

# Structural Change and Service Sector Growth in Haryana

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## ARTICLE DETAILS

### Article History

Published Online: 10 October 2018

### Keywords

Structural Change, Employment, Shift share, Services, Haryana

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## ABSTRACT

Structural change involves emergence and expansion of new economic activities, new industries and transformation of economy leading to improvements in human capital skills. Structural change occurs when an economy changes the manner it functions. Chenery and Taylor (1968) identified a uniform pattern of change in the structure of production as the income level rose in the national economies. Structural change models highlight the process by which developing nations transform their economic structure from emphasis on the subsistence agriculture sector to a modern manufacturing sector of the economy. This research paper aims to understand the structural change and service sector growth in Haryana. The study has been carried out for the state of Haryana covering the time period from 1970-71 to 2014-15. As per Economic Survey, Haryana (2016-17), the growth in GSDP improved to 8.6 percent which is mainly due to the higher growth recorded in services (10.8%) during the year 2016-17. The average annual growth rate in GSDP remained almost above 7 percent. The state economy derives more than 80 percent income from non-agriculture activities. Shift share analysis has been used to understand the structural change in Haryana. The tool decomposes the change in aggregate productivity into two effects: a) within effect (productivity growth) and b) between effects (structural changes). The within effect captures productivity growth within sectors, whereas the between effect measures the productivity effect of labor reallocation across different sectors which is further divided into static and dynamic effects. These effects show that Haryana has been experiencing movement of labour from low productivity sectors to high productivity sectors and sectors expanding in terms of employment.

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## 1. Introduction

'Structural change involves emergence and expansion of new industries, diversified economy for sustained economic growth leading to improvements in human capital skills' (IMF, 2015). The process of structural change along with economic development involves many interrelated changes (like transformation of production and changes in the composition of consumer demand, international trade and resource use as well as changes in the socio economic factors such as urbanization and growth and distribution of country's population) in the economic structure of the economy, moving the economy from a traditional to a modern economic system. This also gets reflected in the form of sectoral composition of output as well as occupational structure of the work force. "Structural Change is defined as different arrangements of productive activity in the economy and different distributions of productive factors among various sectors of the economy, various occupations, geographic regions, types of products, etc..." (Machulp, 1991:76 in Silva and Teixeira, 2008:275) "When an economy shifts from being a largely agrarian economy to one based on services or industry, it is said to have undergone structural change", IMF survey, June 28, 2013. There is controversy whether structural change facilitates/contributes to the pace of economic growth. Many studies show that structural change help to fasten the process of economic growth, although no exact relation is found (Singh, C. and Singh, N. (2012).

## 2. Objective

The present study analyses the structural change and service sector growth in Haryana.

## 3. Coverage and Methodology

The study has been carried out for the state of Haryana covering the time period from 1970-71 to 2014-15. Data on NSDP, GSDP, Primary Sector, Secondary Sector and Service Sector have been obtained from statistical abstracts of various years from Department of Economic and Statistical Analysis, Haryana. Employment data have been collected from NSS Rounds on Employment and Unemployment situation in India. The process of splicing has been used to convert the data (1965-66 to 2013-14) into a common base year 2004-05. Normalization of the spliced values of the NSDP, GSDP, Sectoral Shares, Per capita income has been done to remove the discrepancies in the data.

Contribution of Sectoral shares in the economic growth has also been calculated.

To understand the significance of all the three sectors in the growth of Haryana economy, the contribution of each sector in the growth has been calculated following the method in Nandkarni, A (2009).

The contribution of a sector to growth:  $C_g = (W_i \cdot g_i / g_y)$ . Where  $W_i$  = share or weight of the  $i$ th sector;  $g_i$  = growth rate of  $i$ th sector;  $g_y$  = aggregate growth rate.

The shift share analysis proposed by Timmer and De Vries (2012) has been applied to understand the structural change effect in Haryana. The tool decomposes the change in aggregate productivity into two effects: a) within effect (productivity growth); and b) between effects (structural changes). The within effect captures productivity growth within sectors, whereas the between effect measures the productivity effect of labor reallocation across different sectors and it can further be divided into static and dynamic effects. The time period has been divided into two parts: Period-I from 1993-94 to 2004-05 and Period-II from 2004-05 to 2014-15.

