INDIAN ECONOMIC REFORMS AND ENTREPRENEURSHIP DEVELOPMENT WITH SPECIAL REFERENCE TO SELECTED INDIAN INDUSTRIES

ABSTRACT OF THE THESIS

SUBMITTED FOR THE AWARD OF THE DEGREE OF

Doctor of Philosophy
In
Commerce

BY
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UNDER THE SUPERVISION OF
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ALIGARH (INDIA)
2016
ABSTRACT

Introduction

The reforms

After Independence in the year 1947 to mid-1980s, India sticks to a development pattern of strong centralised planning. The pattern ranges from government ownership of basic and key industries, excessive regulation and control of private enterprises to trade protectionism through tariff and non-tariff barriers and a cautious and selective approach towards foreign capital. During the last 30 years, India’s performance in raising living standards is far behind the East Asian countries (Bajpai & Sachs, 2006). The Indian policy makers remained on the path of centralised economic planning from 1951 to 1991 along with the extensive regulatory controls over the economy (Wadhva, 2004). The strategy of development during the period of first five year plans was based on an ‘inward looking substitution’ model of development (Wadhva, 2004). The strategy implementation by the Indian policy makers after Independence was the main cause of India’s poor performance. Based on high protectionism, planning and detailed domestic regulation of the economy, the Nehruvian Socialist strategy of state-led industrialisation, did not succeed (Bajpai & Sachs, 2006).

In order to overcome the deficiencies and failures of the previous planning, India went through several chapters of economic liberalisation from the period ranging from 1960s to the 1980s. These attempts were self-reversing and half-hearted and did not prove beneficial for the Indian economy. The first attempt was reversed in 1967. Thereafter, a stronger version of socialism was adopted. Second major attempt was in 1985 by Prime Minister Rajiv Gandhi. The process came to a halt in 1987, though 1966 style reversal did not take place. The Indian policy makers started realising the incompetitiveness and ineffeciency of this strategy resulting in a much lower growth rate than desired. Further, the condition of economy worsened due to the poor balance of payment position and growth of inflation. Foreign exchange reserves were barely there to meet the essential imports for few weeks. The NRI’s withdrew dollars from Indian banks at an alarming rate and the credit rating agency downgraded India’s rating from AAA to BB+.

In order to overcome the balance of payment crisis, the Indian government approached the World Bank and IMF for assistance and adopted the new economic policy in the year 1991. The Government of P.V.Narsimha Rao and his Finance
Minister Manmohan Singh started the reforms in the year 1991 and introduced a set of reforms different from those pursued in India during the last 40 years. Although they did not implement many of the reforms IMF wanted. The new neo liberal policies included opening for international trade and investment, deregulation, initiation of privatization, tax reforms, and inflation-controlling measures. The main focus of 1991 reforms was to address the balance of payment crisis through limited tax reforms, control removal from investment in industries, reduction in import tariffs, creating favourable environment for attracting foreign capital, making rupee convertible and opening up of sectors for private investment (Srinivasan, 2004).

**Entrepreneurship Development**

As an economic phenomenon, entrepreneurship dates back to the classical era when it was not recognized as an economic activity but was usually denoted by the trade activity. It was only in the early 18th century that entrepreneurship got recognition as a separate economic activity. The phenomenon called entrepreneurship was given heavy importance due to its nature of being an economy booster. But after the Second World War, the importance of entrepreneurship and small business started diminishing (Audretsch, 2003). Large corporations were considered as the engine for growth of the economies and the progress of technology. These firms were thought to have a competitive advantage over the small firms due to economies of scale and the knowledge of technology (Schumpeter, 1950). The share of small firms in most of the economies was experiencing a downfall. It was only after 1970 that this role started to change and the share of small business in most of the developed economies started to rise (Acs and Audretsch, 1993; Thurik, 1999). Technological advancement is one of the reasons for the revival of small business and self-employment as it reduced the necessity of economies of scale (Meijaard, 2001). Globalisation and other consequences arising due to it like the ICT revolution made way for the developments which created room for the small business to grow (Audretsch and Thurik, 2000).

