Impact of Liberalization Policies on Indian Economy

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Abstract – The economic reforms and liberalization adopted by India since 1991 have affected the Indian economy in general and manufacturing sector in particular in a number of ways. There is no dearth of literature on studies related with performance of manufacturing sector in India. However, very few studies have been conducted to segregate the impact of liberalization policies on economy in terms of efficiency and market conditions. In the present study, an attempt will be made to analyze the manufacturing sector of India at industry level with particular emphasis at impact of liberalization on growth, productivity, profitability, employment and wages.

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INTRODUCTION

The economic liberalisation in India refers to ongoing economic reforms in India that started on 24 July 1991. After Independence in 1947, India adhered to socialist policies. Attempts were made to liberalise the economy in 1966 and 1985. The first attempt was reversed in 1967. Thereafter, a stronger version of socialism was adopted. The 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. In 1991, after India faced a balance of payments crisis, it had to pledge 20 tonnes of gold to Union Bank of Switzerland and 47 tonnes to Bank of England as part of a bailout deal with the International Monetary Fund (IMF). In addition, the IMF required India to undertake a series of structural economic reforms. As a result of this requirement, the government of P. V. Narasimha Rao and his finance minister Manmohan Singh (currently the Prime Minister of India) started breakthrough reforms, although they did not implement many of the reforms the IMF wanted. The new neo-liberal policies included opening for international trade and investment, deregulation, initiation of privatisation, tax reforms, and inflation-controlling measures. The overall direction of liberalisation has since remained the same, irrespective of the ruling party, although no party has yet tried to take on powerful lobbies such as the trade unions and farmers, or contentious issues such as reforming labour laws and reducing agricultural subsidies. Thus, unlike the reforms of 1966 and 1985 that were carried out by the majority Congress governments, the reforms of 1991 carried out by a minority government proved sustainable. There exists a lively debate in India as to what made

the economic reforms sustainable.

To probe and research the problem at hand in a better way, it is necessary to review the existing relevant literature of various studies relating to different aspects of liberalization. Here, It is neither possible nor useful to give references of all such studies. Thus, a brief review of some of the studies conducted in recent years is given below.

REVIEW OF LITERATURE

The study by Aggarwal and Singh (2006) reveals that the Average TFP in the industrial sector grew at a moderate rate of 6 percent during the 1996-97 to 2002-03. The decomposition of TFP growth into technical efficiency change and technical change reveals that the TFP growth is primarily contributed by technical change rather then by technical efficiency change. The study also finds that the firms with weaker plant size attained higher productivity growth than the smaller one. In the study, The TFP growth rate was estimated using data of 36 sugar mills for the period 1996-97 to 2003-03.

In the study by Bhawani and Bhanuhurty (2007), the researchers found an important aspect of competition. It has been studied in terms of still existing policy regulations that deter-competition. The paper also considers general rules and regulations that are complex and make doing business difficult and policies relating to trade, foreign direct Investment and labour. The paper suggest that there are many policy regulations acting as barriers to competition.

In this study the writer also suggest to simplify general

business rules, reduce tariff rate, liberalize restrictive foreign direct investment policies and revamp complex and comprehensive labor legislation to further competition.

Parkash (2006) in his study puts lights on the productivity trends in Indian manufacturing for the period 1985-2001 taking a composite view of the total manufacturing sector. The paper identifies 6 out of 13 industries groups that have registered positive TFP growth during the 1985-2001. The 6 industries are- miscellaneous industries group comprising repair services, recycle, textiles, basic metals, non-metallic, leather and chemicals. The paper suggests some policy initiatives required are increasing the scale of manufacturing sector in the country.

Sharma and Upadhayaya (2004), in their study, analyzed the TFP in Indian fertilizer industry by using translog function. They estimated different components of TFP over a period at 25 years from 1973-74 to 1977-98. The analysis found that industry exhibited deceasing return to scale during the entire study period. The study reveals that technical-bias has been in favor of material inputs.

Sahod (2004), in her study of small scale manufacturing industries put light on the economic structure of the country and has shown that the small-scale sector helps in the economic development and removal of disparities. It is the symbol of our economy and reflects productions by masses rather than mass production as of today this sector has 34 lakhs units which is 95 percent of the industrial units in the country and producing 7500 different items. The sector contributes about 40 percent of value added in manufacturing, 34 percent to export, providing gainful employment to 177 lakhs persons and 7 percent to the GDP. The average growth rate of production and employment was estimated at 7.7percent and 3.7percent during the ninth plan.

