of labour and the first two enquiries were called agricultural labour enquiries since wages and earnings of only agricultural labour households were canvassed. However, since 1963-63, the scopes were extended to include rural labour households and are thus called rural labour enquiries. Since 1977-78 the responsibility of canvassing the wage schedule was handed over to NSSO and the rural labour enquiries were merged with the quinquennial employment and unemployment surveys.

Table.7.8. Effects of Employment transformation from Agriculture to Non-agricultural sector in India

Dependent Variable: *STR*		
Independent Variable Name	**Coefficient**	**'t' statistics**
Constant	0.187*	5.87
UP	-0.073*	-2.15
Y_{NA}	0.043*	2.54
GCF_{NA}	0.028*	4.42
K/L_{NA}	-0.033*	-5.41
UE_{NA}	0.641*	19.75
RW	0.001*	2.45
HC	0.047*	2.08
L_{1991}	0.0001*	1.96
R^2	*0.78*	
Durbin-Watson (DW) Test	*1.62*	
Prob (F-Statistics)	*0.000*	
Number of Observation	*36*	

Note: * at 5% significant level

The estimated for agriculture to non-agricultural transformation is presented in table 7.8. It has a reasonable goodness fit with an explanatory power of 0.78. The estimated coefficients of all the variables are found to be significant and have expected signs. Estimated results corroborate the view that the transformation from agriculture to non-agricultural employment has positively influenced by non-agricultural income, non-agricultural investment, non-agricultural informal sector work force, rural-urban real wage differential and human capital and variables like urban population and non-agricultural capital-labour ratio have negatively influenced the transformation in the economy. From the result, we found that, first, share of non-agricultural informal sector work force has the highest coefficient value, suggesting one unit increase in share of non-agricultural informal sector work force will lead to 0.641 unit increase in share of employment transformation rate from agriculture to non-agricultural sector. Second, human capital has the second highest coefficient value of 0.047. Third, one unit increase in share of non-agricultural income leads to 0.043 unit increases in employment transformation in the economy. Fourth, investment which determines the employment transformation by (a la Lewisian model) suggests only 0.028 unit increase for each unit of investment. Fifth, wage differential which determines the rural-urban migration (Harris-Todaro model result) suggests a positive impact to the employment transformation from rural agriculture to

urban non-agricultural sector. On the other hand, urban population and share of capital-labour ratio in non-agricultural sector decreases employment transformation by 0.144 and 0.042 respectively. Liberalisation dummy positively affects the employment transformation in the economy but the coefficient is very negligible. From the above explanation, it can be observed that due to informal sector growth in terms of employment and growth in non-agricultural sector income has some deterministic influence on employment transformation from agricultural sector to non-agricultural sector.

VII.3.2.2. *Employment Transformation from Unorganised Sector to Organised Sector*

Now we move to estimating the determinants of structural transformation from informal to formal sector. The results of the estimation are presented in table.7.9.

The estimations indicate satisfactory goodness of fit with an R-square of 0.77. We know that the rate of transformation of this type is negative and we are interested to see the determinants. According to the estimation, the employment transformation from unorganised to organised sector is positively influenced by investment and human capital and negatively influenced by labour productivity, urban population and capital-labour ratio. This suggests that first, human capital has the highest and positive coefficient of 0.007 unit share. Second, capital formation has the coefficient of 0.001, suggesting a share of organised sector employment increases for one percent rise in share of investment. On the other hand, with the increase in urban population, quality of employment transformation has declined by 0.026 unit share. Employment has a negative coefficient share with respect to labour productivity and capital-labour ratio in organised sector at 0.009 and 0.002 unit of share respectively. The overall result suggests that it is the human capital and investment in organised sector which has some deterministic influence on quality of employment transformation in the economy.

