

SECTORAL TRANSFORMATION IN INDIAN ECONOMY (1951-2011)

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ABSTRACT

As an economy grows it will undergo some structural changes. Study of the shares of the three sectors, viz, agriculture, industry and services, in output, consumption and employment shares has not been a new phenomenon and has been of interest of scholars for centuries now. In developmental process, occupational structural transformation is avowed outcome. Indian economy also has been experiencing this structural change. The structural changes of an economy that involve the dynamics of sector shares (agricultural, Industry, services) are related to each other and to economic growth as well. According to structural change theory, as GDP per capita increases, the % share of employment in primary sector decreases on the other hand % share of the secondary sector initially increases and subsequently decreases, while the % share of tertiary sector increases steadily. This paper the changes in sectoral changes in three main sectors of Indian economy will be measured using Sectoral Changes Index (SCI).

Keywords: Occupation, Key Sectors, Structural change, Indian Economy, GDP, SCI

INTRODUCTION

Basic requirements of human life are universal and uniform and so man has been pursuing economic activities in one form or the other since ancient times to fulfill these requirements. There is a close relationship between occupational structure and development of an economy. 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.

Sustainable growth and development requires a continuous transformation of the economy towards higher value-added sectors and activities that produce income elastic goods, have an advantage in terms of dynamic economies of scale, create inter- and intra-sectoral linkages and

provide incentives for innovation and learning. Industries in general and manufacturing in particular are the sectors that historically meet these criteria. More recently, progress in information and computing technology has advanced some services to the status of dynamic sectors. While these sectors are the core components of an economy's engine of economic and productivity growth they are also very capital intensive. Hence, direct employment creation by high productivity sectors is limited. To avoid a sectoral enclave trap, policy coordination is necessary to promote and sustain linkages between high-productivity dynamic sectors and labor intensive sectors. Such policy approach is especially needed in an economy with a large and expanding labor force as that of India's.

LITERATURE REVIEW

It is well known in economic literature, the famous research in the early 1960s by Kuznets and Chenry had suggested that development would be associated with a sharp decline in the proportion of GDP generated by the primary sector, counterbalanced by a significant increase in industry, and by a more modest increase in the service sector. Sectoral shares in employment were predicated to follow a similar pattern.

Anju Bala (2005) analyzed the structural change with special reference to tertiary sector in India. Thus, over a span of 54 years the share of agriculture in particular and primary sector in general has been reduced to less than half. This decline in the share of primary sector with every increase in GDP is an indication of healthy economic development which is also in line with the historical experience of developed countries.

There are tremendous studies that have been conducted so far in the field whether the sectoral change affect GDP of economy, at various intervals of time. S.S. Suryanarayana (1995) explored the structure, characteristics and role of service sector in economic development of India.

A.S. Sethi and P.S. Raikhy (2000) analyzed the structure of Punjab economy from the period of 1970-71 to 1997-98 on the basis of various issues of Statistical Abstract of Punjab by statistically applying the coefficient of variation to different Indices.

Cortuk and Singh (2011), using standard definitions of structural change indices, examine the connection between measures of structural change and growth in India, for the period 1951-2007.

T.S. Popola (2005) made a comparative study of the changes in path of economic transformation of India with some other developing Asian countries viz., China, Indonesia, Thailand, Philippines, Malaysia, Republic of Korea and Pakistan on the basis of World Development

Report (2004) for the year 1960 and 2002. The study found that in consonance with the historical experience of developed countries the share of agriculture in GDP has continuously declined in all of these developing Asian countries including India.

Ghate and Wright (2012) also examine state-level data, and their analysis and conclusions are worth summarizing here for later comparison with our own results. They do not estimate convergence regressions, but examine the time series of per capita income for 16 states over the period 1960-2003. Results suggest that a subset of nine states “diverges” from the others from 1985 onward, in the sense of moving to a higher growth path.

SECTORS OF ECONOMY

In simple words occupation implies profession and depends on the degree of economic development of a country. The occupation has been divided into three sectors viz., primary, secondary and tertiary. Primary sector includes activities related to agriculture, animal husbandry, forestry, fishery etc., whereas secondary sector involves manufacturing industries. Transport, communications, banking and finance and services are categorized as tertiary activities in the country.