#### 4. Profile of Haryana State

Haryana is one of the most progressive states of India. Haryana completed 50 years of its formation on November 1, 2016. At the time of its inception, Haryana's GSDP was only half of Punjab. After 50 years, it is 4.34 trillion rupees, just 20

percent more than Punjab GSDP. As per the official estimates, the growth rate of GSDP (2011-12 constant prices) remained above 8 percent per annum except the year 2014-15(6.6%) for the years from 2011-12 to 2017-18. The growth in GSDP in the year 2015-16 improved to 10.3 percent because of higher growth recorded in services (9.3%) and industry (7.9%) sectors. As per Economic Survey (2016-17), the growth in GSDP further improved to 8.6 percent which is mainly due to the higher growth recorded in services (10.8%) and agriculture & allied sectors (6.4%) during the year 2016-17. In 2013-14, Haryana contributed 3.63 percent to India's GDP at constant prices (2004-05 prices). Its per capita income is now one and a half times more than that of Punjab. The State economy derives 81 percent income from industry and services sector. The average annual growth rate in GSDP remained almost above 7 percent. (Table I, Figure-1).

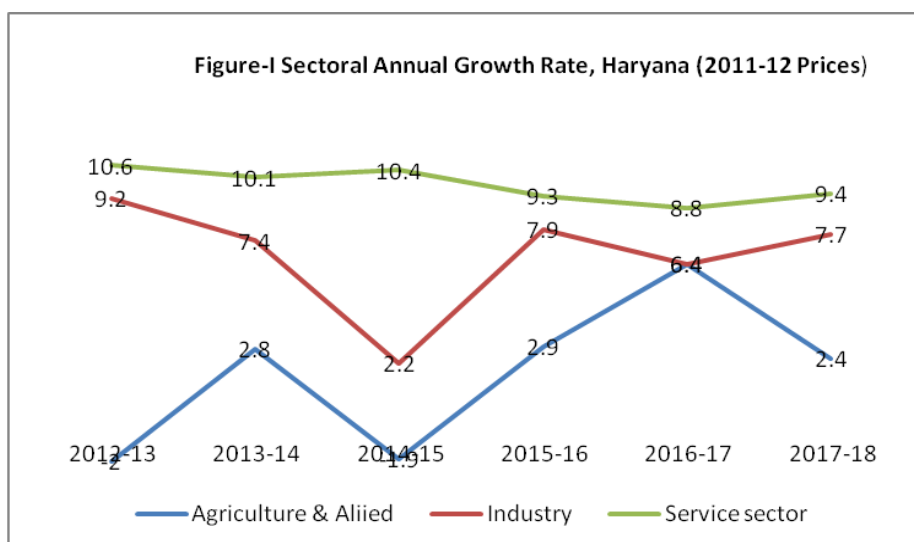
**Table I**  
**Sectoral (GSDP) Growth Rates, Haryana (2011-12 prices) (YOY) (percent)**

Year	2012-13	2013-14	2014-15	2015-16	2016-17 (P)	2017-18 (A)
Agriculture & allied	-2	2.8	-1.9	2.9	6.4	2.4
Secondary sector	9.2	7.4	2.2	7.9	6.4	7.7
Service sector	10.6	10.1	10.4	9.3	8.8	9.4
Trade, Repair, Hotels & Restaurants	9	6.1	12.1	13.2	9.3	9.4
Transport, Storage, Communication & Services related to Broadcasting	8.5	9.2	12	10.4	10.1	9.8
Financial, Real Estate & Professional Services	13.1	15.5	7.8	7.8	7.3	9.1
Public Administration, Other Services	7.6	3	14.2	4.74	11.4	10.1
GSDP	5.5	8.3	6.6	10.3	8.2	8

Source: Economic Survey, Haryana, 2017-18.

The service sector in Haryana experienced annual growth rate of above 8 percent during the past 5 years. The Service sub sectors like Trade, Transport, Financial sector, Real estate, and Public administration depict high growth rates except the years 2013-14 and 2014-15 when Public administration and

other services had low growth rate.(table-I) The figure I shows sectoral annual growth rates (2011-12 prices) and highlights the stability of growth rate in service sector as compared to the other two major economic sectors in Haryana economy.