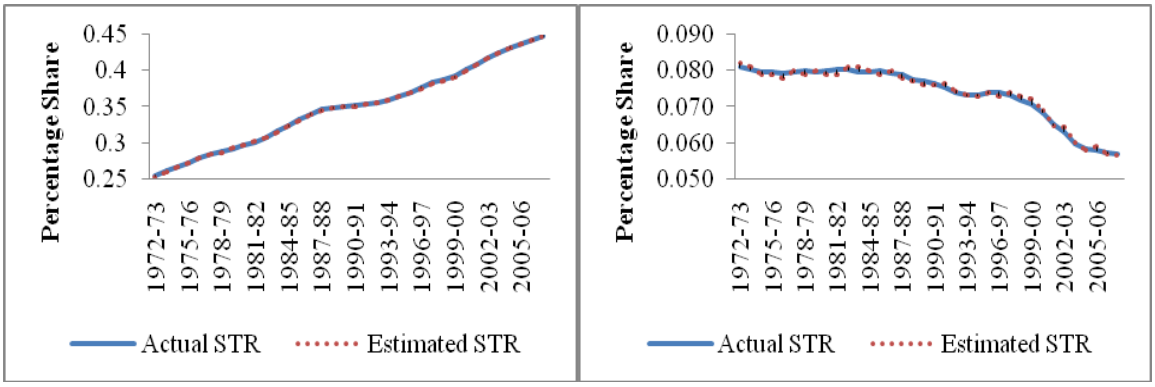
Table.7.9. Effects of Employment transformation from Informal to Formal sector in India

Dependent Variable: *STR*		
Independent Variable Name	**Coefficient**	**'t' statistics**
Constant	0.093*	13.35
UP	-0.026*	-6.48
LP	-0.009*	-3.48
GCF	0.001*	2.16
K/L	-0.002*	-2.67
HC	0.007*	2.99
L_{1991}	-0.002*	-2.66
R^2	*0.77*	
Durbin-Watson (DW) Test	*1.63*	
Prob (F-Statistics)	*0.000*	
Number of Observation	*36*	

Note: * at 5% significant level

Figure.7.3. Actual vs Estimated Structural Transformation of Employment from-

A. Agriculture to Non-Agriculture **B. Informal to Formal Sector**



VII.4. Conclusion

To summarise the discussion, we see that the central features of structural transformation process in substantial terms is missing in case of India. In terms of income, there is no transformation from agriculture to industry instead it went from agriculture to services-led growth. This faster growth of service sector that is not preceded by any remarkable growth of manufacturing sector perhaps is one of the peculiar features of the transition in the Indian economy compared to the experience of developed countries. In terms of employment, there is no commensurate change in the occupational structure that speed up the process of employment transformation which is a major anomaly in the developmental process. From the evidence, we found that there is a declining

transformation of employment during the post-reform period (1993-04). This suggests that the shift of work force from agriculture to non-agricultural sector has been slow. Despite the increase in level of income, development of urbanisation, and higher rural-urban migration, the pace of non-agricultural employment share has been lower due to declining in share of employment in agriculture is slower than the increase in share of non-agricultural sector employment. And whatever increase in share is happening in the non-agricultural sector, majority of work force work as a self-employed due to low skills or casual labourers. We also found that though the quality of job in unorganised sector is very poor, belonging to low earning, low physical and human capital, low education level, insecurity of job. An econometric investigation is under taken to understand the direction of influence of various factors on transformation. From the result, we found that, first, the increase in share of employment transformation from agriculture to non-agricultural sector is positively influenced by share of non-agricultural income, share of non-agricultural investment, share of non-agricultural informal sector work force, rural-urban real wage differential and human capital and negatively by growing urban population and non-agricultural capital-labour ratio. Second, the substantive employment transformation i.e. from unorganised to organised sector has shown that there is a positive influenced by investment and human capital and negative influenced by labour productivity, urban population and capital-labour ratio in organised sector.

Chapter-VIII
Summary and Conclusions

VIII.1. Provision of employment is a major challenge in most countries of the world and its importance cannot be under-emphasised in development process. Therefore, achieving full employment is an important goal for the society in achieving political and social stability. But, unemployment is a source of modern societies, more particularly, for market economies and it lies as major reason behind poverty, crime, and lawlessness. Therefore, reducing unemployment is an important imperative in democracies. However, the sources and nature of the unemployment vary in different societies, depending on how the society and its economic activities are organised, what is the level of development or how fast the society is moving from one stage of development to another. Much of the received notion on employment is based on the development experience of the present-day developed countries. The experiences of Developing Countries vastly differ from it. Indeed, the issue of transformation remained an unresolved problem in the latter and is a crucial concern of development economics.

