

Chapter-5

Structural Change and Growth Relationship in Haryana

5.1 Introduction

In economics, structural change is a shift or change in the basic ways a market or economy functions or operates. Such change can be caused by various factors such as economic development, shifts in capital and labor, changes in resource availability due to natural disaster or discovery or depletion of natural resources, or a change in political system. In this chapter structural change in growth of Haryana is analyzed by constructing NAV and MLI indices. The results of NAV and MLI indices are discussed as follow:

5.2 Constructing the NAV and MLI indices of structural change in Haryana

NAV (norm of absolute values) calculate the differences of sector shares between two points of times. Then add the absolute values of differences and divided by two. The second work is Modified Lilien Index (MLI) standard deviation sectoral growth rate of employment between two time points. It fulfill characteristics of a matrix, used of two indices allow us to check the robustness of our analysis with respect to the structural change measure. The NAV and MLI have been used to measure robustness in the sectors of Haryana during the time period (2004-05 to 2011-12).

Table 5.1 Per capita state domestic product and growth rate of districts (2004-05 to 2011-12)

Districts/ Sectors	Per capita state domestic product			Growth rate		
	Average Share	Median Share	Std. Deviation	Average Share	Median Share	Std. Deviation
Ambala	5.61	5.14	3.37	-10.16	-0.13	56.32
Bhiwani	4.85	5.11	2.05	4.24	0.04	24.34
Faridabad	11.58	8.51	11.28	-11.81	-5.00	23.64
Fatehabad	2.92	2.50	1.93	0.07	-0.08	9.48
Gurgaon	10.76	5.25	11.42	138.65	-2.04	605.91
Hisar	5.59	5.85	2.41	-0.27	-0.47	9.79
Jhajjar	3.10	2.74	1.52	7.54	-0.11	107.38
Jind	4.06	4.47	2.15	-1.64	-0.50	19.84
Kaithal	3.48	3.71	2.54	0.36	-0.40	30.08
Karnal	5.36	5.13	2.10	-2.48	-0.68	7.43
Kurukshetra	3.73	4.04	2.59	0.50	0.02	16.52
Mohindergarh	2.63	3.12	1.12	5.82	0.26	25.12
Mewat	1.46	1.56	1.01	1.00	1.00	1.00
Palwal	1.44	1.48	0.72	1.00	1.00	1.00
Panchkula	4.38	2.69	5.52	-63.01	-0.01	191.12
Panipat	5.31	3.90	4.61	-2.21	-0.09	19.27
Rewari	3.42	3.18	1.85	25.91	0.03	130.98
Rohtak	3.96	4.29	1.65	6.36	-0.48	53.63
Sirsa	3.87	3.53	2.35	0.51	0.38	14.90
Sonipat	5.74	5.61	1.39	-12.94	-0.02	62.59
Yamuna nagar	6.84	4.70	5.22	-93.76	-0.27	354.26

Sources: Directorate of Economics and Statistics Haryana.

The table 5.1 shows the behavior of district wise per capita state domestic product and its growth rate. The table depicts average share and growth of average share in per capita state domestic product during the study period. Faridabad has highest value 11.58 which is followed by Gurgaon with value 10.76 and Yamunanagar 6.48 in highest category. While Palwal (1.44 per cent), Mewat (1.46 Per cent), Mohindergarh (2.63 Per cent) and Fatehabad has lowest share per capita. The more or less similar behavior can be observed in case of median share of the districts in state domestic product. The table 5.1 also shows the calculated standard deviation of per capita state domestic product. The higher standard deviation means higher structural change whereas lower standard deviation shows lower structural change. The standard deviation is highest in case of Gurgaon followed by Faridabad, indicating the highest structural change in both districts. While the lowest standard deviation was observed for Palwal followed by Mewat, Mohindergarh and Jhajjar indicating the lower structural change in these districts.