Source: based on data from Economic Survey, Haryana 2017-18

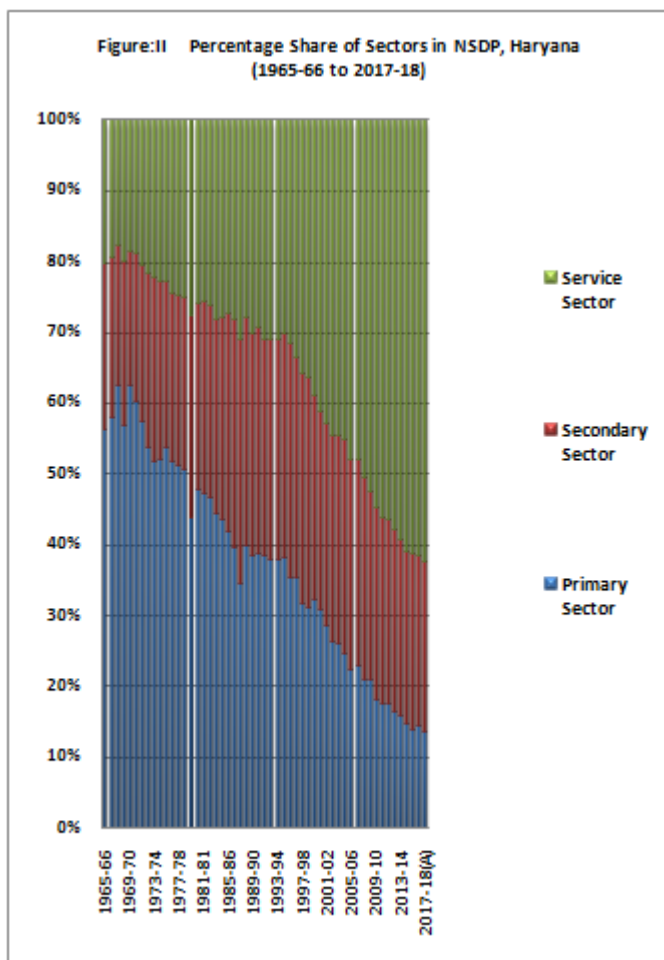
The rise in the services sector's share in GSDP in Haryana shows substantial structural shift in the state economy moving nearer to the essentials of a developed economy. The share of Primary sector kept on falling and is 15 percent in 2011-1 and this fall was captured mostly by service sector. The share of

secondary sector rose and became stagnant almost till 2004-05 and then started falling marginally and is 27 percent in 2014-15. The share of service sector rose throughout especially after reforms and is 58 percent in 2014-15. (table-II & figures-II,III).

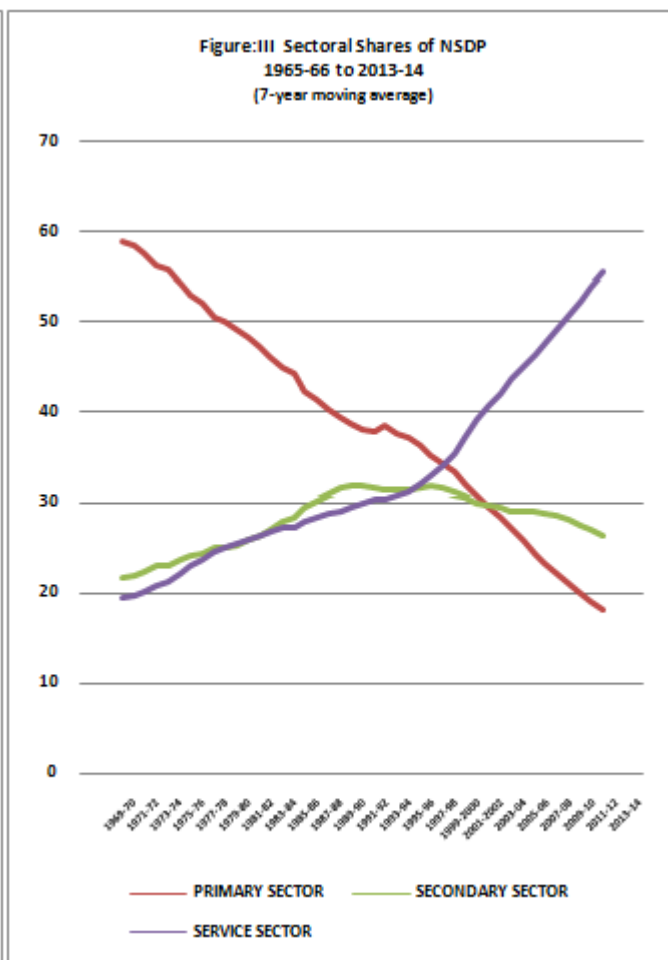
**Table-II**  
Percentage shares of various sectors in NSDP, Haryana  
(at constant prices 2004-05)