In India agriculture and the allied activities are very traditional occupation of people. It comes naturally to them because food which comes from agriculture is the basic need of life. In the primary sector agriculture is the predominant occupation and has the largest share in national income and on the other hand it provides employment to a larger section of population and providing raw materials to industries. In the secondary sector manufacturing industries form the major part. The secondary sector significantly contributes in national income and generates employment. Secondary sector also helps in creation of infrastructure and it provides goods we consume daily. Service sector of India has been expanding and growing very fast. Service sector or tertiary sector consists of services rendered by banks, hospitals, hotels, transports, railways, airways etc. As primary and secondary sector, tertiary sector also contributes to the national income and generate employment for millions. All the three sectors are interlinked. In fact they complement and supplement each other.

STRUCTURAL TRANSFORMATION

The term “structural change” is widely used in economic research, although with different meanings and interpretations. In development economics, the structural change is defined as a process of combining economic growth with changing share of different sectors in gross domestic product (GDP) and labour force. Historically, the most common pattern of structural change that has been observed in developed countries has followed a sequence of shift from

primary to secondary and then to tertiary sector. In this pattern, an underdeveloped economy is characterized by a predominant share of primary sector, while with economic development the share of secondary sector increases and that of primary sector declines and subsequently after reaching a reasonably high level of development, the tertiary sector attains importance by becoming the dominant sector of the economy. These structural changes have been observed both in the relative share of gross domestic product and workforce.

The occupations structure of a country depends on the degree of economic development. Occupational structure is a key component of population composition which gives a clear picture of working population in various sectors of economy. Occupational structure greatly influences the socio-economic development of a country. The significance of occupational distribution of population of a region lies in the fact that, it clearly reveals the socio-economic characteristics of the people living that particular region. It is, hence, one of the important measures of socio-economic development of the country.

Structural change, as defined by (Matsuyama 2008, p. 1), entails complementary changes in various aspects of the economy, such as the sector compositions of output and employment, organization of the industry, financial system, income and wealth distribution, demography, political institutions, and even the society's value system." Therefore it is a wide phenomenon, which can be analysed from many angles. Importance of structural change for economic development is stressed by many authors. (Kuznets 1971, p. 348) notes that some structural changes, not only in economic but also in social institutions and beliefs, are required, without which modern economic growth would be impossible.

"Likewise, (Chenery et al. 1979, p. xvi) view economic development as a set of interrelated changes in the structure of an economy that is required for its continued growth." Structural change then can become by itself a source of economic development when production factors move from low to high productivity sectors. Since developing countries are usually characterized by large productivity differential between distinct economic sectors [McMillan & Rodrik (2011)], structural change can here exhibit larger economic benefit since it leads to markedly better utilization of resources.

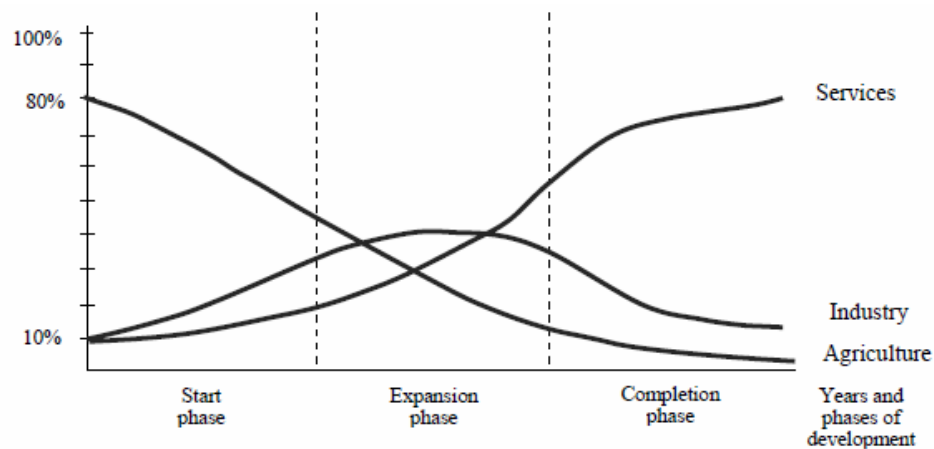
STRUCTURAL TRANSFORMATION THEORY OF EMPLOYMENT

Changes in the sectoral structure of employment are subject to different impacts. The nature of the determinants depends to a large extent on the time horizon of the analysis.