While studying entrepreneurship development, an important question is what is understood by entrepreneurship? As discussed earlier, the entrepreneurship phenomenon dates back to classical era but even till date, there is no single definition of entrepreneurship which can be quoted across the globe without any differentiation. In general terms, entrepreneurship refers to creation of a new enterprise for the motive of profit. Venkatasubramaniam (2003), views entrepreneurship as ‘(1.) individual
personality traits of entrepreneurs, (2.) the environment that supports entrepreneurship and facilitating factor, or (3.) entrepreneurship process and its various stages.’ Audretsch (2003), in his work stated that there is little consensus about what constitute entrepreneurship. Even there are differences in the economic and managerial aspects of entrepreneurship (Audretsch, 2003). According to the definition chosen in the Green Paper Entrepreneurship in Europe (European Commission, 2003): "Entrepreneurship is the mindset and process to create and develop economic activity by blending risk-taking, creativity and/or innovation with sound management, within a new or an existing organisation". Another study on entrepreneurship development emphasises that entrepreneurship is greater than starting new businesses or managing a small business (Campbell and Mitchell, 2012). “Entrepreneurship does not require, but can include, the creation of new organizations” (Shane &Venkataraman, 2000). Schumpeter (1934) defines entrepreneurship as a driver for innovation and technical change which helps generate economic growth. Discussing about the determinants of entrepreneurship in China, Li (1997), defines entrepreneurship as the number of private businesses and their share in economy as these determinants are taken widely as equivalent to entrepreneurial intensity.

Another question arises that whether small firms and entrepreneurship are synonymous? Answering this question Wennekers and Thurik (1999) argues that this is not the case. ‘Small firms certainly are a vehicle in which entrepreneurship thrives. There are more such vehicles, for instance business units within large companies’ (Wennekers and Thurik, 1999).

In order to measure entrepreneurship development for empirical analysis, several measures of entrepreneurship should be taken into consideration (Stel, 2005)

“We can think of entrepreneurship as owning and managing an incumbent business. This aspect of entrepreneurship translates into measures like the number of self-employed or business owners and the number of firms. Second, entrepreneurship may refer to the extent in which markets are penetrated by new entrants. This can be measured by the number of new-firm startups. Third, entrepreneurship may refer to the process of starting a new business, including activities required in the pre-startup phase. This may be called entrepreneurial activity. Finally, one can think of entrepreneurship as the share of small firms in total value-of-shipments of an economy. (Stel, 2005)”
Therefore, considering the above literature, it is evident that the study on entrepreneurship development does not include only new startups but it covers up an area much broader than being a small business or a new start-up.

**Research Framework**

The present study focuses on entrepreneurship and tries to find out the impact of economic reforms of 1991 on its development. As entrepreneurship is a qualitative phenomenon and its empirical testing is not possible, some proxies are needed to be drawn. As Wennekers and Thurik (1999) mention in their paper that ‘some concept operationalisation has to be done and proxies are needed to draw some construct of entrepreneurship.’ Focusing on the available literature, the most appropriate proxy for measurement of entrepreneurship development are number of small and medium businesses (Parker 1996; Wennekers and Thurik 1999; Georgellis and Wall 2000; Wennekers 2006; Shrestha et al. 2007; Glaeser 2007; Muhanna 2007; Goetz and Rupasingha 2008; Szirmai, Naude and Goedhuys 2011; Ravi 2014), though it was criticized by many authors on the grounds of being a very limited source of measuring entrepreneurship development, still it is one of the most commonly used proxy of entrepreneurship across the available literature. But the main limitation with this measurement is the lack of data as the databases covering the small and medium industries contains data of the industry as a whole and does not fulfill the requirement of this particular research work (as this research work requires data on selected industries). To fulfill this requirement, data on various inputs and outputs has been constructed from the Annual Survey of Industries (ASI). Another reason for this choice is its similarity with the establishment measure of entrepreneurship. Though this measure also has many shortcomings, still it is considered as a good indicator of past entrepreneurship (Gartner and Shane, 1995; Loveridge and Nizalov, 2006). Saxenian (1994) prefers this method for longitudinal entrepreneurship research due to its availability and stability over time. Low (2009) refers to it as a useful measure of entrepreneurship over long periods and it is widely available for use.

Since, majority of the manufacturing industries are heavily concentrated with the small and medium enterprises and the reforms were particularly targeted towards the manufacturing sector (Bhagwati and Srinivasan, 1975), the obvious choice for measurement purpose is industries from the manufacturing sector. The data is
collected from 1981-82 to 2010-11 representing the pre and post reforms period. Several 3-digit industries have been selected from the available data and for the ease of measurement and presentation, they have been classified into the following 2-digit industries: Manufacture of Food products, Manufacture of Tobacco products, Manufacture of Rubber and plastic products, Manufacture of Textile, Manufacture of Leather and related products, Manufacture of Wood and products of wood and cork and Manufacture of Paper and paper products. The classification of industries is done according to the National Industrial Classification (NIC)-2008 and various adjustments have been made to bring the data in accordance with the previous NIC classifications of 2004, 1998, 1987 and 1970. Few industries were dropped due to the mismatching of 3 and 4 digit industries over the period of time and the abovementioned industries were selected as they fulfill our requirement of data collection. The study focuses on the impact of the reform policies on the growth and development of these industries since the 20 years of reforms i.e., from 1991-92 to 2010-11. The variables for the study are presented in the next chapter after the extensive literature survey covering majority of studies on the manufacturing sector.