Year	Primary sector	Secondary sector	Tertiary sector	NSDP
1965-66	56.20	23.39	20.41	100
1970-71	60.13	20.95	18.92	100
1974-75	51.75	25.21	23.03	100
1979-80	43.73	28.41	27.86	100
1984-85	43.49	28.41	28.10	100
1989-90	39.88	32.03	28.09	100
1993-94	37.12	31.45	31.43	100
1998-99	30.90	32.65	36.45	100
2004-05	23.23	32.70	44.00	100
2008-09	19.71	29.95	50.34	100
2013-14	15.28	27.73	56.98	100
2014-15	15	27	58	100

Source: Calculated on the basis of data spliced and normalized



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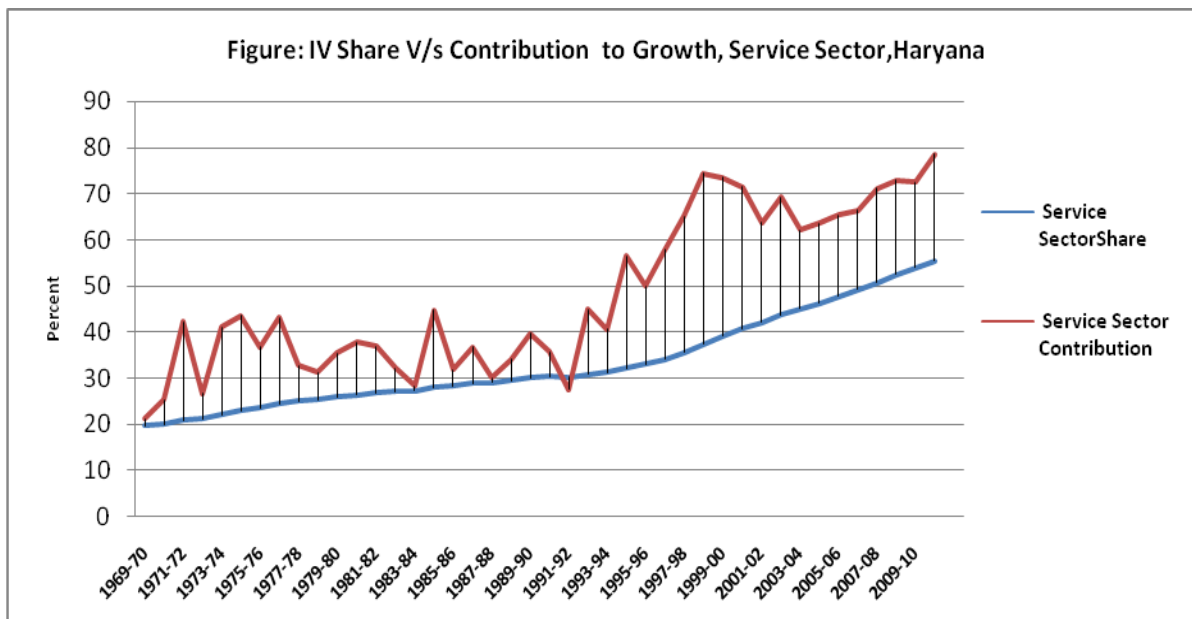
Source: Calculated on the basis of data spliced and normalize

Figures II & III clearly depict that there has been consistent rise in the share of service sector in state income over the period under study. To remove fluctuations in data, 7 year moving average sectoral shares have been calculated which clearly depict that the share of secondary sector rose and then

maximized, remained stagnant for some years and then experienced a slow downward trend. Primary sector witnessed continuous decline in its share. The fast growth of Haryana economy can be attributed to the sustained and fast growth of service sector in Haryana.

