The Impact of Industrial Policies on the Performance of Punjab's Manufacturing Sector

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ABSTRACT *The present paper aims to analyse the industrial policies of Punjab and their impact on production and employment of Punjab's manufacturing sector. For this, data has been culled from Annual survey of industries and Directorate of Industries, Government of Punjab. All the industrial policies are categorised into incentive based policies i.e. Industrial policy of 1978, 1987, 1989, 1992, 1996, 2013 and competition based policies i.e. industrial policies of 2003 and 2009. Using Gross Value Added and number of workers as the performance measurement variables, and applying the dummy variable technique, it was found that incentive based industrial policies have a positive significant impact on production and employment. On the other hand, the introduction of competition based policies worsened the performance of Punjab's manufacturing sector.*

Section-1: Introduction

Industrial policy plays a crucial role in the industrial development of an economy. It focuses on framing rules, regulations and principles by the Government that supported the process of industrialisation in the state or country. It includes setting up of objectives, targets and then explaining the measures to be undertaken for achieving the same. Industrial policies are announced both at the state as well as at the centre level. In Punjab, industrial policy is announced by the Directorate of Industries, Chandigarh, Punjab. The industrial policy at central level, on the other hand, is announced by the Department of Industrial Policy and Promotion which is under the Ministry of Commerce and Industry, Government of India. Till now, eight industrial policies have been framed and announced in Punjab i.e. Industrial Policy of 1978, 1987, 1989, 1992, 1996, 2003, 2009 and of 2013. Based on the characteristics of each of the industrial policy of Punjab, these have been divided into two groups, i.e. incentive based policies and competition based policies. Incentive based industrial policies i.e. industrial policy 1978, 1987, 1989, 1992, 1996 and of 2013 emphasised on attracting new investments by providing incentives like capital subsidies, land subsidies, sales tax concession, electricity duty exemption and others. Thrust areas (Agro-Based Industries, Electronic Units, Export Oriented Units, Rural/ Village Industries, IT/ ITes/ Knowledge Industry, Tourism Industry etc.) were identified in these policies and special set of incentives were provided for promoting these thrust areas. Competition based policies i.e. Industrial Policy 2003 and 2009 apart from attracting new investments also concentrated on developing infrastructure, reviving sick units, enhancing competitiveness of existing units etc. Government of Punjab has undertaken various initiatives under different policies announced by it from time to time for promoting industrialisation in Punjab. It is worthwhile to identify as to whether these incentive based and competition based policies had actually improved the performance of an industrial sector in Punjab. This study makes an attempt to quantify the same. For this, the present study is divided into three sections. Section-1 introduces the study. Section-2 presents the database and methodology. Section- 3 interprets the results.

Section- 2: Database and Methodology

Production and employment are used as indicators of performance measurement. Gross value added will be used as production variable and number of workers employed will be used as employment variable. The time period chosen for the same is from 1970-71 to 2009-10 and data has been taken from various issues of Annual Survey of Industries. All the Industrial policy statements published by Government of Punjab have been analysed for the present study.

To evaluate the impact of industrial policies on the production and employment of industrial sector in Punjab, following model was used:

For Production:

$$\text{Log GVA}_t = \beta_0 + \beta_1 t + \beta_2 (D_{1t} \, t) + \beta_3 (D_{2t} \, t) + \mu_t \quad (1)$$

where GVA is Aggregate Gross Value Added of manufacturing sector in Punjab in the current year and t is the trend variable

D_i's are dummy variables defined below:

$D_1 = D_2 = 0$ for the first period i.e. from 1970-71 to 1977-78 when there was no industrial policy announced in Punjab.

$D_1 = 1$ for the second period 1978-79 to 2002-03, the period of incentive based industrial policies

= 0 otherwise.

$D_2 = 2$ for the third period 2003-04 to 2009-10, the period of competition based policies

= 0 otherwise.

For Employment:

$$\text{Log Emp}_t = \beta_0 + \beta_1 t + \beta_2 (D_{1t} \, t) + \beta_3 (D_{2t} \, t) + \mu_t \quad (2)$$

where Emp is the total number of workers employed in manufacturing sector of Punjab in the current year and t is

the trend variable

D_i's are dummy variables defined below:

$D_1 = D_2 = 0$ for the first period, i.e. from 1970-71 to 1977-78 when there was no industrial policy announced in Punjab.

$D_1 = 1$ for the second period 1978-79 to 2002-03, the period of incentive based industrial policies

= 0 otherwise.

$D_2 = 2$ for the third period 2003-04 to 2009-10, the period of competition based policies

= 0 otherwise.