In the context of India, employment is an important issue in the development agenda and four decades of development planning in the past and latter seem to a neglected aspect. The employment trends in India suggests that there has been a deceleration of aggregate employment growth during post-reform period, indicating a job-less growth, compared to pre-reform period. Such adverse impact of liebralisation on employment has been noted by several scholars like Visaria and Minhas (1991), Deshpande (1992), Mundle (1993), Bhatacharya and Mitra (1993), Ghose (1994), Kundu (1997), Datt (1994, 1999), Bhattacharya and Sakthivel (2004). Sector-specific analysis suggests this decline in employment growth extends to be in all the three major sectors during the phase. In terms of status and nature of employment too, the evidence suggests that close to half of the work forces are employed in self-employed category and an overwhelming majority of 92 per cent are under unorganised sector.

As far as the structural transformation concerned, which lies at the heart of employment growth in a development context, India seems to have missed this

transformation trajectory. The transformation which is in place is quite different, led by a service sector rather than the manufacturing sector, in both income terms as well as employment. There is evidence for some movement in structural transformation in the past two decades, with an increased share of labour moved out of agriculture to non-agriculture. However, the nature of this transition remained less than satisfactory as employment generation is happening in informal sector and shrinking of the same in the formal sector casts doubts about substantive aspects of the transition.

In this context the motivation of the thesis is to examine what can explain the slow growth of employment in three major sectors namely, agriculture, industry and services sector. What is the magnitude of structural transformation in the economy and what explains the pace of structural transformation in the economy. In this regard, the objectives of the study are: (1) to review the literature on issues of employment and structural transformation in India and elsewhere; (2) to examine the trends in growth of employment and estimates the determinants of employment in three major sectors i.e. agriculture, industry and services in both organised and unorganised segments; (3) to identify the broad determinants of the growth of aggregate employment from disaggregated sectoral approach; and (4) to estimate the magnitude and pace of structural transformation in terms from agricultural to non-agricultural sector? And how much is this transformation from informal sector to formal sector?

To examine the above objectives, the present study used the annual data set covering the period from 1972-73 to 2007-08. The empirical analysis in this study is based on two different data sources. First, Gross Domestic Product and its major components are collected from various issues of National Account Statistics. The GDP estimates of unorganised sector in each industry group are initially prepared for a bench mark year by using labour input method. Second, the major source on employment is the quinquennial surveys on employment and unemployment conducted by the National Sample Survey Office. Time series data for employment at an aggregate as well as disaggregate level is constructed using the discrete NSS rounds through interpolation. This study follows a broad Keynesian framework, in which employment is determined through determination of output through demand-supply framework. The determinants of output are thus the indirect

determinants of employment in sub-sectors as well as aggregate. The empirical estimations use simple and compound growth rates, and Ordinary Least Square (OLS) technique.

The following are the important findings of the study:

VIII.2. Chapter-II dealt with an empirical literature on the India's planning and programmes of employment, empirical studies on the relationship between growth, employment and technology at aggregate and disaggregates sectoral levels. The development economics literature recongises a potential conflict between the objectives of growth and employment, suggesting efforts to boost economic growth may not necessarily augment growth of employment. However, Indian economic policy seemed to have tilted towards 'growth first' strategy since early eighties and much more after economic reforms in 1991.

The protagonists of economic liberalisation held that growth of income is necessary for poverty reduction and employment creation. Much more, it is aimed at removing distortions in industrial sector and is argued that it would have a favourable effect on the growth of employment in industry. The favourable effects may arise from greater labour market flexibility and increased trade-orientation leading to changes in the structure of industries in favour of labour intensive industries and technique of production.

Whereas, the critics pointed out that deflationary policies combined with privatisation will adversely affect the employment growth, leading to jobless growth. They also held that even without the economic 'reforms' in the format of Washington Consensus could achieve growth in income as well as employment provided the government has taken care of financial and fiscal profligacy, rationalisation of wasteful expenditure and keeping the balance of payments in balance. The most adverse impact of the liberalisation policies ushered in 1991, were said to be seen on employment creation. A number of studies that we have reviewed brought to our notice that employment growth rates have slowed, organised sector employment declined in absolute it in unorganised sectors. The employment elasticities have declined in the all three subsectors.