A. Fisher, C. Clark, and J. Fourastié, founder of theory of the three-sector the economy, have identified three sectors in the economy: agricultural, industrial, and service, and emphasized the

long-term regularities of their development. According to their approach, along with the economic growth the share of the agricultural sector (i.e., the primary sector) in total employment tends to decline, the share of the industrial sector (the secondary sector) tends to increase, stabilizes and then declines, and the share of the service sector (the tertiary sector) in total employment continuously tends to increase. As a result of these trends the changes take place in the three-sector employment structure involving the shift of the centre of economy's activity in the process of development from the agricultural sector through the industrial sector and to the service sector (Fig.1).

Fig. 1: Evolution of transformation of the three-sector employment structure as presented by J. Fourastié



Source : Fourastié (1954), pp. 126–128.

In simple words the structural change theory on sectoral shares in employment suggests two stages of development. In the first stage, (modern stage) as countries move from low-income to lower-middle-income status, the share of both industry and services rises, the rise in the former being greater than that in the latter. In the second stage, (post modern stage) as the economy moves to upper-middle- and high-income levels, the share of industry declines and that of services increases. The similar shifts take place in respect of output across the key sectors.

OBJECTIVE

The main aim of this paper is to analyze changes in sectoral changes in three main sectors of Indian economy using Sectoral Changes Index (SCI). This paper also aims to examine the process and nature of structural transformation of employment in the Indian economy.

METHODOLOGY

This paper is mainly based on secondary data obtained from different sources like websites, journals, Newspapers, Economic survey, Economic Census, Economic Review etc. The sectoral transformation in three sectors of Indian economy will be found out with the help of Structural Change Index (SCI).

Structural Change Index Method (SCI)

A commonly used method of measuring structural change in employment (and out-put) is the rate or coefficient of (compositional) structural change, often referred to as a SCI. The SCI for employment may be defined as half the sum of the absolute value of the differences in employment over time. The calculation is given by the formula:

$$SCI = \frac{1}{2} \sum |x_i(t) - x_i(t-1)|$$

Where $X_i(t)$ and $X_i(t-1)$ represent each industry's percentage share in employment at time (t) and (t-1), respectively. The use of absolute values ensures that positive and negative changes in industry share do not cancel each other out when the values are summed across industries. The SCI is bound between zero and 100, with zero representing no structural change while 100 indicates a complete reversal of structural change.