Considering equations (1) and (2), the rate of growth in the first period is given as:

$R_1 = [\text{Antilog} (\beta_1) -1] * 100$ (3)

The rate of growth in second period is given as:

$R_2 = [\text{Antilog} (\beta_1 + \beta_2) -1] * 100$ (4)

The rate of growth in third period is given as:

$R_2 = [\text{Antilog} (\beta_1 + \beta_3) -1] * 100$ (5)

Section-3: Empirical Results
3.1. Impact of Industrial Policies on Production:
This section seeks to analyse the dummy based growth rate to examine the effectiveness of industrial policies on gross value added during the period under consideration in Punjab. Table-1 reveals that incentive oriented industrial policy had significant impact on production of Punjab's manufacturing. Competition based industrial policy on the other hand had insignificant impact on its production. Incentives and subsidies provided to the industries resulted in improving production while the period when such incentives were replaced by infrastructure development and technological upgradation measures, the production declined. It also highlights the compound annual growth rates of GVA. It reveals that before the introduction of industrial policies, the compound growth rate of GVA was 4.55 percent per annum. With the introduction of incentive oriented policies, the rate of growth of production in the manufacturing sector improved to 7.62 percent. In other words, the introduction of incentives oriented policies pushed up the growth rate by 2.07 percentage points. But with the introduction of competition based policies, this figure declined by 0.92 percent points and stood at 6.70 percent.

Table-1
Empirical Estimation of the Regression Equation (Dependent Variable: GVA)

GVA	Coefficient	p-value
Constant	11.42445*	0.000
Time (t)	0.044515*	0.025
Dummy Variable (D_1t)	0.028871**	0.089
Dummy Variable (D_2t)	0.020336	0.251
No. of observations- 40		
F-Statistics=293.48* p-value=0.000		
R-squared=0.96 Adjusted R-squared=0.96		
r_1 = 4.55, r_2 = 7.62, r_3= 6.70		

Note: - *-significant at 5% level, **-significant at 10% percent

r_1, r_2 and r_3 are the dummy based estimated compound growth rate of GVA for first, second and third period.

Source: Authors' Calculations

3.2. Impact of Industrial Policies on Employment:
Apart from production, industrial policies also had an impact on employment. Table-2 discusses the same. Considering incentive based and competition based policies, the table reveals that the former (D_1t) had significant impact on employment of Punjab's manufacturing while the later (D_2t) had insignificant impact on it. It is so because the employment generation was the main motive of incentive based industrial policies. Further, it reveals that the compound growth rate of number of workers was -0.141 percent per annum during the first period. Incentive based industrial policy resulted in improving this figure to 2.963 percent. Further, the introduction of competition based policy did not cause much change in employment. During the period of this policy, the compound annual growth rate of number of workers showed a mild decline of 0.30 percentage points.

Table-2
Regression Estimates of Industrial Policy on Production

No. of workers	Coefficient	p-value
Constant	11.86259**	0.000
Time (t)	-0.001412	0.940
Dummy Variable (D_1t)	0.0306108**	0.066
Dummy Variable (D_2t)	0.0276606	1.114
No. of observations- 30		
F-Statistics:315.80* p-value=0.000		
R-squared=0.9733 Adjusted R-squared=0.9702		
r_1 = -0.141, r_2 = 2.963, and r_3 = 2.659		

Note: - **-significant at 10% level

r_1, r_2 and r_3 are the dummy based estimated compound growth rate of Production for first, second and third period.

Source: Authors' Calculations

Many studies have been conducted in the past to find the impact of industrial policies on the performance of firms/industries. These found that incentive based policies have improved the performance of firm/industry. Bergstrom (2000) while evaluating the relation between capital subsidies and the performance of Sweden firms revealed that capital subsidies resulted in improved figures of value added and employment. Pingfang and Weinin (2003) also highlighted that incentive based policy promoted industrial enterprises of Shangai. Tzelepis and Skuras (2004) while measuring the effect of regional capital subsidies on European firms' performance revealed that capital subsidisation positively affects firms' growth. Further, Skuras et.al (2006) while evaluating the impact of capital subsidies on productivity growth of Greek food and beverages manufacturing industry highlighted that capital subsidy resulted in total factor productivity growth through technical change, and not through scale efficiency change.

4. Conclusion and Policy Implications:

The industrial policies that mainly emphasised on providing incentives and subsidies brought prosperity in the industrial sector of Punjab. GVA and employment improved during the period (1978 to 2002) when these policies were put into operation. With the introduction of competition based policies (2003 to 2012), the rate of growth of production and employment slowed down considerably and became insignificant. Thus, this study concludes that incentive based policies were more fruitful than the competition based policies. Government in order to improve the production and employment of Punjab's manufacturing sector should concentrate at announcing and implementing incentive based industrial policies.

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