VIII.3. Chapter-III examines the employment dynamics in agricultural sector, where trends in growth and the determinants of employment are estimated. Though agriculture was not directly subjected to any reforms after 1991 reforms, the macroeconomic

adjustment and liberalisation measures have indirectly affected the agricultural sector, which has slowed down the growth of the sector. But in terms of absorption of employability, it still employs a dominant majority of the work force in spite of some decline in the recent period. The composition of employment status in agricultural sector suggests that majority of agricultural workers are self-employed, constituting 64.2 per cent, and casual labour constituting 34.6 per cent, together 98.6 per cent are informal sector labour in agriculture.

With the decline in output growth in the sector, there has been significant slow down in the rate of growth of labour productivity and the rate of growth of real wage for casual labourer. The decomposition of labour productivity shows that during the post-reform period, capital productivity has gone down significantly despite the high growth in capital that displace the labour. It is also found that agricultural employment in post-reform period has been more responsive to growth than to investment. This suggests that production conditions in agriculture are under change in the long run, which gives some clues for slower generation of employment.

Given the slow and declining growth of employment in the long run, the study examined the determinants of employment in the sector for both organised and unorganised. The organised sector is in fact insignificant in its share of income as well as employment, still we conducted the exercise for the sake of uniformity of the study. For the unorganised agricultural sector, estimated results corroborate the view that performance of agriculture determines the capacity to generate employment in the sector where employment is positively influenced by HYV, K/L, terms of trade and public investment and variables like non-agricultural output and productivity displace labour in the sector. Capital-labour ratio bore a positive sign in the estimation is taken is as indication that technology is most labour displacing. The policy variable i.e. public investment indicates a positive but very less impact to the employment in the sector.

VIII.4. The fourth chapter is concerned with the structure, status and nature of employment and determinants of growth of employment in industrial sector by organised and unorganised.

The initial performance of industrial growth during 1956-64 was also highly successful, it has grown at an average of 7.8 per cent per annum, a record which is not yet surpassed. However, the mid-sixties industrial stagnation has brought several policy as well as macroeconomic constraints for industrial growth. The partial liberalisation of the economy started in the mid-1980s, saw changes in the external and industrial sector. The turn around in industrial output growth in this decade has been variedly attributed to liberalisation, improvement in public investment and public sector performance. A concrete shift in the policy towards liberalisation has been introduced in 1990-91. Abolition of licensing, near complete import liberalisation (barring agricultural products), rationalisation of tariff structure, opening up major sectors for foreign direct investment, capital market reforms, exchange rate reforms, and financial sector reforms. Also this made little impact on industrial growth rate. During the pre-reform period during 1983-93, industry grew at 6.17 percent per annum, in the post-reform period of 1993-05, it slightly increased to 6.68 percent. The major reason for this increase is accounted by a rise in the construction and manufacturing sector growth rate.

In terms of employment, we observed that its growth in industry has gone up during post-reform period and is higher than the other two sectors of the economy. However, much of the growth came from construction sector, it increased at 6.62 per cent and manufacturing employment increased at 2.65 per cent. The construction sector employment have actually shown a steady growth in the two decades where as manufacturing sector employment was sluggish during 1993-00, but picked up to 4.96 during 1999-05. This has reflected in terms of falling employment elasticities. Not only employment elasticities with respect to output are falling, the employment elasticities of investment are turning negative. Thereby, faster growth of output alone can raise employment in the sector. The structure of the employment in the sector is such that 90 per cent of employment is informal. Among these, 80 per cent constitute self-employed and casual labour. It is disheartening to note that even in the so called organised industry, informal labour constitute 60 per cent. Given the preponderance of self-employed and casual labour, the incidence of disguised unemployment could be prevailing in considerable measure, but no estimates are available. Further, the labour productivity and capital labour ratio in aggregate as well as disaggregate level has been increasing. Capital

productivity has been falling. This means a greater factor substitution becomes necessary to sustain growth, which eventually can erode employment; the growth of employment then is sustained by increase in capital accumulation over period.