**Research Background**

The reforms of 1991 were expected to be a game changer for the Indian economy. The economy was in deep crisis at the time of implementation of reforms and it was expected that these reform will provide a boost to the economy as a whole and also to each and every sector of Indian economy. A number of studies have been done on the impact of economic reforms on different sectors of the Indian economy and several pros and cons were reported from time to time by different researchers. It was reported that the most benefited sector was the service sector and the tiny and micro industries were very badly hit by the waves of the reforms. The manufacturing sector as a whole had not shown any signs of vast improvement after implementation of the reforms.

The manufacturing industries are very important for the development of an economy as they are the drivers of majority of small and medium sized industries which form the backbone of an economy like ours. With this background, the researcher has tried to identify the key variables of growth and development of the selected manufacturing industries.
**Literature Survey**

After presenting the introductory background and framework, to cover various aspects of the study, literature from different dimensions has been surveyed. The review is categorised into two main groups, first one consists review on entrepreneurship meaning, determinants, measures and importance (Mill, 1848; Schumpeter 1934; McClelland, 1961; Palmer, 1972; Timmons, 1978; Leff, 1979; Brockhaus, 1980; Martin, 1982; Carland, 1984; Kirzner, 1985; Churchill & Lewiss, 1986; Gartner, 1988; Hebert & Link, 1988; Wennekers & Thurik, 1999; Shane & Venkataraman, 2000; Birley, 1984; Haswell & Homes, 1989; Wennekers & Thurik, 1999; Verheul, 2001; Wennekers, 2006; Muhanna, 2007; Justo, De Castro and Maydeu-Olivares, 2008; Szirmai, Naude and Goedhuys, 2011; Ghani, Kerr and O’Connell, 2013). The second group covers literature regarding the impact of reforms on manufacturing industries, the performance of reforms during the period, role of the government and constraints for small business (Bajpai & Sachs, 1997; Nagaraj, 1997; Joshi, 1998; Panagariya, 2001; Wadhva, 2004; Singh & Srinivasan, 2004; Balakrishnan et. al., 2006; Babu, 2008; Kotwal, Ramaswami and Wadhwa ,2010; Agarwal and Whalley, 2013; Majumdar, 1996; Krishna & Mitra, 1998; Neogi & Ghosh, 1998; Balakrishnan, Pushpangadan and Babu, 2000; Balasubramanyam and Mahambre, 2001; Chaudhuri, 2002; Driffield and Kambhampati, 2003; Unel, 2003; Goldar, 2004; Topalova, 2004; Siggel, 2007; Siggel and Agrawal, 2009; Nataraj, 2011).

**Research gap**

The extensive literature survey shows many aspects of the economic reforms and their impact on the growth and development of manufacturing sector and the small-scale sector but none covered the impact of liberalisation on entrepreneurship development specifically. Most of the studies are centric to whole of the manufacturing sector but very few studies focused on the impact of reforms on particular industries. The methodology used in most of the studies does not cover all the aspects of growth and development rather some specific approach is used. Even the studies on entrepreneurship show ambiguity regarding its meaning and measures. In this purview, the current study tries to find how entrepreneurship develops after implementation of the reforms in the selected industries by assessing the impact on indicators of growth and productivity.
**Variables identified**


**Absolute growth variables**

**Number of units**

This indicator of growth is the most commonly used in almost every concerned study so far. No. of units refer to the working units in a year with regard to an industry, institution etc. It is more imperative for this study as it represents new start-ups every year which is the most common parameter for measuring entrepreneurship. The following studies shows evidences of use of this indicator- Sandesara (1993), Mukherjee, Das and Bhattacharya (1998), Raghurama (2004), Subrahmanya (2005), Ramappa and Basavaraja (2006), Kumar and Bala (2007), Bargal, Dashmishra and Sharma (2009), Sonia and Rajeev (2009).

**Production**

Production refers to the output produced by each unit during a year. Rising production means rising sales which indicates growth. Increase in production also refers increasing capacity of the unit which again indicate growth. Therefore, as used in Sandeasara (1993), Ganesamurthy and Manickam (2002), Subrahmanya (2005), Ramappa and Basavaraja (2006), Kumar and Bala (2007) and Sonia and Rajiv (2009), this study also incorporates production growth as an indicator of growth and development.
Abstract

**Employment**
Rising employment will give rise to a better human index and thus to a better standard of living. Policies are being formulated from time to time in order to upsurge employment and thus a better living standard. Therefore, employment is always considered as a prominent measure of growth and development by a number of authors (Sandesara, 1993, Mukherjee, Das and Bhattacharya, 1998, Ganesamurthy and Manickam, 2002, Raghurama, 2004, Subrahmanya, 2005, Ramappa and Basavaraja, 2006, Kumar and Bala, 2007, Siggel, 2007, Bargal, Dashmishra and Sharma, 2009 and Sonia and Rajeev, 2009).