Rao, Raghwan and Gupta (2003) have analyzed the manufacturing sector of Maharashtra state. According to them, liberalization has not led to any displacement of labor in Maharashtra. Even though in all industries the labor share in total output declined after the reforms. It is evident from the rate of growth of labour that there has been a district tendency for it to increase. In all industries, the share of capital in the total output has shown a tendency to increase after the reforms. However there have been inter industry variations. Certain sectors have fared better in the total factor productivity growth rate, while certain sectors have last out.

Batra (1999) has studied this emerging trends in the

stock market in the wake of liberalization. he has concluded that liberalization of the financial markets has brought positive transformation in the business environment. various concessions given by the state have significantly increased the profit margins of the corporate sector, which in turn have resulted in higher investment.

Biswas, Kumar and Biswas (2005) have concluded that globalization and privatization can not perform the tasks of Government. The states will have to devise the methods to ensure the rights of workers and simultaneously nurture the industries to increase their capabilities and competitiveness.

Chattopadhyaya and Bhatre (1998) examined manufacturing sector of West Bengal and found high and significant values of elasticties of substitution between capital and labour that vary considerably and found that appropriate change in a specialization of labor intensive activities are better suited to factor endowment. The capital-labour relation does not significantly affect the value of elasticity of substitution.

Kaur (1998) has found that there is no significant relationship between growth and firm size and on this basis has supported the policy of liberalization initiated in the Indian economy from 1990, as it will not create imbalances in growth and inequalities and amongst small size and large sized firms.

The study by Burgange (2002) reveals that after liberalization, the states in India are making a concerted effort to improve industrial performance. On the basis of ASI data, it was found that Haryana, Rajasthan, Punjab, Tamil Nadu, Andhra Pradesh, Karnataka, Madhya Pradesh, Kerala and Delhi recorded higher growth rate of employment in the manufacturing sector than that of All India during 1980-81 to 1997-98. However, Assam, Gujarat, Uttar Pradesh, Maharashtra, Bihar and West Bengal recorded lower growth rate of employment during 1980-81 to 1997-98. During pre-liberalization period Punjab, Rajasthan, Haryana, Delhi, Tamil Nadu, Andhra Pradesh, Orissa, Madhya Pradesh and Karnataka recorded higher employment growth than that of All India. While states such as Uttar Pradesh, Kerala, Assam, Bihar, Gujarat, Maharashtra and West Bengal recorded lower growth rate. During post-liberalization period states like Karnataka, Kerala, Gujarat and Maharashtra accelerated the growth of employment. During post-liberalization period in terms of growth of real output better performance is recorded by Haryana, Gujarat, Karnataka, Tamil Nadu, Rajasthan and Maharashtra, while Assam, Bihar and West Bengal shared relatively poor performance. In overall, Tamil Nadu, Andhra Pradesh, Punjab,

Haryana, Rajasthan and Karnataka recorded better performance in terms of growth of employment and output of the manufacturing sector during 1980s and 1990s

CII Report (2009), has noted that the national capital region has a strong industrial base, sound infrastructure, reliable communication network and developed commercial markets, because of which the Haryana state has been able to attract sizable investment from multinational companies, large business houses and foreign investors. More so, the region is emerging as a metropolitan city of the country with fast growing urban, affluent with growing strength and is headed towards new heights of development. The IT and BPO sectors have grown exponentially.

The state of Haryana has taken a number of initiatives in the recent past aimed at the development of infrastructure and creating an industry-friendly atmosphere in the state. For instance, Haryana was the only state that has gone ahead and implemented VAT, while other states were playing a wait-and-watch game. The scope of this study is limited to analyze the impact on growth, costs, productivity, wages and employment.

OBJECTIVES OF THE STUDY

The present study will be conducted keeping in view the key areas outlined above and the specific objectives listed below:

To take a brief account of economic reforms and liberalization process in India.

To take an overview of growth trends of industries in India.

To analyze the performance of organized industrial sector at aggregate level in India before and after economic liberalization in terms of productivity.

To draw conclusions and policy implications from the study.

The research methodology to achieve the said objectives has been given in next section.

RESEARCH METHODOLOGY

The manufacturing sector in India has undergone drastic changing after the economic liberalization introduced in 1991. In this study an attempt has been made to track and analyze some of these changes through some selected industry parameters. In this section, the research methodology has been presented

to achieve the objectives outlined above.

DATA USED IN THE STUDY

The present study shall mainly use the secondary data which has been collected from Ministry of Statistics and Programme Implementation, New Delhi. The Ministry provides the data on industries with major classifications which is known as Annual Survey of Industries. (ASI Classifications).