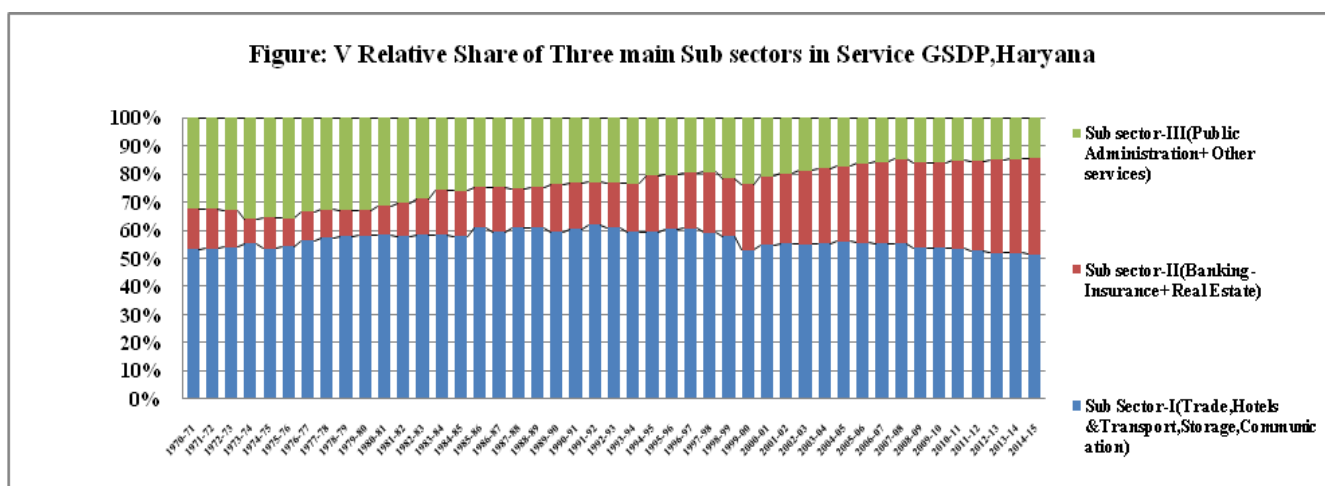
Thus, it can be concluded that Haryana economy has been experiencing the process of structural change, following the same pattern as of Indian economy and many other Asian economies. (Banga, R., 2005; Gordon & Gupta, 2004; Singh, C. & Singh, N. 2013). The structural change pattern points that there is a shift directly from Primary sector to Service sector, escaping the industrial revolution in Haryana.

The figure IV shows the difference between the share and contribution of service sector in Haryana. It is calculated on the basis of 7 year moving average and methodology used by Nandkarni (2009). The contribution of a sector depends on two factors: a) its growth rate (gi); b) its share in output (WI). The contribution of service sector in Haryana remained much more than its share in state income, mainly due to its fast growth rate.



Thus during the structural change process in Haryana, the service sector comprising of its three sub sectors like sub sector-I (trade, repair services, hotels, restaurants; transport, storage & communication); sub sector-II (banking, finance, real estate & business services); sub sector-III (public administration

& other services) also underwent structural change. There has been fast growth of sub sector components like communication, IT services, other business services, financial services & community services. Table-V displays the change in the relative share of service sub sectors in Haryana.



Source: DESA, Haryana

**5. Shift Share Analysis and Structural Change in Haryana.**

The modified shift share analysis given by Timmer and Vries (2009) has been used to pinpoint the structural change in output and employment in Haryana during the period under study. The entire has been divided into two parts as stated above. The results show that during period I, the productivity of

secondary sector was highest followed by service sector and then Primary sector. During period II, the productivity of service sector was highest followed by secondary sector and primary sector. Table-III and IV depict the output and employment shares and growth in them in Haryana during both the periods.

**Table: III**  
**Output and Employment Shares, Haryana**

Year	Output Share Primary Sector	Output Share Secondary sector	Output Share Service sector	Employment share Primary sector	Employment share Secondary sector	Employment share Service sector
1993-94	37.12	31.45	31.43	57	17.9	25.1
2004-05	23.23	32.70	44.00	51.9	22.2	25.9
2014-15	15	27	58	37	26.1	36.9

Source: Calculated on the basis of data spliced and normalized.