Next three columns in the table are showing the growth rate in terms of average share, median share and std. deviation while talking about average share. Highest growth rate in terms of average share are Gurgaon (138.65) and Rewari with value 25.91 and lowest shareholders of growth rate districts are Yamuna nagar (-93.76), Panchkula (-63.01), Sonipat (-12.94) respectively.

Next column is explaining the median share of districts in growth rate. Highest shareholding states are Sirsa (0.38) and Mohindergarh (0.26). Faridabad is having the lowest share median share growth rate (-5).

Last column is explaining the std. deviation of growth rate. Here Gurgaon is leading with highest value 605.91 followed by Yamuna nagar (354) and then by Panchkula (191.12).

Lowest std. deviation value states are Karnal (7.43), Fatehabad (9.48) and Hissar (9.79)

Table 5.2 District Wise Sector Share in GSDP of Haryana

Sectoral share in total data from 2004-05 to 2011-12 (Percent)																	
Districts/ Sectors	1	2	3	4	5	6	7	8	9	9.1	9.2	9.3	9.4	10	11	12	13
Ambala	3.87	2.97	2.43	1.16	2.14	5.75	4.79	10.20	7.60	14.82	6.53	3.86	8.91	5.63	3.63	5.97	5.14
Bhiwani	7.44	5.58	5.48	7.40	2.31	5.17	6.58	0.98	4.93	3.27	5.11	3.21	4.53	2.74	2.78	8.13	6.80
Faridabad	2.86	3.84	6.33	51.86	15.37	8.37	8.21	19.37	10.26	4.04	10.14	5.13	13.03	12.26	11.85	5.49	8.51
Fatehabad	6.34	2.50	5.24	0.03	1.28	2.43	4.41	0.69	2.50	1.16	2.54	6.57	3.19	1.38	1.47	3.72	4.23
Gurgaon	2.96	3.22	4.84	1.15	31.51	5.25	4.17	22.98	9.06	3.02	9.86	2.92	6.86	25.63	38.50	5.66	5.25
Hisar	8.62	3.91	7.93	0.18	8.59	6.76	7.68	2.41	5.54	2.93	5.60	5.85	6.03	4.22	3.56	8.07	7.09
Jhajjar	3.15	2.46	6.68	0.50	2.75	2.30	3.82	1.79	4.69	2.62	5.18	1.05	2.74	2.66	2.33	3.95	4.06
Jind	7.29	4.22	5.54	0.17	1.40	3.71	5.51	0.73	4.47	5.65	4.56	7.12	3.65	1.74	2.13	5.59	5.52
Kaithal	6.13	4.72	4.60	0.09	1.02	2.81	4.64	0.71	3.43	0.86	3.71	10.60	3.75	1.52	1.70	4.23	4.60
Karnal	8.14	4.70	6.16	1.82	2.99	5.25	6.25	5.13	4.89	3.24	4.77	10.77	6.50	4.25	3.67	7.08	5.47
Kuruksetra	5.47	2.79	2.98	0.46	1.13	4.22	4.91	0.92	4.04	1.50	4.08	11.67	5.48	2.87	2.13	4.29	4.54
Mahindergarh	3.25	3.10	3.32	3.01	1.05	3.61	3.26	0.18	3.12	3.33	3.31	1.45	1.88	1.41	1.53	3.96	3.87
Mewat	1.71	1.70	4.40	0.84	0.65	2.15	2.09	0.22	1.07	0.13	1.13	1.81	1.03	0.39	1.70	1.56	2.31
Palwal	1.82	1.18	2.21	0.91	0.66	2.52	2.31	0.44	0.58	1.50	0.88	1.94	0.82	0.65	2.14	1.48	2.39
Panchkula	1.36	23.75	1.70	6.41	1.24	2.27	2.23	2.20	2.75	4.03	2.55	0.36	3.21	10.62	4.37	2.69	2.77
Panipat	3.85	2.59	4.19	2.34	4.84	16.44	4.97	18.31	4.12	3.64	3.90	2.96	4.08	3.71	2.64	3.61	4.00
Rewari	2.78	2.76	2.79	1.08	9.63	2.03	3.18	3.78	3.52	5.09	3.40	1.84	3.89	2.88	2.16	3.82	3.43
Rohtak	3.46	2.85	6.38	0.31	2.26	4.29	4.24	1.52	5.50	5.45	4.67	2.86	4.97	4.75	3.01	6.00	4.82
Sirsa	9.63	2.98	5.25	0.11	1.54	3.02	6.29	1.04	3.90	2.67	3.53	6.89	4.54	2.26	2.39	4.78	4.99
Sonipat	5.17	4.67	8.73	7.20	4.87	6.95	5.61	4.80	6.74	3.82	7.87	5.63	5.73	4.74	3.53	5.95	5.60
Yamunanagar	4.69	13.53	2.83	12.98	2.77	4.70	4.83	1.57	7.28	17.21	18.15	5.52	5.18	3.69	2.79	3.95	4.63
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Director of Economics and Statistical Haryana.