**Productivity growth variables**

**Total Factor Productivity**
In the words of Comin (2006), Total Factor Productivity (TFP) is that portion of output which is not explained by the amount of inputs used in production. Kathuria *et al* (2013) defined TFP as a ratio of output to a weighted sum of the inputs used in production. Most of the productivity related studies have focused on TFP estimates in recent past to measure productivity. In all, TFP is considered as the most prominent measure of productivity. The question arises how to measure TFP. There are 2 main approaches involved in measuring TFP- frontier and non-frontier approach, further divided into parametric and non-parametric techniques.

The most commonly used approach for estimating TFP is Growth Accounting while the most common index is translog index. It’s only in the last few years that the use of Malmquist index through the DEA approach is gaining popularity. Following the likes of Raj (2011), Kumar (2004), Marjit & Kar (2009) and few others, this study also adopted the Malmquist index estimation for calculating TFP growth through the linear programming technique of DEA.

**Technical efficiency**
For measuring efficiency of industries, financial institutions etc. the traditional financial ratios have been playing a major role. Ratio analysis is limited to one input and one output situation which is considered almost inexisten as all situations involve multiple inputs and multiple outputs (Tesfay, 2004). The ratios provide only partial measure of efficiency and are considered unconvincing in making efficiency comparisons (Peacock *et al.* 2001). According to Hassan and Benito (2009), the ratio
Abstract

Analysis may mislead in performance evaluation. These shortcomings lead to the use of different measurements of efficiency. Though introduced way back (Farrell, 1957), the concept of efficiency measurement based on frontier is very much in practice now. Farrell (1957) continued the work of Debreu (1951) and Koopmans (1951) and defined a measure of efficiency which could account for multiple inputs and outputs. This frontier based efficiency measurement technique got famous because it compares the efficiency of an observation with the best practicing observation and also with the observation itself.

Objectives of the study

After the extensive literature survey covering literature on entrepreneurship and its measurements, the impact of reforms on the manufacturing sector and the performance of the reforms, the following objectives have been framed for the purpose of the study.

(a) To find out the impact of reforms policies on selected industries in regard to growth in number of units, production and employment.

(b) To find whether the reform policies resulted in higher productivity in the selected industries.

(c) To find whether the industrial efficiency increased after the implementation of the reforms.

(d) To find whether the effects of reforms vary across all the industries.

Hypotheses

The objectives of present study are supported by the hypothesis that there is a significant impact of reform policies on the growth and productivity of concerned industries. The following hypotheses have been constructed for the purpose of empirical testing:

1. There is no significant impact of the reform policies on the growth of selected industries.

   1. (a) \( H_0 \) = There is no significant impact of the reform policies on growth of no. of units.

   1. (b) \( H_0 \) = There is no significant impact of the reform policies on growth of employment.
1. (e) $H_0 = \text{There is no significant impact of the reform policies on growth of production.}$

2. There is no significant change in the productivity of the selected industries due to policy changes.

   2. (a) $H_0 = \text{There is no significant change between the total factor productivity of pre and post reform periods in selected industries.}$

   2. (b) $H_0 = \text{There is no significant change between the technical efficiency of pre and post reform periods in selected industries.}$

**Limitations of the study**

a.) **Proxy measurement:** As discussed in the review, entrepreneurship is a qualitative phenomenon and its quantitative measurement is very difficult. Therefore, some proxy has to be drawn for the purpose of empirical analysis.

b.) **Data limitations:** The source of data does not provide coverage for all manufacturing industries as it only covers the registered sector. Also, accurate required values are not provided by the data sources due to which some adjustments are made.

c.) **Sampling errors:** The study is mainly based on secondary sources of the primary surveys conducted by CSO therefore errors of primary surveys bound to be occurred.

d.) **Scarcity of variables:** The present study is having the objective to assess the impact; therefore, the researcher has taken some variables to check the impact. But the researcher encounter the problem of proper availability of data to check the impact of reform policies on the export, imports and investment made in selected industries.

e.) **Time constraints:** The data for pre-reform period is only for 10 years while the post-reform period constitutes data for 20 years which may result in some ambiguities.