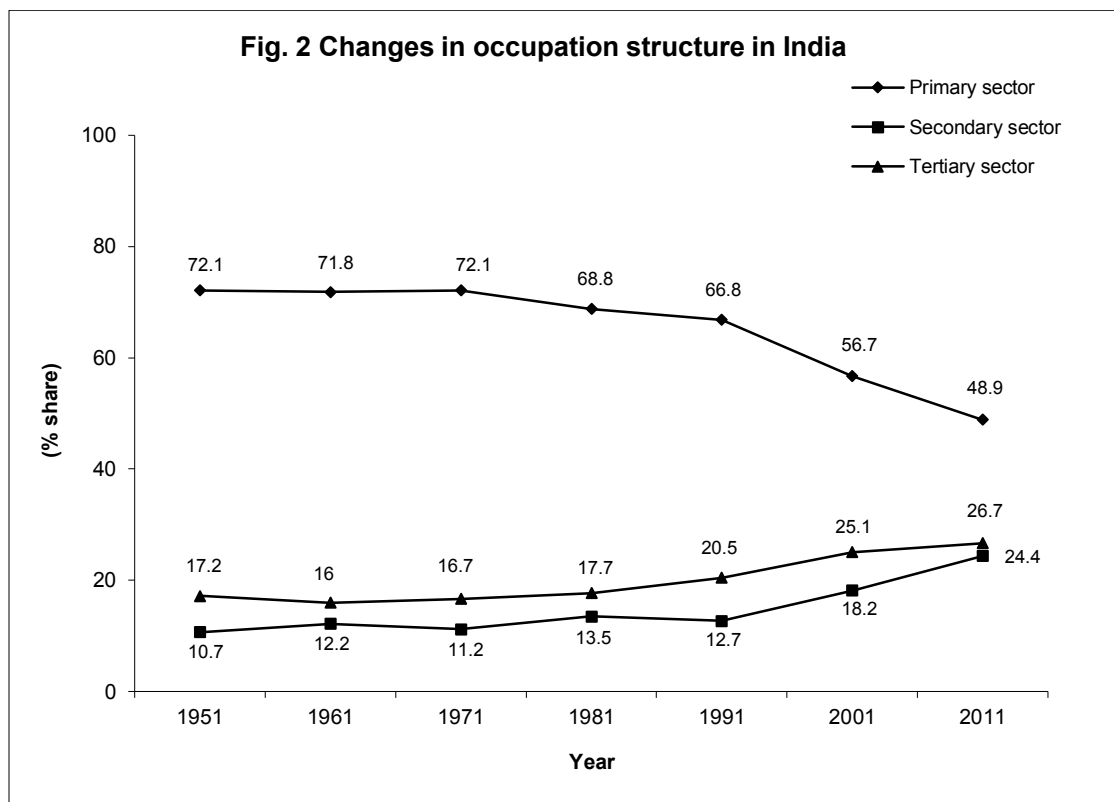
OCCUPATIONAL STRUCTURE TRENDS OF INDIAN ECONOMY (1951 - 2011)

The present occupational structure clearly reflects the backwardness in Indian economy. We shall now examine whether occupational distribution of labor force has changed since 1951. The changes in occupational structure in India since 1951 is shown in table 1 :

Table 1: Sectoral occupation structure (% percentage)

Occupation	1951	1961	1971	1981	1991	2001	2011
Primary sector	72.1	71.8	72.1	68.8	66.8	56.7	48.9
Secondary sector	10.7	12.2	11.2	13.5	12.7	18.2	24.4
Tertiary sector	17.2	16.0	16.7	17.7	20.5	25.1	26.7
	100	100	100	100	100	100	100

Source: compiled from census of India, various issues.



Source: compiled from census of India, various issues.

The table 1 & figure 2 shows that primary sector in Indian economy shows regular declining trend in per cent share in occupation since 1951. Per cent share of Primary sector which mainly includes agriculture sector, in Indian economy decreased from 72.1 per cent in 1951 to 48.9 per cent in 2011. Per cent share of primary sector decreased steadily from 1951 to 1991 but after that it shows sharp decline and reached to 56.7 per cent in 2001 and 48.9 in 2011.

The per cent share of secondary sector in occupation structure in 1951 was 10.7 per cent to 24.4 per cent in 2011. It shows that per cent share of secondary sector in occupation structure raised to more double since 1951. Per cent share of secondary sector in 1951 was 10.7 per cent which slightly raised to 12.2 in 1961 and then again slightly decreased to 11.2 in 1971. In 1981 raised to 13.5 per cent and again decreased to 12.7 per cent in 1991. In 2001 a significant change in per cent share of secondary sector is seen and it jumped to 18.2 per cent and in 2011 again a significant change is seen and it reached to 24.4 per cent. In this way in six decades per cent share of secondary sector in occupation structure raised significantly.

The per cent share of tertiary sector in occupation structure first decreased from 17.2 per cent in 1951 to 16.0 per cent in 1961, it then slightly raise to 16.7 in 1971, 17.7 per cent in 1981 and

20.5 per cent in 1991. A significant change in per cent share of tertiary sector is seen in 2001 and the per cent share reached to 25.1 per cent, it then slightly increased to 26.7 per cent in 2011.

