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Decomposing economic growth process in Haryana

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Abstract
Though Haryana is geographically a small State, the contribution of the State in the National Gross Domestic Product at constant (2011-12) prices has been estimated to be 3.86 percent. It increased from 3.52 percent in 2014-15 to 3.86 percent in 2022-23. Haryana's per capita income may rise to Rupees 296685 in the year 2022-23 as per the official estimate. The state economy has experienced a rise in the share of service sector. Service sector growth became the main driver of the growth process of the economy of Haryana. The annual growth rate of Haryana economy has remained consistently higher ranging between 8 to 10 percent, although agriculture sector experienced low growth during the same period 2013-14 to 2017-2018. The main objectives are to understand the service sector role in the Haryana's growth and output and employment growth. The Shapley decomposition method is applied utilizing the Job Generation and Growth decomposition tool. The leading role of the service sector could be attributed to the change within the service sector itself as its output share and employment share has increased along with a rise in its productivity level. The decomposition analysis can further indicate the sources of this growth. The decomposition analysis identified the importance of the service sector in general for the employment and GDP per capita growth.

Keywords: Haryana, growth rates, service sector, agriculture secto

Introduction
Haryana has developed an economic structure which has been shifting from the traditional agriculture sector to the modern service sector. The state economy has experienced a rise in the share of service sector. Service sector growth became the main driver of the growth process of the economy of Haryana. The growth rate of Service sector (8.67 percent during 1965-66 to 2013-14) always remained above the Primary and secondary Sectors. Haryana's economic growth can be called Service–led growth, especially after 1995-96, showing the impact of introduction of economic reforms. The share of Service sector rose from 18 percent in 1970-71 to 59 percent (2013-14). The development of IT sector and software exports further empowered the pace of growth of service sector in Haryana. The government of Haryana framed policies for the growth of Agriculture, Manufacturing and Service sector.

Haryana Economy
Though Haryana is geographically a small State, the contribution of the State in the National Gross Domestic Product at constant (2011-12) prices has been estimated to be 3.86 percent. Annual Compound growth rate of GSDP at constant prices has been 5.62 percent during the period 2014-15 to 2022-23 as compared to 4.58 percent at All India Level for the same period. The GSDP growth rate is estimated to be 7.1 percent for the year 2022-23. There is high growth of all the sectors, especially the service sector, as shown in Table IA to I C.

Table 1a: Growth Rates, Haryana (2011-12 prices) percent

Year	GSDP	NSDP
2016-17	10.48	10.56
2017-18	6.69	6.67
2018-19	6.12	5.87
2019-20	8.24	8.32
2020-21	-5.65	-5.61

Source: Directorate of Economic and Statistical Organization, Haryana.

Table 1b: NSDP Per Capita, Haryana (2011-12 prices)

Year	NSDP per capita Rupees
2016-17	150259
2017-18	158039
2018-19	164976
2019-20	176199
2020-21	163912

Source: Directorate of Economic and Statistical Organization, Haryana

Table 1c: Annual growth rate, Haryana (2013-14 to 2017-2018)

Sector	2013-14	2014-15	2015-16 (P)	2016-17 (P)	2017-18 (A)
Agriculture & Allied	2.8	-2.3	3.8	6.4	2.4
Industry	7.4	4.6	10.5	5.9	7.7
Services	10.1	10.4	9.3	8.8	9.4
GSDP	8.3	6.6	10.3	8.2	8.0

Source: Economic Survey Report 2017-18

As per the quick estimates, growth in GSVA at constant prices was 10.1 percent and 7.1 percent in the years 2021-22 and 2022-23 respectively. Table IA and IB depict growth rates of GSDP and NSDP, NSDP per capita which is constantly increasing. Table IC shows that the annual growth rate of Haryana economy has remained consistently higher ranging between 8 to 10 percent, although agriculture sector experienced low growth during the same period 2013-14 to 2017-2018.

Table 2: Sector wise share, Haryana 2020-21 (Prices 2011-12) percent

Year	Share in GVA
Primary sector	19.10
Agriculture	18.87
Mining	0.23
Secondary sector	30.02
Manufacturing sector	21.38
Construction	1.31
Electricity, Gas	7.33
Tertiary sector	50.89
Trade, Repair, Hotels Restaurants	15.02
Transport, Storage, Communication	4.48
Financial Services	5.77
Real Estate	18.01
Other Services	4.78

Source: Calculated, ESO, Haryana Statistical Abstracts, Various Years

The shares of different sectors in GVA shows that service sector contribution is the highest (50.89%), followed by Secondary sector (30.02%), and then of Primary sector (19.10%). The major subsectors are Agriculture, Manufacturing sector, Real Estate, Trade, repairs,& hotels which contributes 18.87%, 21.38%, 18.01% and 15.02% respectively, while construction, Transport, storage, communication and financial sector are smaller sectors which contributes 1.31%, 4.48% & 5.77% respectively (Table 2a). Services are considered to be dynamic that can drive economic growth and employment.