**Statistical Methods**

For the analysis of current study, different methodologies have been adopted which lead us to the use of different statistical tools. For estimating growth variables, the technique of multiple linear regression is used and for productivity variable estimation, mathematical technique of linear programming, Data Envelopment Analysis is used. Further, the results obtained from DEA are analysed using Independent Sample t-test.
**Multiple Linear Regression**
Regression is a technique of statistical analysis used to assume a functional relationship between one dependent variable and independent variable(s). Multiple linear regression estimates a coefficient that assumes the impact of a set of independent variables on dependent variable. The measurement of independent variables can be done either at qualitative level (represented by dummy variables) or at an ordinal level or at a continuous level. Multiple regression helps in estimating the relationship of each independent variable with that of dependent variable while controlling the effects of other variables (Gujarati & Sangeetha, 2007). Not much evidence is found while reviewing the literature about use of multiple regression in estimating the impact of economic reforms on the industrial sector. Ganesamurthy and Manickam (2002) and Alam (2009) had used this approach to assess the impact of reform policies on SMEs. This study also used the technique of multiple regression analysis for the purpose of analysis.

In case of multiple regressions the functional relation takes the following form:

\[ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \ldots + b_nX_n \]

Where,

- \( Y \) is the dependent variable
- \( X_1, X_2, X_3, \ldots, X_n \) are the independent variables.
- \( b_1, b_2, b_3, \ldots, b_n \) are the respective coefficients of the independent variables \( X_1, X_2, X_3, \ldots, X_n \), and 'a' is the Y-intercept.

**Data Envelopment Analysis**
Data Envelopment Analysis (DEA) is a mathematical programming technique used to estimate a deterministic production frontier (Gebremichael, 2013). It is a performance assessment tool which is used for revealing patterns of efficiencies (Majumdar, 1996). DEA is of grave importance because it can derive a single indicator of efficiency while allowing for multiple outputs and inputs. It uses only output and input data to calculate the efficiency of each measurement in converting inputs to outputs by constructing a production frontier and evaluating each observation against all others (Majumdar, 1996). This linear programming technique converts several outputs and inputs into measurement of efficiency of organisational units and these units are termed as decision making units (DMUs) (Gebremichael, 2013).

DEA identifies most efficient units in a given population and provide an inefficiency measurement for all other units. Based on actual data, this method constructs a frontier. DMUs falling on the frontier are considered efficient and off the frontier are
considered inefficient. The DMU which is having best efficiency score is assigned 100 per cent efficiency score and under-performing units are assigned scores between 0 to 100 per cent. DEA also provides information about peers (efficient DMUs) which are having similar input-output structure as some inefficient DMUs. Relative efficiency forms the basis of DEA and this technique is widely used in productivity and efficiency measurement (Berger & Humphrey, 1997).

There are many advantages of using DEA like this measure of efficiency is related to best practice instead of average practice and being a non-parametric approach, there is no need of using a pre-determined form for technology and also of assumptions about error terms. When using DEA, there is no need to identify a functional form for the production frontier. The use of linear programming method estimates the frontier as a piecewise linear equation, providing a close estimate for any undetermined, flexible production function (Banker, 1993).

As discussed earlier, the efficiency can be measured either by input-oriented or output-oriented process. Both the measures provide same results under constant returns to scale but under variable returns to scale, different results are derived (Fare & Lovell, 1978; Coelli et al., 2005). Though both the methods, CRS and VRS are used for estimating technical efficiency, the VRS is preferred as most of the time all DMUs are not operating at an optimal scale due to imperfect competition or financing constraints (Coelli, 1996). In developing countries like India, VRS method is more appropriate for technical efficiency estimation and it is considered better to run estimate both the models for the purpose of comparison. The comparison decomposes the technical efficiency into pure technical efficiency and scale efficiency which helps in finding whether the DMU is operating at constant returns to scale, returns to scale or decreasing returns to scale (Coelli, 1996).

**Independent Sample t-test**

A t-test helps in comparing averages of two different groups (whether they are different or not). The two primary outputs of t-test are its statistical significance and its effect size which represents whether the difference between sample means represents a definite difference between populations and whether that difference is big enough to be considered practically.

Independent sample t-test is used where the samples in consideration are unequal. The present study also uses the independent sample t-test for comparing the averages of pre and post reform period’s T.E. and TFP growth values. Equal variances have been
assumed for the purpose of estimation. In the case of t-test also, SPSS 19.0 is used for estimation purpose.

- **Requirements of Data**

The following requirements are required to be fulfilled before running independent sample t-test:

1. The test variable or dependent variable must be continuous i.e., interval or ratio scale.
2. The grouping variable or independent variable must be categorical i.e., in two or more groups.
3. The samples must be independent i.e., no subject in any group can effect subjects in other groups nor any group can affect the other group.
4. The test variable must be normally distributed for each group.
5. The variances must be homogenous across the groups.