The above table also depicts that primary sector which mainly consists of agriculture dominates in occupation structure of Indian economy. The per cent share of primary sector was 72.1 per cent in 1951 although decreased to 48.9 per cent in 2011, but it still dominates in occupation structure of Indian economy. The per cent of secondary sector increased from 10.7 per cent in 1951 to 24.4 per cent in 2011 and that of tertiary sector increased from 17.2 per cent in 1951 to 26.7 per cent in 2011. It is important to note that in 2011 primary sector still share about 50 per cent in occupation structure and the share of secondary and tertiary sector are almost equal. This clearly shows that in occupation structure of India a clear shift from primary sector to secondary and tertiary sector is seen from 1951 to 2011.

On the basis of the patterns of growth and structural changes, economic growth in post - Independence India can be divided into the four phases, each with its distinguishing features. In the first phase from independence to mid -1960s the period saw a significant acceleration in the growth rate over the past decades marked by a high growth of industry, and a significant structural change with a large increase in the share of non-agricultural sector. In second phase from mid 1960s to 1980 the Period was marked by a slower growth of GDP, accompanied by a deceleration in the growth of industry, a slower pace of structural shift from agriculture to non-agriculture and a very small increase in the share of industry and further in third phase we considered 1980 to early 1990s the period saw a sharp acceleration in growth rate, mainly contributed by services. In the last phase fourth from early 1990s onwards the growth continued at similar rate as 1980's, with share of agriculture sharply declining and services emerging as the major sector and with very small increase in the share of industry.

Decadal Occupational Structural shifts in Key Sectors of Indian Economy

Decadal Occupational Structural shifts in Key Sectors of Indian Economy is shown in Table 2 :

Table 2: Decadal Occupational Structural shifts in Key Sectors of Indian Economy

Decades	Sectors of Indian Economy			SCI
	Primary	Secondary	Tertiary	
1951	72.1	10.7	17.2	
1961	71.8	12.2	16	
%change	-0.3	1.5	-1.2	1.5
1961	71.8	12.2	16	
1971	72.1	11.2	16.7	
%change	0.3	-1	0.7	1.0
1971	72.1	11.2	16.7	
1981	68.8	13.5	17.7	
%change	-3.3	2.3	1	3.3
1981	68.8	13.5	17.7	
1991	66.8	12.7	20.5	
%change	-2	-0.8	2.8	2.8
1991	66.8	12.7	20.5	
2001	56.7	18.2	25.1	
%change	-10.1	5.5	4.6	10.1
2001	56.7	18.2	25.1	
2011	48.9	24.4	26.7	
%change	-7.8	6.2	1.6	7.8

Source: compiled from census of India, various issues.

The table 2 shows that from 1951 to 1961 the per cent share of secondary sector increased by 1.5 per cent whereas per cent share of primary sector decreased by -0.3 per cent and tertiary sector decreased by -1.2 per cent,. The SCI for the period 1951 to 1961 is calculated as 1.5 which shows that there is 1.5 per cent shift from primary and tertiary sector to secondary sector in occupation structure. The magnitude of transformation from secondary to primary sector is 20 per cent and 80 per cent to tertiary sector.

In the period 1961 to 1971 there is reverse transformation. The per cent contribution of secondary sector decreased by -1 per cent where as primary and tertiary sector increased by 0.3 per cent and 0.7 per cent, respectively. The SCI for the period 1961 to 1971 is calculated as 1.0 which shows that there is 1 per cent shift from secondary sector to primary and tertiary sector. The magnitude of per cent share shifted to secondary sector is 30 per cent from primary sector and 70 per cent from tertiary sector.

In the period from 1971 to 1981 there is transformation from primary sector to secondary and tertiary sector. The primary sector shows -3.3 per cent decrease in per cent share, out of which 2.3 per cent is shifted to secondary sector and 1 per cent to tertiary sector. The SCI for 1971 to 1981 period is calculated as 3.3 which show that there is 3.3 per cent shift in occupation structure from primary sector to secondary and tertiary sector. The magnitude of transformation from primary sector to secondary sector is 69.69 per cent and 33.3 per cent to tertiary sector.