According to Ghani and Connell (2014) [3], services contribute more than manufacturing sector to output and employment growth in low and high-income countries. Fuchs (1980), Kuznets (1966), Ghani (2010) [2], Rodrik (2014) discussed and analysed the fast expansion of service sector and pointed out various factors responsible for this growth. Rodrik (2014) viewed that 'the bulk of excess labor in low-income countries is absorbed in non-tradable services that operate at low levels of productivity'. However, a disaggregated analysis of service sector role on employment and GDP growth has not been studied for the State of Haryana. Therefore, as Haryana is experiencing service sector surge, it is essential that its service-led growth remain sustainable and helps to transform the economy into a modernized economy.

Objectives

The main objectives are to explore the service sector role in the Haryana GSDP and employment growth through decomposing the economic growth rate in Haryana and to understand how growth is linked to changes in employment, output per worker and population structure at the aggregate level and by sectors.

Data and Methodology

The study has been carried out for the State of Haryana covering the time period from 1970-71 to 2013-14. The selected variables are NSDP, Shares of Output at aggregate level and disaggregate level. Data on NSDP, GSDP, Primary Sector, Secondary Sector and Service Sector and its sub sectors at constant prices have been obtained from Economic and Statistical Organization (ESO), Haryana. The methodology applied is descriptive statistics and growth decomposition techniques. The Shapley decomposition method is applied utilizing the Job Generation and Growth decomposition tool.

The decomposition of GSDP growth depicts many steps.

Step 1: Employment rate changes; Changes in aggregate output per worker; Changes in the demographic structure of the population.

Step 2: Sectoral pattern of employment generation.

Step I

Per capita GSDP, Y/N=y can be expressed as:

$$Y/_N = \frac{Y}{E} \cdot \frac{E}{A} \cdot \frac{A}{N}$$

Or

$$y = w * e * a$$

Where Y is total Value Added; E is total employment; A is the total population of working age and N is total population. In this way Y/E=ω is total output per worker, Y/N= Per capita GSDP; E/A = the share of working age population (i.e. the labor force) employed and A/N is the labor force as a fraction of total population. e- as the employment rate.

Thus per capita GDP growth can be decomposed into growth associated with changes in output per worker, growth associated with changes in employment rates and growth associated with changes in the size of the working age population. This decomposition has the advantage of being additive. This means that the total change in per capita GDP will be the sum of the growth attributed to each of its components ω, e, and a. Thus if we let (w), (e) and (a) denote the fraction of growth linked to each component then:

Growth rate of an economy can be expressed as

$$\frac{\Delta y}{y} = (w).\frac{\Delta y}{y} + (e).\frac{\Delta y}{y} + (a).\frac{\Delta y}{y}$$

Total growth as

$\Delta y = a*\Delta y + b*\Delta y + c*\Delta y$

Descriptive analysis

The main stylized facts observed in the structure of Haryana economy within a half century are the decline of agriculture, the rise of service and the stagnant growth of manufacturing sector.

Therefore, from the descriptive analysis, we can observe that the role of the service sector to the total economy growth in GVA and employment is increasing. The leading role of the service sector could be attributed to the change within the service sector itself as its output share and employment share has increased along with a rise in its productivity level. The decomposition analysis can further indicate the sources of this growth.

Growth Decomposition Analysis

This section discusses the Haryana Service sector contribution to the change in total employment rate and per capita GSDP during 2001-2011 using decomposition analysis.

The table 3 shows the contribution to absolute observed growth in per capita GSDP as well as the percent contribution. The growth in per capita GSDP decomposition result shows that productivity growth has much more pronounced contribution to the GDP per capita growth because Output per worker growth has accounted the largest share (119.48%) to the total growth in GSDP per capita followed by changes in the share of population of working Age (20.59%) in 1999-2005. The contribution of employment rate is negative (-40.07), thus growth reducing.

Table 3: Decomposition of Growth in per capita Value Added, Haryana 2001-2011

	At 2004-05 prices	**Percent of total change in per capita value added growth**
Total Growth in per capita GDP (value added)	34,081.43	100
Growth linked to output per worker	40,721.70	119.48
Growth linked to changes employment rate	-13,656.16	-40.07
Growth linked to changes in the share of population of working Age	7,015.88	20.59

Calculated

It clearly indicates the jobless growth process in the economy of Haryana. The employment policies of the State government regarding the generation of employment along with growth did not contributed to job creation.

Table 4: Changes in Output per Worker by Sectors. Haryana 2001-2011

	2001	**2011**	**% Change**
Agriculture	47, 481	74, 596	57.11
Manufacturing	148, 218	287, 062	93.68
Services	126, 640	305, 552	141.28
Total output per worker	90, 117	198, 416	120.18

Calculated

It is interesting to note that changes in output per worker remained positive in all the three sectors. The service sector experienced highest change in output per worker both in 2001 and 2011. The change in total output per worker has been 120.18 percent. Service sector experienced 141 percent change in Output per worker, followed by manufacturing sector (93%) and agriculture sector (57%).

Conclusion

In Haryana, the contribution of the service sector to the total output growth or GDP growth and to employment growth is increasing and the sector is becoming an important sector to drive growth. The decline in agriculture paved the way for the dominance of the service sector. The agriculture share in the total output declined by larger percentage points as the manufacturing sector's output share changed slightly during the period 1970-71 to 2013-14. Concomitantly, the output share in the service sector has increased. Hence, these changes in the sectoral structure of Haryana economy imply that there is sectoral growth dynamics, especially in the service sector.

The decomposition analysis identified the importance of the service sector in general for the employment and GDP per capita growth.

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