**Table: IV**  
**Productivity Growth Sector wise, Haryana**

Year	Primary sector	Secondary sector	Service sector
1993-94 to 2004-05	0.13	0.46	6.54
2004-05 to 2014-15	5	4.12	5.17

Source: Calculated

In 1993-94, the output shares of the three major economic sectors were almost equal, 37%, 31% & 31% in primary, secondary and service sector respectively and this changed in favour of service sector when its share became 44% in 2004-05 and 58% in 2014-15. The employment shares also depict the structural change but at a slower pace. This is the typical characteristics of Indian economy and of many of its states like Haryana. Primary sector remained the largest employment provider till 2004-05 afterwards the share of service sector in total employment started rising though very slowly. In 2014-15, the relative share in total employment in Haryana is 37%, 26.1% and 36.9% in primary sector, secondary sector and

service sector respectively. During both the periods, the growth in the service sector productivity has been higher than other sectors. This is because the high productivity sectors within service sector grew faster. The rise in the service sector productivity in primary sector is evidently due to fall in employment levels there. Secondary sector also displayed high growth in productivity during period-II.

The shift share method uses the productivity and employment shares. The tool offers various equations with the help of which the different effects have been calculated to understand the structural change.

It can be represented as:

$$\Delta P = \sum_i (P_i^T - P_i^O) \bar{S}_i + \sum_i (S_i^T - S_i^O) \bar{P}_i$$

Equation-I

Where  $S_i$  is the share of sector  $i$  in overall employment,  $P_i$  the labour productivity level of sector  $i$ , and superscript  $O$  and  $T$  refer to initial and final period, the average sectoral employment share and labour productivity level. (Timmer & Vries, 2009).

The within-sector productivity change, the first term on the right-hand side in equation -I, is also called the 'within-effect' or 'intra-effect'. (Timmer & Vries, 2009).

The reallocation effect, second term is also called the "shift-effect" or 'structural-change effect'. The 'within-effect' is 'positive when the weighted change in labour productivity levels in sectors is positive'. The 'structural-change effect' measures the contribution of labour reallocation across sectors, and it will be positive when labour moves from less productive sectors to sectors that are more productive' (Timmer & Vries, 2009).

**Table: V**  
**Within effect and structural change effect, Haryana**

Sector	Within effect (1993-94 to 2004-05) period I	Within effect 2004-05 to 2014-15) period II	Structural change effect (shift effect) (1993-94 to 2004-05) period I	Structural change effect (shift effect) 2004-05 to 2014-15) period II
Primary sector	1.4	19.98	-56.55	-39.84
Secondary sector	5.3	23.91	131.06	27.28
Service sector	93.2	56.11	25.48	112.15
Aggregate(economy)	82.59	67	14.15	21.71

Source: calculated with shift share method.

**Table: VI**  
**Changes in Employment shares, Haryana.**

Time	Primary sector (fall in employment share)	Secondary sector (rise in employment share)	Service sector (rise in employment share)
Period I	-5.1	4.3	0.8
Period II	-14.9	3.9	11.1

Source: calculated on the basis of NSS data for 1993-94, 2004-05 & 2014-15.

Table:V shows that the within effects positive in all the three sector-primary, secondary, service sector, indicating a movements of labour within the sector from low productive activities to high productive activities. This value of within effect is highest within service sector and lowest within primary sector during period I. It means that within service sector, labour moved from low productive activities to high productive activities to larger extent. It also happened within primary and secondary sector. During Period II, this within effect was again positive and its value rose for primary sector, and secondary sector and was comparatively less than period-I in service sector. The results match with theoretical base and empirical results of Timmer and Vries. It is a good sign that as development proceeds and structural change occurs in employment, the labour moves from low productive activities to high productive activities. The structural change effect i.e. the shift effect is also positive, pinpointing that labour has moved from low productive sectors to high productive sectors. During period I, the value of shift effect is negative for primary sector (having below average productivity) mentioning that labour moved out of the primary sector (lowest productivity sector) to higher productivity sectors i.e. secondary sector and service