Given the slow employment growth in the long run, the study estimated the determinants of employment in the sector for both organised and unorganised. For the organised sector, whose share is just about 10 per cent to total industrial employment, employment have positively determined by industrial lagged output followed by non-industrial income, investment, non-industrial income, and non-agricultural import. On the other hand, capital-labour ratio and labour productivity displaces labour in the sector. The overall result suggests that it is the income and investment in organised sector which has some deterministic influence on employment transformation in the economy. For the unorganised sector, the remaining 90 per cent of employment in the sector is positively influenced by non-industry income, lagged output, and gross capital formation. It is negatively influenced by capital-labour ratio, labour productivity, and non-agricultural export. It is suggested that for employment to grow in the unorganised sector, the capital formation had to rise faster than rise in productivity and capital-labour ratio.

On the whole, our econometric estimations have lent support to the above contention that the employment growth on whole is driven by income and capital formation, while it is slowed down by factor substitution.

VIII.5. Chapter-V deals with the slow growth of employment in the service sector at the aggregate level and estimates the determinants of employment in the service sector by organised and unorganised segments.

Services sector in India has grown rapidly in the last one and a half decades. Its growth has, in fact, been higher than the growth in other commodity-producing sectors such as agriculture and manufacturing sectors. Looking at the performance of the growth, it has shown a little higher growth i.e. 8.0 per cent in 1993-94 to 2004-05 from 7.06 per cent in 1983 to 1993-94. Among the sub-sectors in services, transport sector recorded a higher growth followed by trade sector instead of finance sector during post-reform period. Among the services, the unorganised services grew at a higher rate than organised sector during post-reform period.

In terms of employment, it absorbs only 25 per cent of work force in the country and contributes 56 per cent of national income. The rate of growth in the service sector shows that employment trend has declined to 3.33 per cent in post-reform period from 4.06 per cent in pre-reform phase. Though the growth rate has accelerated (i.e. 3.89 per cent) during 1999-04, but the compensation of fall in employment growth (i.e. 2.86 per cent) in 1993-99 has not made any more employment addition during post-reform. The decline in services employment in post-reform phase is accounted by a massive fall in growth of community, social and personal services. Within the service sector, employment growth is highest in finance, insurance, and business services, followed by trade, hotels and restaurants and transport etc.

The composition of employment status in service sector too has a high share self-employed labour followed by regular-wage/salaried category. The nature of employment in the sector is such that nearly 86 per cent workers are engaged in unorganised sector which constitute highest share of informal workers in the economy. The informal labour in Trade, Hotel and Restaurant and Transport, Storage and Communication sectors have a combined share is 95 per cent to total services employment. For the organised sector, the services employment has come down in the post-reform period due to slow down in employment in the pubic sector. The faster growth in private sector employment did not offset the effect of the slow down in public sector employment in the organised segment.

Further, we observe that the labour productivity and capital-labour ratio in aggregate as well as disaggregate level has been increasing. Capital productivity has been falling. This would necessitate greater factor substitution to sustain growth, which eventually can erode employment.

With the declining growth of employment in the long run, the study tried to examine the determinants of output growth which in turn affects the employment in the sector for both organised and unorganised. For organised sector, estimated results corroborate the view that performance of services determines the capacity to generate employment in the sector where employment is positively influenced by non-services output, last year services income, human capital and net export and variable like productivity displace labour in the sector. Variables like Investment, private final

consumption expenditure and capital-labour ratio are not statistically significant. It is quite plausible that gross capital formation does not influence the employment growth in the sector. It can be observed that it is the output in services along with non-services output, and human capital have some deterministic influence on employment generation in the organised services sector. For the unorganised services, the employment is positively influenced by non-services income, lag output, and liberalisation dummy and negatively influenced by capital-labour ratio, labour productivity, and human capital. A negative impact of human capital on employment in unorganised sector suggests that with the increase in human capital, people will prefer to work in organised services rather than unorganised services. It is the skilled based job which requires quality of persons to be engaged in the services. Therefore, those with more skilled power, they intend to work in organised sector. The result also suggests that gross capital formation does not influence the employment growth in the sector.