(1)Agriculture (2) Forestry (3) Fishing (4) Mining (5) Manufacturing (6) Electric and Gas (7) Construction (8) Transportation, Storage (9) Trade, Hotels and Restaurant (10) Banking and Insurance (11) Real Estate and Business Service (12) Public Administration (13) other Services

The above table discussed the district-wise share of all 13 sub-sectors in gross state domestic product over the study period. Agriculture and animal husbandry sector share varies among districts between 9.63 and 2.96. In terms of leading share Sirsa is at top of table with share of 9.63 which is followed by Hissar (8.62) and Karnal (8.14) while talking about the lowest share of Panchkula which is having the lowest production of agriculture with value of 1.36 and Panchkula (1.36), Mewat (1.71) is just above Panchkula after Mewat, Rewari (2.71), Faridabad (2.86), and Gurgaon (2.96) are trending above respectively. Forestry and logging sector is discussed in column 2nd where Panchkula, Yamuna nagar and Hisar are topping the table with values 23.07, 13.53, 7.93 respectively while talking about bottom shareholder districts, in this category are Palwal, Mewat and Hisar having sector shares with value of 1.18, 1.70 and 2.46 respectively. 3rd column is explaining the sector share of fishing which is dominated by Panipat (9.41), Sonipat (8.73), Hisar (7.93) and lowest shareholders in this category are Panchkula (1.07), Palwal (2.21) and Yamuna nagar (2.83).

4th column contains the sector share of mining and quarrying. Table toppers are Yamuna nagar (12.98), Sonipat (7.20) and Faridabad (5.86). Lowest shareholders in this category are Fatehabad (0.03), Kethal (0.09), Sirsa (0.11) and Jind (0.17).

Manufacturing sectors shares results are discussed in column 5th. Highest shareholders are Faridabad (15.37), Gurgaon (31.05) and Rewari (9.63). On the other hand districts like Sirsa (0.11), Rohtak (0.31) and Mewat (0.65) are the lowest shareholder districts.

6th column have the sector shares of electricity, gas and water supply .Panipat (16.04) and Faridabad (8.37) are highest shareholders respectively. Mewat, Panchkula, Rewari are tabled below with values of 2.15, 2.27 and 2.03 respectively.

Next column have construction share in GSDP. Faridabad have highest share of 8.21 which is followed by Hisar which have share value of 7.68. Lowest share holder districts in this category are Mewat (2.09), Palwal (2.31) and Panchkula (2.23).

9th column contains the share of Transport and storage. Highest shareholding districts in this category are Faridabad (10.26), Gurgaon (9.66) and next Yamuna nagar (9.28). Districts which are on bottom of this category are Palwal (0.58) and Mewat (1.67).

10th Column contains the share of banking and insurance. Highest shareholding districts in this category is Gurgaon (25.63) and lowest shareholding district is Mewat (0.39). Next column is of real estate and ownership of dwellings, legal and business services. Highest share in this category is holed by Faridabad (11.85) and lowest shareholding district is Fatehabad (1.38).