In the period from 1981 to 1991 there is transformation from primary and secondary sector to tertiary sector. The primary sector shows -2 per cent decrease in per cent share and secondary sector shows -0.8 per cent decrease in per cent share, the tertiary sector shows 2.8 increases in per share in occupation structure. The SCI for 1981 to 1991 period is calculated as 2.8 which show that there is 2.8 per cent shift in occupation structure from primary sector and secondary sector to tertiary sector. The magnitude of transformation to tertiary sector is 71.42 per cent from primary sector and 28.57 per cent from secondary sector.

In the period from 1991 to 2001 there is transformation from primary sector to secondary and tertiary sector. The primary sector shows huge -10.1 per cent decrease in per cent share whereas secondary sector shows 5.5 per cent and tertiary sector shows 4.6 per cent increase in per cent share in occupation structure. The SCI for 1991 to 2001 period is calculated as 10.1 which show that there is 10.1 per cent shift in occupation structure from primary sector to secondary and tertiary sector. The magnitude of transformation from primary to secondary sector is 54.45 per cent and 45.54 per cent from primary to tertiary sector.

In the period from 2001 to 2011 there is transformation from primary sector to secondary and tertiary sector. The primary sector shows huge -7.8 per cent decrease in per cent share whereas secondary sector shows 6.2 per cent and tertiary sector shows 1.6 per cent increase in per cent share in occupation structure. The SCI for 2001 to 2011 period is calculated as 7.8 which show that there is 7.8 per cent shift in occupation structure from primary sector to secondary and tertiary sector. The magnitude of transformation from primary to secondary sector is 79.48 per cent and 20.51 per cent from primary to tertiary sector.

Occupational Structural shifts in Key Sectors of Indian Economy (1951 – 2011) is shown in table 3 :

Table 3: Occupational Structural shifts in Key Sectors of Indian Economy (1951 – 2011)

Sector	1951	2011	Change in % Per	SCI
Primary	72.1	48.9	-23.2	23.2
Secondary	10.7	24.4	+13.7	
Tertiary	17.2	26.7	+9.5	
Total	100	100		

Source: compiled from census of India, various issues.

The table 3 depicts that structural change across three key sectors India economy is 23.2 per cent which shows that during the 60-year period i.e. from 1951 to 2011, 23.2 per cent resources have been reallocated from primary sector to secondary and tertiary sectors of economy. The resources shift from primary sector to secondary sector is 13.7 per cent and tertiary sector is equal to 9.5 per cent. The magnitude of per cent change is 59.05 per cent from primary to secondary and 40.95 per cent from primary to tertiary sector.

One of the best known characteristics of labour in developing economies is that most people work in agricultural sector. Agriculture's share of the labour force is highest in the poorest economies and declines systematically as GNP per capita rises. The shares of both secondary and tertiary sectors workers rise to offset this decline. In India, both secondary and tertiary sector are rising on off set of agriculture sector. This clearly implies that India still stood on low development stage.