**Hypotheses Testing**

The following table presents all the hypotheses of growth along with the sub-hypotheses formulated for each industry.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Hypotheses</th>
<th>Accepted/Rejected</th>
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<tbody>
<tr>
<td>1.)</td>
<td>There is no significant impact of the reform policies on the growth of no. of units.</td>
<td></td>
</tr>
<tr>
<td>1.(a)</td>
<td>There is no significant impact of the reform policies on the growth of no. of units of food industry.</td>
<td>Accepted</td>
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<tr>
<td>1.(b)</td>
<td>There is no significant impact of the reform policies on the growth of no. of units of tobacco industry.</td>
<td>Accepted</td>
</tr>
<tr>
<td>1.(c)</td>
<td>There is no significant impact of the reform policies on the growth of no. of units of rubber and plastic industry.</td>
<td>Rejected</td>
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<tr>
<td>1.(d)</td>
<td>There is no significant impact of the reform policies on the growth of no. of units of textile industry.</td>
<td>Rejected</td>
</tr>
<tr>
<td>1.(e)</td>
<td>There is no significant impact of the reform policies on the growth of no. of units of leather industry.</td>
<td>Rejected</td>
</tr>
<tr>
<td>1.(f)</td>
<td>There is no significant impact of the reform policies on the growth of no. of units of other industry.</td>
<td>Accepted</td>
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## Abstract

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<tbody>
<tr>
<td>1.(g)</td>
<td>There is no significant impact of the reform policies on the growth of no. of units of wood industry.</td>
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<tr>
<td>2.)</td>
<td>There is no significant impact of the reform policies on the growth of production.</td>
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<tr>
<td>2.(a)</td>
<td>There is no significant impact of the reform policies on the growth of production of food industry.</td>
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<tr>
<td>2.(b)</td>
<td>There is no significant impact of the reform policies on the growth of production of tobacco industries.</td>
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<tr>
<td>2.(c)</td>
<td>There is no significant impact of the reform policies on the growth of production of rubber &amp; plastic industry.</td>
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<tr>
<td>2.(d)</td>
<td>There is no significant impact of the reform policies on the growth of production of textile industry.</td>
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<tr>
<td>2.(e)</td>
<td>There is no significant impact of the reform policies on the growth of production of leather industry.</td>
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<tr>
<td>2.(f)</td>
<td>There is no significant impact of the reform policies on the growth of production of wood industry.</td>
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<tr>
<td>2.(g)</td>
<td>There is no significant impact of the reform policies on the growth of production of paper industry.</td>
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<tr>
<td>3.)</td>
<td>There is no significant impact of the reform policies on the growth of employment.</td>
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<td>3.(a)</td>
<td>There is no significant impact of the reform policies on the growth of employment of food industry.</td>
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<td>3.(b)</td>
<td>There is no significant impact of the reform policies on the growth of employment of tobacco industry.</td>
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<tr>
<td>3.(c)</td>
<td>There is no significant impact of the reform policies on the growth of employment of rubber &amp; plastic industry.</td>
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<td>3.(e)</td>
<td>There is no significant impact of the reform policies on the growth of employment of leather industry.</td>
</tr>
<tr>
<td>3.(f)</td>
<td>There is no significant impact of the reform policies on the growth of employment of wood industry.</td>
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</tbody>
</table>
3.(g) There is no significant impact of the reform policies on the growth of employment of paper industry. Accepted

### Hypotheses testing

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<thead>
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<th>Accepted / Rejected</th>
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<tbody>
<tr>
<td>4.)</td>
<td>There is no significant change between the TFP growth of the pre and post reform periods in the selected industries</td>
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</tr>
<tr>
<td>4.(a)</td>
<td>There is no significant change between the TFP growth of the pre and post reform periods in the food industry.</td>
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</tr>
<tr>
<td>4.(b)</td>
<td>There is no significant change between the TFP growth of the pre and post reform periods in the tobacco industry.</td>
<td>Accepted</td>
</tr>
<tr>
<td>4.(c)</td>
<td>There is no significant change between the TFP growth of the pre and post reform periods in the rubber and plastic industry.</td>
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<tr>
<td>4.(d)</td>
<td>There is no significant change between the TFP growth of the pre and post reform periods in the textile industry.</td>
<td>Accepted</td>
</tr>
<tr>
<td>4.(e)</td>
<td>There is no significant change between the TFP growth of the pre and post reform periods in the leather industry.</td>
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<td>There is no significant change between the TFP growth of the pre and post reform periods in the paper industry.</td>
<td>Accepted</td>
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<tr>
<td>5.)</td>
<td>There is no significant change between the technical efficiency of the pre and post reform periods in the selected industries.</td>
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<tr>
<td>5.(a)</td>
<td>There is no significant change between the technical efficiency of the pre and post reform periods in the food industry.</td>
<td>Accepted</td>
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<td>5.(b)</td>
<td>There is no significant change between the technical efficiency of the pre and post reform periods in the tobacco industry.</td>
<td>Accepted</td>
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<td>5.(c)</td>
<td>There is no significant change between the technical efficiency of the pre and post reform periods in the rubber and plastic industry.</td>
<td>Rejected</td>
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<tr>
<td>5.(d)</td>
<td>There is no significant change between the technical efficiency of the pre and post reform periods in the textile industry.</td>
<td>Accepted</td>
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<tr>
<td>5.(e)</td>
<td>There is no significant change between the technical efficiency of the pre and post reform periods in the leather industry.</td>
<td>Rejected</td>
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<td>5.(f)</td>
<td>There is no significant change between the technical efficiency of the pre and post reform periods in the wood industry.</td>
<td>Accepted</td>
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<tr>
<td>5.(g)</td>
<td>There is no significant change between the technical efficiency of the pre and post reform periods in the paper industry.</td>
<td>Accepted</td>
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**Results and Discussions**