VIII.6. Chapter-VI consolidates the results estimated in the previous three chapters and aggregates them to arrive at some understanding of the aggregate employment. At the aggregate level, the rate of growth employment in unorganised as well as the organised sector, both of them are declining. At the aggregate level, the supply side there is a clear upward trend in capital-labour ration and labour productivity.

We analysed aggregate employment by modellling it as a weighted average of sector-wise employment and these are estimated through regressing on a broad set of determinants. The sectoral employment is already estimated in the previous chapters, here, the estimated sectoral employment is aggregated. The estimated and observed employment rates converge well. At the aggregate level too, we conclude that while variables such as income and capital accumulation are pushing the employment up, there are factors such as capital-labour ratio and the labour productivity are pulling it down. The influence of the negative factors seems to have increased after reforms leading to slowing down the employment creation. Thus quite naturally, in private sector dominated capitalist economy, it is quite understandable if the capital substitution for labour happens. However, this would eventually mean that structural transformation would also get slow down.

VIII.7. The seventh chapter examines the issue of structural transformation. An elaborate review of literature on structural transformation is undertaken before contemplating empirical analysis. The central feature of structural transformation process in substantial term is missing in case of India. First, output transformation is lot quicker than in employment for the past quarter century in India. Second, there is a declining transformation of employment during the post-reform period. This suggests that the shift of work force from agriculture to non-agricultural sector has been slow. Third, Despite the increase in level of income, development of urbanisation, and higher rural-urban migration, the pace of non-agricultural employment share has been lower due to declining in share of employment in agriculture is slower than the increase in share of non-agricultural sector employment. Fourth, though the quality of job in unorganised sector is very poor, due to low earning, low physical and human capital, poor assessment of education, insecurity of job, but still majority of workers basically from self-employed category are engaging in this sector.

An econometric investigation suggests that, the increase in share of employment transformation from agriculture to non-agricultural sector is positively influenced by share of non-agricultural income, share of non-agricultural investment, share of non-agricultural informal sector work force, rural-urban real wage differential, and human capital and variables like growing urban population and non-agricultural capital-labour ratio negatively influence the transformation in the economy. It can be observed that due to informal sector growth in terms of employment and growth in non-agricultural sector income has some deterministic influence on employment transformation from agricultural sector to non-agricultural sector. The substantive employment transformation i.e. from unorganised to organised sector is a positive influenced by investment and human capital and negative influenced by labour productivity, urban population and capital-labour ratio in organised sector. It is suggested that human capital and investment in organised sector which has some deterministic influence on quality of employment transformation in the economy.

VIII.8. From the entire exercise, we conclude that a high rate of economic growth has not been able to generate high employment growth, and it has, in fact, been accompanied by a

slow down in employment growth in India in recent years. This made economists to term the recent experience as ‘jobless growth’. Two main points needs to be looked into for future of employment growth in India. First, labour productivity and capital labour ratios have negatively influenced the employment creation. Employment driven by demand factors such as income and capital formation, the new employment creation will depend on the nature of the employment, technology and structure of the economy. Second, as the recent experience suggests that most of the new employment opportunities are likely to generate in the unorganised sector and belongs to poor conditions of work, and social security. Even within the organised sector an increasing number of workers are being employed in a ‘flexible’ manner on casual or contract basis, without the social security benefits available to regular workers. Thus the challenge of quality of work, in terms of earnings and social security will continue. With a decline in its share in organised sector and increase in that of the unorganised sector, the share of the unprotected workers is on increase. Provision of a minimum social protection to this large mass of workers is, therefore, likely to emerge as a much greater challenge than of expanding employment opportunities. It will require special attention of the state and society at large in coming years, as the market driven high growth even if accompanied by an expansion in employment opportunities may not by itself be adequate to address the issue of quality of employment.