12thcolumn is of public administration. Highest shareholding state in public administration is Bhiwani with value of 8.13 and lowest is Palwal with value of 1.38.Last column have other shares. In this category highest shareholding district is Faridabad (8.51) and lowest is Mewat with value of 2.01.

Districts/ Sectors	NAV Index		
	Average	Median	Std. Deviation
Ambala	0.04	-0.43	1.95
Bhiwani	-0.02	-0.02	1.50
Faridabad	0.18	-0.15	8.04
Fatehabad	-0.07	0.42	1.37
Gurgaon	0.07	-0.04	8.08
Hisar	-0.05	-0.12	2.04
Jhajjar	0.03	0.01	1.36
Jind	-0.06	0.39	1.44
Kaithal	-0.05	0.14	1.70
Karnal	-0.08	-0.21	1.41
Kuruksetra	-0.03	0.11	1.69
Mohindergarh	0.02	-0.03	0.80
Mewat	0.02	-0.02	0.73
Palwal	0.02	-0.09	0.54
Panchkula	0.04	0.01	4.38
Panipat	0.00	-0.03	3.33
Rewari	0.02	-0.07	1.59
Rohtak	0.04	-0.07	1.31
Sirsa	-0.15	0.27	1.61
Sonipat	0.01	-0.33	1.11
Yamunanagar	0.00	0.20	3.44

Sources: calculated by researcher

There are two indices have been used in the present study. NAV and Modified Lilien Index. The use of these two indices allows us to check the robustness of our analysis with respect to structural change measures. Both indices predict the average structural change during the time period. On the bases of above NAV table, Gurgaon and Faridabad stands at first place with the value of 8.08 and 8.04 respectively in structural change. NAV index shows lowest structural change in Palwal, Mewat and Mohindergarh with the value of 0.54, 0.73 and 0.80 respectively during the study period.

Table 5.4 District wise MLI Index of Haryana (2004-05 to 2011-12)			
Districts/ Sectors	MLI Index		
	Average	Median	Std. Deviation
Ambala	2.94	2.46	2.31
Bhiwani	2.26	1.84	1.56
Faridabad	8.60	5.95	11.26
Fatehabad	1.97	1.85	1.14
Gurgaon	10.06	6.49	8.89
Hisar	2.63	2.60	1.74
Jhajjar	1.89	1.81	1.42
Jind	2.12	2.04	1.21
Kaithal	2.34	2.27	1.91
Karnal	2.23	1.62	1.54
Kurukshetra	2.47	2.45	1.95
Mohindergarh	0.95	0.39	0.97
Mewat	0.97	0.77	0.88
Palwal	0.85	0.89	0.51
Panchkula	4.09	1.77	5.29
Panipat	3.74	1.19	4.85
Rewari	1.76	1.34	2.13
Rohtak	1.82	1.76	1.31
Sirsa	2.32	2.29	1.59
Sonipat	1.79	1.73	1.17
Yamunanagar	4.62	2.50	4.28
Sources: Directorate of Economics and Statistics Haryana.			

The table 5.4 depicts the ratio of district-wise structural changes in Haryana through Modified Lilien Index. The both indices are depicting quite similar in their magnitudes, patterns and field similar results. The highest structural changed district and lowest structural changed district are same as NAV results.

On the bases of both indices, the structure change gap is worst in the districts of Haryana such that highest structural changed district's NAV and MLI values are very high and lowest rated districts have very low values. The difference between these values is more. It showed the discrimination between the districts of Haryana.

Conclusion

The main objective of this chapter was to construct the NAV and MLI indices of structural change in Haryana. The use of two indices (NAV and Modified Lilien Index) allows us to check the robustness of our analysis with respect to structural change measures. Both indices predict the average structural change during the time period. So the structural change is same in pattern. The highest structural changed districts and lowest structural changed district are same as NAV results.

On the bases of both indices, the structure change gap is worst in the districts of Haryana such that highest structural changed district's NAV and MLI values are very high and lowest rated districts have very low values. The difference between these values is much. It showed the discrimination between the districts of Haryana.