

## **Performance of The Share of The Secondary Sector in Relation To Gdp, Workforce and Exports**

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### **ABSTRACT**

Secondary sector has come to be regarded as synonymous with economic development. Industrialization involves adoption of technologically superior techniques of production that help to transform basic raw material and intermediate goods into manufactured goods. It also means application of modern techniques of management and organization like economic calculations, accountancy and management techniques, etc. Secondary sector has contributed much to the economic development of Indian economy. After independence there was an emphasis on industrialization. The heavy industry-oriented strategy of industrialization and the pursuit of industrial growth is the major objective of planning. Most of the planning in India concentrated on the growth of secondary sector. Secondary sector growth encourages economic development in various ways. Statistical substantiation demonstrated that in developed countries, manufacturing industries have made enormous contribution to the GNP and in such countries the per capita income is much higher than that in the under developed countries. The income per head generated in manufacturing sector is by and large, higher than in agriculture. Hence it was argued that if a country desires to raise its national or per capita income it should give top priority to industrialization.

### **INTRODUCTION**

Development is almost synonymous with industrialization. Rapid growth and diversification of an economy is not possible without due emphasis on secondary sector. Every developing country, therefore, gives an overriding importance to the growth of secondary sector and India is no exception to this. Industrial growth of a country is the barometer of its progress. All countries, developed as well as developing are growth minded. This universal quest for growth is a revolution.

The people of the world today are everywhere on the march towards industrialization, for it is a means to conquer poverty. Industrialization refers to the actual course of transition from the traditional society towards industrial progress.

It is a recognized fact that underdeveloped countries are afflicted with extensive unemployment in urban areas and equally large disguised unemployment in the rural areas. The spreading out of secondary sector is advocated for absorption of surplus population from agriculture. When this superfluous population is more lucratively work force in industry, the national output would indeed go up.

A highly industrialized country produces a wide assortment of commodities. Industrialization enhances the purchasing power of the people engaged in the industrial sector. It leads to enlargement of market for all other commodities. In this chapter an attempt is made by the researcher to analyse the performance of the secondary sector towards the macroeconomic variable in India. The three important variable was been selected to analyse the performance of the secondary sector are GDP, workforce and export. Many studies in India and abroad has taken these three variables to analyse the sectoral contribution.

The following table gives the details of the GDP generated from secondary sector. It also presents contribution of secondary sector made in the GDP of India.

**TABLE 1.1**  
**REGRESSION RESULTS OF THE CONTRIBUTION OF THE SECONDARY**  
**SECTOR TO GDP DURING 1980-81 TO 2011-12**  
(In crores)

Model	Period	Year	Regressions Co – efficient			R <sup>2</sup>	Compound Growth Rate
			a	b	t		
Linear	Pre-reform period	1980-81 to 1990-91	160987.35	13592.43	15.19*	0.96	--
	Post-reform period	1991-92 to 2011-12	152331.67	49777.81	15.50*	0.93	--
	Whole period	1980-81 to 2011-12	-17692.97	33961.70	14.59*	0.88	--
Log-linear	Pre-reform period	1980-81 to 1990-91	12.05	0.06	23.90*	0.98	5.71
	Post-reform period	1991-92 to 2011-12	12.57	0.07	41.46*	0.98	7.44
	Whole period	1980-81 to 2012-13	11.97	0.06	53.21*	0.99	6.60

Source: Computed by Researcher

\*Indicates 5per cent level of significant

Regression analysis has been conducted by the researcher to analyses the performance of the contribution of the secondary sector towards GDP in India. In the pre-reform period, the value of the slope co-efficient was found to be 13592.43. This showed that the contribution of secondary sector towards GDP in India increased annually by 13592.43 crores on an average over the ten years period. The value of R<sup>2</sup> was found to be 0.96, which meant that about 96 per cent of the

variations in the contribution of secondary sector towards GDP is explained by time. The estimate of ‘b’ was found to be statistically significant at 5% significant level.