To accomplish its first objective, the study investigated impact of reform policies on variables concerning absolute growth of all the selected industries through quantitative analysis of industry level data during the period 1981-82 to 2010-11. The industry level data has been extracted from Annual Survey of Industries (ASI) published by Central Statistical Organisation (CSO) and made available through INDIASTAT database. The focus of study is only on registered sector and it does not include the unregistered industrial sector. To explore the impact of reform policies on growth of the concerned industries, the study highlighted three variables of absolute growth i.e., number of units, production and employment. The multiple linear
regression has been used for assessing the impact of reform policies and SPSS 19.0 has been used to yield the results.

Heterogeneity is noticed in the results of impact of reform policies on the growth variables. The number of units’ model shows insignificant results in food, tobacco, wood and paper industries. Rather, the trend of time shows significant results in all industries which indicate that various other political and socio-economic factors (as captured by time variable) are responsible for growth in no. of units. On the other hand, results of rubber & plastic, textile and leather industries show significant impact of reform policies on growth of no. of units.

Moving to the production variable, food, rubber & plastic and wood industries have statistically insignificant impact of the reform policies on its growth. It shows that there is no relationship between the reform policies and growth of production in abovementioned industries. But the time variable have a significant impact and causes high variations in the growth of production. Further, tobacco, textile, leather and paper industries’ results show a positive relation between reform policies and growth of production and the impact is found to be statistically significant.

Employment growth is always considered crucial because it results into ultimate goals of reforms i.e., income growth and poverty alleviation. Sigge (2007) expected the employment growth of manufacturing industries to rise in long run but all the industries with an exception of tobacco industry are revealing statistically insignificant results. In tobacco industry, the results are statistically significant and there is a positive relation between reform policies and growth of employment. Also, the time variable in this case shows statistically insignificant results which indicates that growth in employment is mainly due to the impact of reform policies. The variation caused by time is very minimal.

To fulfil the second objective, the study compared total factor productivity growth of pre and post reform periods of all the selected industries during the same time period as mentioned before. Same source of data and sector type have also been used. Mathematical technique of Data Envelopment Analysis (DEA) has been used for estimation purpose and inputs and output series has been constructed after deflating from suitable deflators. The index used for estimation of TFP is Malmquist index and DEAP (2.1) computer programme has been used to yield the results.

Observing the results, it is revealed that average of TFP during the pre-reform period is greater than the post reform period though the difference is not worth mentioning.
still it is greater in numbers. Comparing the pre and post-reform TFP values through the independent sample t-test, it is found that the difference between the two time periods is statistically insignificant in all the industries. The annual average growth rate is higher in few industries in post-reform era but it couldn’t signify the positive impact of the reforms. Thus, reform policies did not result in higher productivity in selected industries.

The third objective is fulfilled by using multi-stage output oriented DEA. DEAP (2.1) computer programme is again used and variable returns to scale (VRS) are assumed. The construction of inputs and output is same as above. The averages reveal that technical Efficiency (TE) is higher in the pre-reform era in all the 7 industries. Again, higher values in most of the industries are not worth mentioning. The results obtained from t-test reveal statistically significant difference for leather and rubber & plastic industries. There is a significant decline in TE of leather and rubber & plastic industries after the implementation of the reforms.

This discussion fulfils the fourth objective and observed that the effects of reforms do not vary across all the selected industries. Growth in all the industries is almost in same condition and the boost expected from the reforms is still unachieved.