sector with above average productivity. Secondary sector had highest productivity and its value of shift effect is also highest. It clearly indicates that labour moved in the secondary sector more (with higher productivity) and its employment share rose by 4.3 percent, while labour also moved into service sector as its value of shift effect is also positive and its employment share rose by 0.8 percent (table-VI). During period II, the value of shift effect is again negative for primary sector, therefore, labour moved out of the primary sector (lowest productivity sector) to higher productivity sectors i.e. service sector and secondary sector. Service sector had highest productivity and its value of shift effect is also highest. It states that labour moved in the service sector more (with higher productivity) and its employment share rose by 11.1 percent, while labour also moved into secondary sector as its value of shift effect is also positive and its employment share rose by 3.9 percent. The rise in employment share of all the sectors is the combine result of within effect and shift effect. The value of shift effect is positive for the entire economy also.

The shift effect is further divided into two parts. The third term on equation-II shows the dynamic effect.

$$\Delta P = \sum_i (P_i^T - P_i^o) \bar{S}_i + \sum_i (S_i^T - S_i^o) \bar{P}_i + \sum_i (P_i^T - P_i^o) * (S_i^T - S_i^o)$$

Equation-II

The first term is the within effect, the second term measures whether workers move to above-average productivity level sectors (static reallocation effect, which is called the static effect). The third term in equation -II is known as the dynamic effect or interaction term(Timmer & Vries,2009,2013). It represents the joint effect of changes in employment shares and sectoral productivity. It is positive if

workers are moving to sectors that are experiencing positive productivity growth. Hence, the reallocation term of equation -I is split into two terms: whether workers move to above-average productivity level sectors (static reallocation effect) and whether productivity growth is higher in sectors that expand in terms of employment shares (dynamic reallocation effect).Table: VII depicts the static and dynamic effects in Haryana.

**Table: VII**  
**Static and Dynamic Reallocation Effect, Haryana**

Sector	Static Effect (shift effect) period I	Static Effect (shift effect) period II	Dynamic Re-allocation effect period I	Dynamic Re-allocation effect period II
Primary sector	-56.55	-39.84	(-3.38)	(-39.84)
Secondary sector	131.06	27.28	29.06	22.97
Service sector	25.48	112.15	74.31	116.87

Source: calculated on the basis of shift share method

The above table VII shows dynamic re-allocation effect i.e. higher productivity growth in sectors which expand in terms of employment shares. The results show that during period I, the value of this effect is negative in primary sector, explaining that labour moved out of this sector to secondary sector and Service sector. The value of dynamic effect is positive for secondary sector, indicating that labour has moved in to this sector with rising productivity with expanding employment share (4.3%) and the value is much higher for service sector,

so labour moved into the service sector as the employment expands and its employment share rose by 0.8%. During period II, again primary sector experienced a negative value leading to exit of labour from the sector. In period II, this value for primary sector is quite higher as compared to period I, indicating shrinking of the sector in terms of employment as its employment share fell by14.9 percent and this fall is absorbed mainly by service sector. The dynamic reallocation effect value for secondary sector is positive (though less than period I) and

the sector experienced movement of labour into the sector as its employment share rose by 3.9 percent. The dynamic reallocation effect value for service sector is quite higher during period II. The sector expanded in terms of employment as labour moved into the sector and its employment share rose by increased by 11.1 percent.

Therefore, the structural change effect composed of Static Shift effect and Dynamic Re-allocation effect shows that Haryana has been experiencing movement of labour from low productivity sectors to high productivity sector and expanding sector in terms of employment. These results are desirable and match the theoretical base and empirical results of the study by Vries and Timmer in Asia and India.

## 6. Conclusions and Suggestions

Haryana, though agrarian state has experienced structural change. The pattern of structural change is similar to that of

Indian economy. Haryana's growth story speaks of fast growth of service sector and its sub sectors.

The structural change in Haryana is analysed with shift share analysis which proves that there has been movement of labour from low productivity sectors to high productivity sector and expanding sector in terms of employment.

Haryana should design policies for growth of output and employment especially for service sub sectors like trade, banking, real estate, IT& IT-enabled sectors and for secondary sector and diversification of agriculture sector.

**Scope for further research:** There are wide disparities in the growth of various districts in Haryana. The 13NCR districts especially Gurugram and Faridabad have grown much faster. The inter-district development gaps are of serious concern.

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