The annual average growth rate of the contribution of the secondary sector towards GDP after the introduction of post reform period is Rs.49777.81crores. The overall growth rate shows that the contribution of the secondary sector towards the GDP is Rs. 33961.70. The compound growth rate shows that the contribution of secondary sector towards the GDP increases annually at 6 percent, while its value in post reform period is 7 percent.

## **GROWTH RATE OF GDP IN THE SECONDARY SECTOR**

In order to examine as to whether the contribution of secondary sector towards GDP had differed between the two sub periods (viz) pre-reform and post-reform period, the following ‘t’ test was applied.

$$t = \frac{b_1 - b_2}{\sqrt{(SE b_1)^2 + (SE b_2)^2}}$$

**b<sub>1</sub>** = slope coefficient for the pre-reform period,  
**b<sub>2</sub>** = slope coefficient for the post-reform period.

$$t = \frac{-36185.38}{\sqrt{11117429.83}}$$

**t = -10.85**

Table value of ‘t’, d.f(30) at the 5 per cent level was 2.04

Since the calculated value was found to be higher than the ‘table’ value, the researcher has rejected the null hypothesis and concluded that there was found to be a significant difference between the growth rates of the contribution of secondary sector towards GDP during the pre-reform and Post-reform periods.

## **STRUCTURAL CHANGES IN THE PERFORMANCE OF SECONDARY SECTOR SHARE TO THE GDP**

The ‘Chow test’ had been used by the researcher to compare the performance of the secondary sector’s share to the GDP in India during the two sub-periods of ‘before’ and ‘after’ the introduction of the New Economic policy. The ‘Chow test’ helps us to find out whether there had been any structural changes that had taken place during the two assumed time periods.

The growth rates were estimated for the pre-reform period (1980-81 to 1990-91) and for the post-reform period (1991-92 to 2011-12) separately and also for the whole period (1980-81 to 2011-12) separately and using the following F – statistics, the Chow test was carried out,

$$F = \frac{S_5/K}{S_4 / (n_1 + n_2 - 2K)}$$

Where,

n<sub>1</sub>= Number of years before the economic reforms,

n<sub>2</sub>= Number of years after the economic reforms,

Degrees of freedom = (k, N<sub>1</sub>+N<sub>2</sub>-2K),

S<sub>5</sub> = S<sub>3</sub> - (S<sub>1</sub>+S<sub>4</sub>),

$$S_4 = S_1 + S_2,$$

$S_1$  = Error Sum of squares obtained in the first equation,

$S_2$  = Error Sum of squares obtained in the second equation, and

$S_3$  = Combined Error Sum of squares

$H_0$  = There are no structural changes in the performance of the secondary sector's shares to the GDP between the two periods

$H_1$  = There are structural changes in the performance of the secondary sector's shares to the GDP between the two periods.

## GROWTH RATE OF WORK FORCE IN THE SECONDARY SECTOR

To examine as to whether the growth rates of work force in the secondary sector had differed between pre-reform and post-reform period, the following 't' test for comparing mean has been applied

$$t = \frac{b_1 - b_2}{\sqrt{(SE b_1)^2 + (SE b_2)^2}}$$

$b_1$  = slope coefficient for the pre-reform period,

$b_2$  = slope coefficient for the post-reform period.

$$t = \frac{-0.099}{\sqrt{0.000386}}$$

$$t = -5.039$$

Table value of 't', d.f (30) at the 5 per cent level was 2.04

From the above statistical tool of analysis, we could find the calculated value is higher than the table 't' value, so we reject the null hypothesis and conclude that there is significant difference between the contribution of secondary sector towards workforce in India.

## STRUCTURAL CHANGES IN THE PERFORMANCE OF SECONDARY SECTOR SHARE TO THE WORK FORCE

$H_0$  = There are no structural changes in the performance of the secondary sector's shares to the work force between the two periods

$H_1$  = There are structural changes in the performance of the secondary sector's shares to the work force between the two periods.