The main objective of implementing reform policies was to create a competitive environment which should help in increasing the efficiency and productivity of Indian industry (Neogi & Ghosh, 1998). But this study does not find any rise in productivity and efficiency during the post-reform period. In fact 2 industries reported significant fall in efficiency in the post-reform era. Assessing the absolute growth of selected manufacturing industries, it is observed that there is very limited impact of economic reforms on the industrial growth. The nature of economic reforms is said to be gradual (Chand & Sen, 2002) but the 20 year period of post-reforms is long enough to observe some gradual impact. However, observing the yearly values of productivity and efficiency, it is found that the decade immediately after policy implementation was registering lowest productivity and efficiency scores. It was only in the latter decade of post-reform period that situation started to improve. Das (2004) gave 2 possible reasons for this slowdown. First is the initiation of macroeconomic stabilisation programmes like import compression, inflationary pressures etc. which acted as a constraint for industrial production during this period. Second is the late commencement of mergers. The author also quoted that beneficial impact of the structural reforms can only be observed gradually.
Comparison between the decades before and after policy implementation would have revealed a decline in all the growth and productivity variables and a negative impact of the reform policies. This leads to the conclusion that reforms have started to work gradually in favour of industrial development. But it does not necessarily means that the reform policies implementation was a failure. There are studies where many researchers had shown that the productivity had risen after liberalisation (Driffield & Kambhampati, 2003; Unel, 2003; Goldar & Kumari, 2003; Topalova, 2003; Krishna & Mitra, 1998; Topalova & Khandelwal, 2011). More than the reform policies, the decline in TFP of manufacturing industries is associated with decline in growth rate of agriculture (Goldar, 2004) and capacity underutilisation in the industrial sector (Goldar & Kumari, 2003). The Indian industry was experiencing an investment boom in the mid-1990s due to which the production capacities had raised (Uchikawa, 2001). But due to stagnant demand this investment boom resulted in decline in capacity utilisation.

**Suggestions**

The present study functions as an archetype for the researchers, academicians as well as for the executives by providing a comparative standard from Indian viewpoint. This study may serve the policymakers and academicians who seek to find impact of reform policies on industrial growth from different perspectives. This study also serves as a guide as it covers vast literature base presenting various aspects of entrepreneurship development.

However, the following suggestions have been offered in the present study:

1. Government should balance the process of economic liberalisation so that those industries which are falling behind in the development process should be able to keep pace with the development and growth
2. The policy reforms were very much needed due to ‘high cost’ and ‘poor quality’ industrialisation which was a result of India’s pre 1991 protected policies. But what was required and still needed to be controlled is the nature and pace of policy implementation. Though the policies have started to work in favour of manufacturing industries, still a strategic approach towards industrial policy is required for sustaining industrial output and employment growth.
3. The reform policies cannot produce beneficial effects on growth if the human resource lacks education and training. Therefore, it is suggested that proper education and training should be considered imperative for developing the human resource. For this purpose, the government is required to take initiatives and establish entrepreneurship development and training institutes. Along with this, the universities should be made well equipped for conducting regular training programmes.

4. Another bottleneck in the growth and development through reform policies is inadequate infrastructure (Joshi, 2007). In order to cope up with this bottleneck, it is suggested to establish more special economic zones (SEZs) with high level of infrastructure facilities.

5. The entrepreneurship development programmes (EDPs) should be made more diversified by providing technical know-how of business and by expanding the programmes to further levels.

6. It is suggested that the state government should help the entrepreneurs in state by removing major constraints from the path of their growth like financial constraints, economies of scale, infrastructural bottlenecks, etc.

7. The policies should be carried out in such a way that they should promote small business rather than protecting it. It is suggested to accelerate the process of gradual policy implementation to accelerate growth.

**Directions for future research**

The estimation of growth is not limited to only 3 variables nor do seven divisions provide a complete picture of whole manufacturing sector. Further, there are multiple approaches to estimate the total factor productivity (TFP) and technical efficiency (TE) and most of the time, they yield different results. Therefore, the debate on impact of economic reforms is in continuity since last two decades and it does not end here. Though significant contribution is done by this study, still there is a need for further enquiry. Several issues require further investigation as they have not been addressed in this study. Following directions for future research have been put forward:

1. This study has taken 7 industrial divisions of manufacturing sector for estimating absolute and productivity growth and the data is limited to the
registered sector only. The unregistered sector, too plays a very vital role in the growth and development of a nation, and is needed to be considered for future research. Examination of absolute and productivity growth in the unregistered sector will let us know whether the reform policies promoted this sector or not.

2. The indicators used for absolute growth are limited in this study. Though these are the most commonly used indicators, still a more vibrant picture can be drawn by adding more indicators. Therefore, future research should take into consideration more indicators of growth like investment, export, import etc.

3. This study is focussed on small business and establishment measures of entrepreneurship. However, there are different proxy measurements for entrepreneurship which need to be considered for future research.

4. The MSME sector is considered as an engine of growth for the economic development and its contribution in a country’s GDP cannot be neglected. Therefore, productivity and efficiency analysis of this sector should be given special attention in future researches.

5. The industries in this study represent main divisions of the manufacturing sector. Future researches can use a breakdown of divisions into lower levels in order to get more aggregated results.