Appendix 1.1

Macroeconomic Modeling in India:

Macroeconomic modeling is a dynamic process in which advances are made continually towards a more effective integration of the building blocks out of which it is fashioned. It is based on an appropriate theoretical framework to motivate by two objectives: forecasting and more significantly, policy analysis. In India, most of the existing models appear to be Keynesian in so far as components of effective demand are carefully modeled on Keynesian lines. Most of the models had a specific focus and innovated wherever it dealt with problems common with other models. In India, a number of macro economic models are used to forecast gross domestic product at an aggregate and disaggregate level, such as; in the early phase; Choudhary (1963); Marwah (1963 and 1972), Dutta (1964), Choudhry and Krishnamurty (1968), Bhattacharya (1975), Chakrabarty (1977), Rangrajan (1982), Pani (1984), Bhattacharya and Rao (1986), Ahluwalia and Rangrajan (1986), Narain Sinha (1986), Pandit and Bhattacharya(1987), and latter on by Bhattacharya and Guha (1992), Anjaneyulu (1993), Chakravarty and Joshi (1994), Rangrajan and Mohanty (1997), Mammen (1999), Klein and Palanivel (1999), Murthy (2002), Bhattacharya and Bhanumurthy (2004) and many more. Interestingly, some institutes/organisations are also doing modeling exercises through independently or outsourced by government agencies, such as Institute of Economic Growth (IEG), National Council of Applied Economic Research (NCAER), Indira Gandhi Institute of Development Research (IGIDR) and National Institute of Public Finance and Policy (NIPFP). They all address issues relevant to new policy regime, specifically projecting growth in terms of output, by using different methodology and carry out many what if policy scenario simulations. These models are large in size, provide emphasis on sectoral details and inter-links and trade-offs between sectors. More specifically those models have classified into four major blocks, such as; real sector, price behavior, monetary and fiscal behavior and external sector to forecast the gross domestic product in the economy.

From the above models some are used regularly for forecasting the growth in the economy, but at present, there is no attempt to develop a macro model on employment to forecast. Therefore, the present study tries to build an aggregate economic model on employment at an aggregate as well as some disaggregate level.

Appendix 3.1

Stationarity Test for the Variables used in the Estimation for Agricultural Sector:

Results of the DF/ADF Unit Root Tests for the Series

Variables Name	Levels	First Differences
E_{org}	-1.585674	-2.658546***
E_{unorg}	-0.961757	-2.675197***
RI	-2.263529	-6.733130*
Electricity	-1.120542	-2.713500***
HYVPRP	-1.703541	-4.703965*
NAY_{org}	2.457297	-3.732966*
NAY_{unorg}	4.724454	-3.856416*
$Y_{org(t-1)}$	0.489613	-6.492749*
$Y_{unorg(t-1)}$	-0.337523	-10.56441*
LP_{org}	0.504683	-7.124721*
LP_{unorg}	0.073716	-10.26690*
GCF_{PUB}	-1.803665	-2.818774**
GCF_{PVT}	-0.067828	-8.435809*
$(K/L)_{org}$	-2.353684	-5.632793*
$(K/L)_{unorg}$	1.051843	-2.755250***
ATOT	-2.370462	-8.235449*

Note: Critical Values at 10% (-2.612874)***, 5% (-2.948404)**, and 1% (-3.632900)* significance level.

Appendix 3.2

Results of Estimating Organised Agricultural Sector Employment:

Though, the organised sector's share of employment in agriculture is less than 1 per cent, it is just the exercise to find out how the determinants of macro variables on employment work. The agricultural organised sector employment in the model is a function of rainfall index, proportion of area under irrigation, electricity, labour productivity, public investment and capital-labour ratio, agricultural export. The below table illustrates that in Model-I, we found most of the variables have expected sign with a significant level. Rainfall, Electricity and non-agricultural output do not have any significant level at 5 per cent. In the model we found that rainfall is positive but has insignificant value. It is expecting that the agricultural sector is undergoing structural changes and that rainfall no longer acts as a driving force. For electricity consumption to the sector, it also shows a negative as well as insignificant value. There might be some inconsistency in the electricity data and hence, it has dropped from the model too. The non-agricultural output is negative and insignificant. But after dropping rainfall and