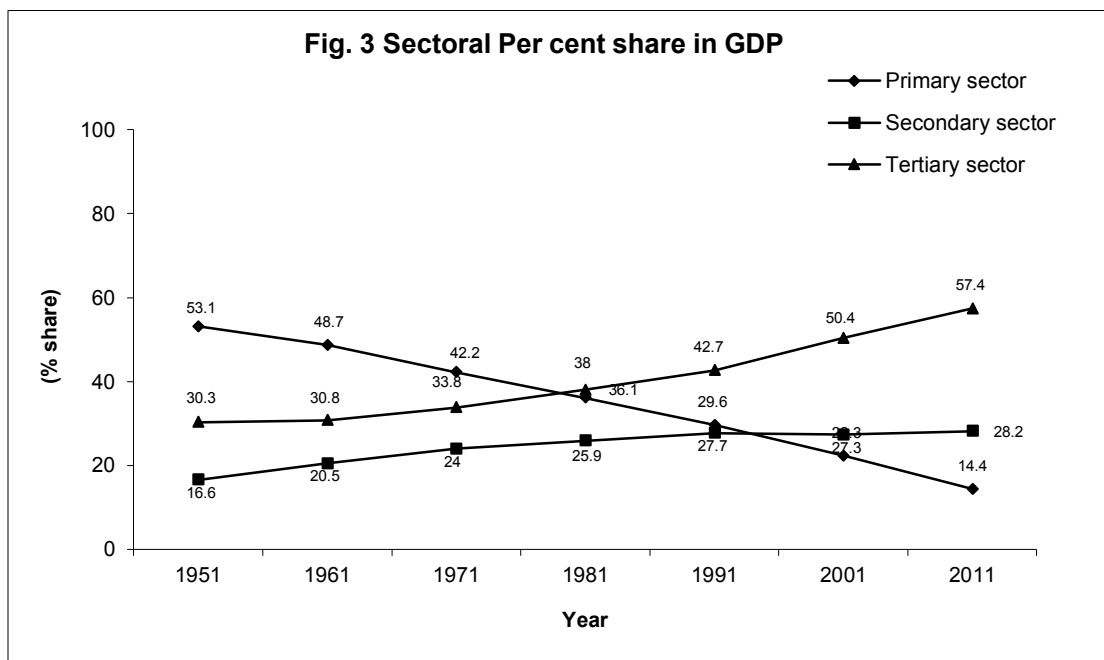
SECTORAL SHARE IN GDP

The per cent share three sectors of Indian economy viz., primary, secondary and tertiary in GDP of India is shown in table 4

Table 4: Sectoral share (per cent) in GDP

Sector of Economy	1951	1961	1971	1981	1991	2001	2011
Primary sector	53.1	48.7	42.2	36.1	29.6	22.3	14.4
Secondary sector	16.6	20.5	24.0	25.9	27.7	27.3	28.2
Tertiary sector	30.3	30.8	33.8	38.0	42.7	50.4	57.4
	100	100	100	100	100	100	100

Source: compiled from census of India, various issues.



The table 4 and Fig. 3 shows that in 1951 agriculture contribute 53.1 per cent of total GDP in India then onwards the share of primary sector declined in every decade and finally reached to 14.4 per cent in 2011. There is consistent decline in share of primary sector in GDP, it declined to 48.7 per cent in 1961, 42.2 per cent in 1971. There is significant consistent decline in the share of primary sector in GDP in 1991 and it reaches to 36.1 per cent in 1981, 29.6 per cent in 1991, 22.3 per cent in 2001 and 14.4 per cent in 2011.

On the other hand, the per cent share of secondary sector in GDP increases steadily from 1951 to 2011. In 1951 it was 16.6 per cent and reached to 20.5 per cent in 1961, 24.0 per cent in 1971, 25.9 per cent in 1981, 27.7 per cent in 1991, and 27.3 per cent in 2001 and finally it reached to 28.2 per cent in 2011. Similarly, there is significant increase in per cent share of tertiary sector in GDP. From 1951 to 1981 it increases steadily and then from 1991 to 2011 it increases sharply.

In 1951 the per cent share of tertiary sector in GDP was 30.3 per cent, in 1961 it was 30.8 per cent, in 1971 it was 33.8 per cent, in 1981 it was 38.0 per cent and in 1991 it was 42.7 per cent. Then in 2001 a significant increase in per cent share of tertiary sector is seen and it reached to 50.4 per cent and again in 2011 it jumped to 57.4 per cent. The above table clearly depicts that there is a clear shift in per cent share of primary sector to tertiary sector in GDP.

CONCLUSION

The analysis of data shows that per cent share of primary sector in Indian economy shows regular declining trend since 1951 and on the other hand, the per cent share of secondary and tertiary sector in occupation structure increased steadily. A significant change in per cent share of tertiary sector in GDP is seen in 2011 where it contributes about 50 per cent in GDP of India. It is clear that primary sector which mainly consists of agriculture dominates in occupation structure of Indian economy since 1951, although its per cent share in occupation structure declined but it still dominates in occupation structure of Indian economy. The per cent share of primary sector declined on one hand and on the other hand, secondary and tertiary sectors gain in occupation structure. The share of secondary and tertiary sector in 2011 is almost equal. In occupation structure of India a clear shift from primary sector to secondary and tertiary sector is seen from 1951 to 2011. According to J. Fourastié's three sectors theory of economy clearly indicates that India is still a developing country. In Indian economy, share of both secondary and tertiary sector are declining on off set of primary sector which clearly denotes that India is developing country with slow growth.

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