**TABLE**  
**CHOW TEST FOR INDIA'S SECONDARY SECTOR SHARES TO WORK FORCE**

STEPS	VALUES	
I	$S_1$	0.0217
	$S_2$	5.2564

	<b>S<sub>3</sub></b>	6.6497
II	<b>S<sub>4</sub></b>	5.2781
III	<b>S<sub>5</sub></b>	1.3716
IV	<b>F<sub>(2, 28)</sub></b>	3.64

$$F = \frac{1.3716/2}{5.2781/28}$$

**F=3.64**

At the 5 per cent level,  $F_{(2, 28)}=3.42$

The computed ‘F’ value was found to be higher than that of the ‘table’ value and hence, the null hypothesis was rejected and the researcher concludes that there is structural change in the contribution of secondary sector towards workforce during the pre-reform and post-reform period.

### Performance of the Secondary Sector in Terms Of Export

**TABLE 1.5**

### REGRESSION RESULTS OF THE CONTRIBUTION OF THE SECONDARY SECTOR TO EXPORT DURING 1980-81 TO 2011-12

(In billion crores)

Model	Period	Year	Regressions Co – efficient			R <sup>2</sup>	Compound Growth Rate
			a	b	t		
linear	Pre-reform period	1980-81 to 1990-91	-6.65	18.97	6.58*	0.83	--
	Post-reform period	1991-92 to 2011-12	-2024.12	481.38	8.2*	0.78	--
	Whole period	1980-81 to 2011-12	-2281.31	270.59	7.69*	0.66	--
Log - linear	Pre-reform period	1980-81 to 1990-91	3.46	0.17	12.21*	0.94	18.98
	Post-reform period	1991-92 to 2011-12	5.72	0.17	54.14*	0.99	18.52

	Whole period	1980-81 to 2011-12	3.47	0.19	66.33*	0.99	20.38
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Source: Computed by Researcher

\*Indicates 5per cent level of significant

Table 1.5 has shown that the average annual growth rate of the of the export of secondary sector during the pre-reform period is Rs. 18.97billion crores. But in the post-reform period the rate of change is Rs. 481.38 billion crores. This shows that there is a significant change in the performance of the export of the secondary sector. The growth rate for the whole period is Rs. 270.59 billion crores. The R<sup>2</sup> value of the whole period is 0.66 which shows that the 66 percent of the change in the variation in the growth of secondary sector export is explained by the time.

The semi-log model shows that the performance of the export from secondary sector. The annual average growth of the secondary sector grows at 17 percent during the pre-reform and post-reform period. The corresponding value for the whole period is 19 percent. The compound growth shows that the average growth rate during the pre and post reform period is around 19 percent and in the whole period it is around 20 percent.

## GROWTH RATE OF EXPORT IN THE SECONDARY SECTOR

The researcher has used ‘t’ test to examine as to whether the growth rates of export in the secondary sector had differed between the two sub periods (viz) before the introduction of new economic policy and after the introduction of new economic policy.

$$t = \frac{b_1 - b_2}{\sqrt{(SE\ b_1)^2 + (SE\ b_2)^2}}$$

**b<sub>1</sub>** = slope coefficient for the pre-reform period,  
**b<sub>2</sub>** = slope coefficient for the post-reform period.

$$t = \frac{-462.41}{\sqrt{3456.3905}}$$

**t = -7.865**

Table value of ‘t’, d.f (30) at the 5 per cent level was 2.04

The calculated ‘t’ value is greater than the table ‘t’ value, so we have no reason to accept the null hypothesis. so the researcher has concluded that there is significant difference between the export of secondary sector before the introduction of new economic policy and introduction of new economic policy in terms of export of secondary sector.

## CONCLUSION

The performance of secondary sector has been analyzed in the above chapter. The analysis highlighted that the contribution of secondary sector is quiet encouraging. The three variables which were taken for analysis (viz) GDP, workforce and export explains that there is a positive growth rate in the contribution of secondary sector towards the above said three variables. The growth of secondary sector is essential in the sense that it creates work force opportunity. But

the growth of tertiary sector does not create any work force opportunities. The pre-reform period analysis and post-reform period analysis shows that the secondary sector has contributed significantly for the growth of Indian economy. But today the growth of the secondary sector has been over shadowed by the enormous growth of the tertiary sector. India is a country with huge population. So government of India has to develop the industrial sector with special focus on small scale industries.

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