electricity from the equation, we found significant result but the coefficient is negative. The final estimation reflects that firstly, public investment does have higher elasticity, suggesting one per cent increase in public investment; agricultural employment will grow by 0.057 per cent. Second, one percent increase in agricultural export, 0.032 per cent of employment will grow in the organised sector. Third, one per cent increase in capital-labour ratio displaces 0.877 per cent decline in employment. Fourth, one per cent rise in non-agricultural output displaces 0.22 per cent labour. Fifth, last year output and labour productivity displaces labour by 0.11 per cent individually, though the former is having insignificant value. Sixth, liberalisation dummy adversely affects the employment in the organised agricultural sector. The overall result suggests that it is the rate of public investment and export which have some deterministic influence on employment generation in the organised agricultural sector.

Regression Results on Employment Determination in Organised Agricultural Sector

Dependent Variable: Δ *Ln (E)*	**Organised Sector**	
Independent Variables	**Model-I**	**Model-II**
Constant	0.061 (9.58)*	0.060 (9.40)*
Δ *Ln*(RI)	0.088 (1.09)	---
Δ *Ln* (ELCTRCTY)	-0.043 (-1.19)	---
Δ *Ln* (NAY)	-0.148 (-1.44)	-0.217 (-2.52)*
Δ *Ln* (Y_{t-1})	-0.015 (-1.96)*	-0.011 (-1.81)
Δ *Ln* (LP)	-0.016 (-2.04)*	-0.011 (-1.98)*
Δ *Ln* (PUBI)	0.062 (3.42)*	0.057 (3.16)*
Δ *Ln* (K/L)	-0.956 (-12.80)*	-0.925 (-12.75)*
L_{1991}	-0.037 (-8.85)*	-0.034 (-8.90)*
R^2	0.91	0.90
Durbin-Watson (DW) Test	1.63	1.73
Prob (F-Statistics)	0.000	0.000
Number of Observation	35	35

Note: * at 5% significant level, Δ is at first difference

Appendix 4.1

Stationarity Test for the Variables used in the Estimation for Industrial Sector:

Results of the DF/ADF Unit Root Tests for the Series

Variables Name	Levels	First Differences
E_{OI}	-2.210396	-2.901035
E_{UI}	-0.788497	-3.451508
$Y_{OI(t-1)}$	1.265468	-4.141540
$Y_{UI(t-1)}$	2.739906	-2.621775
NIY_{org}	2.642265	-4.400091
NIY_{unorg}	2.786398	-7.882334
LP_{OI}	3.079173	-2.688128
LP_{UI}	-1.593420	-3.690968
GCF_{PUB}	-1.208890	-4.608675
GCF_{PVT}	1.781855	4.625215
$(K/L)_{OI}$	-1.974195	-3.212519
$(K/L)_{UI}$	-0.037618	-2.969007
NAGIMP	1.213086	-5.079812
NAGEXP	1.959656	-5.002409
WPIOIL	4.339946	-3.063423
GCEXP	-0.476992	-4.216950

Note: Critical Values at 10% (-2.614300) ***, 5% (-2.951125) **, and 1% (-3.639407) * significance level.

Appendix 5.1

Stationarity Test for the Variables used in the Estimation for Services Sector:

Results of the DF/ADF Unit Root Tests for the Series

Variables Name	Levels	First Differences
E_{OI}	-2.562652	-7.927085
E_{UI}	0.023711	-2.625844
$Y_{OI(t-1)}$	1.965759	-4.404409
$Y_{UI(t-1)}$	4.034526	-4.065087
NSY_{org}	1.504232	-3.453212
NSY_{unorg}	1.028857	-9.568127
LP_{OI}	4.487201	-3.669124
LP_{UI}	2.710741	-3.999500
GCF_{PUB}	0.660428	-4.900742
GCF_{PVT}	0.991045	-5.841917
$(K/L)_{OI}$	2.122191	-3.518582
$(K/L)_{UI}$	1.865887	-4.348278
NINVEXP	0.097766	-8.481841
PFCE	6.174295	-2.876578
HC	0.477180	-3.138324

Note: Critical Values at 10% (-2.614300) ***, 5% (-2.951125) **, and 1% (-3.639407) * significance level.

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