In this study industry-wise two digit level data aggregated at state level has been used from 1980-81 to 2005-06 with NIC 1986-87 and NIC 1997-98 classifications. The data has been collected on twenty two major variables namely; number of units, fixed capital, working capital, total capital employed, outstanding loan, number of workers, number of persons engaged, wages, emolument expenses including salaries, total wage bill including all workmen benefits, fuel expenses, materials, all inputs, value of output at market prices, depreciation charges paid, rent paid, interest paid, net income, net fixed capital formation, gross fixed capital formation, gross capital formation and profits for organized industrial sector of Haryana State. The aggregated data is summation of seventeen industries namely- food products; beverages; tobacco and tobacco products; cotton textiles; wool, silk and synthetic fiber textiles; jute and vegetable fiber textiles; textile products including wearing apparel; wood and wood products, furniture and fixtures; paper and paper products and printing, publishing and allied industries; leather and products of leather, fur substitutes of leather; basic chemicals and chemical products except products of petroleum and coal; rubber, plastic, petroleum and coal products; non-metallic mineral products; basic metal and alloys industries; metal products and parts, except machinery & equipment; machinery and equipment other than transport equipment; electrical machinery, apparatus, appliance and supplies; transport equipment and parts and other manufacturing industries.

The concepts and definitions of items collected through ASI schedule are given below:

Reference Year for ASI 2005-06 is the accounting year of the factory ending on 31st March 2006 while the survey was conducted in 2006-07.

Factory is one that is registered under sections 2m (i) and 2m (ii) of the Factories Act, 1948. The sections 2m (i) and 2m (ii) refer to any premises including the precincts thereof (a) whereon ten or more workers are working, or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on with the aid

of power, or is ordinarily so carried on; or (b) whereon twenty or more workers are working or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on without the aid of power, or is ordinarily so carried on.

Fixed Capital represents the depreciated value of fixed assets owned by the factory as on the closing day of the accounting year. Fixed assets are those that have a normal productive life of more than one year. Fixed capital includes land including lease- hold land, buildings, plant & machinery, furniture and fixtures, transport equipment, water system and roadways and other fixed assets such as hospitals, schools, etc. used for the benefit of the factory personnel.

Physical Working Capital is the total inventories comprising of raw materials and components, fuels and lubricants, spares, stores and others, semi-finished goods and finished goods as on the closing day of the accounting year. However, it does not include the stock of the materials, fuels, stores, etc. supplied by others to the factory for processing and finished goods processed by the factory from raw materials supplied by others.

Working Capital is the sum total of the physical working capital as already defined above and the cash deposits in hand and at bank and the net balance receivable over amounts payable at the end of the accounting year. Working capital, however, excludes unused overdraft facility, fixed deposits (irrespective of duration), advances for acquisition of fixed assets, loans and advances by proprietors and partners (irrespective of their purpose and duration), long-term loans (including interest thereon) and investments.

Productive Capital is the total of fixed capital and working capital as defined above.

Invested Capital is the total of fixed capital and physical working capital as defined above.

Gross Value of Plant and Machinery represents the total original (un-depreciated) value of installed plant and machinery at the end of the accounting year. It includes the book value of the newly installed plants and machinery and the approximate value of rented in plants and machinery at the time of renting-in but excludes the value of rented-out plants and machinery. Total value of all the plants and machinery acquired on hire - purchase basis is also included.

Outstanding Loans represent all loans (whether short term or long term, interest bearing or not) outstanding according to the books of the factory as on the closing day of the accounting year.

Workers are defined to include all persons employed directly or through any agency whether for wages or not and engaged in any manufacturing process or in cleaning any part of the machinery or premises used for manufacturing process or in any other kind of work incidental to or connected with the manufacturing process or the subject of the manufacturing process. Labour engaged in the repair & maintenance, or production of fixed assets for factory's own use, or employed for generating electricity, or producing coal, gas etc. are included.

Employees include all workers defined above and persons receiving wages and holding clerical or supervisory or managerial positions engaged in administrative office, store keeping section and welfare section, sales department as also those engaged in purchase of raw materials etc. or purchase of fixed assets for the factory as well as watch and ward staff.

Total Persons Engaged include the employees as defined above and all working proprietors and their family members who are actively engaged in the work of the factory even without any pay, and the unpaid members of the co-operative societies who worked in or for the factory in any direct and productive capacity. The number of workers or employees is an average number obtained by dividing mandays worked by the number of days the factory had worked during the reference year.

Wages and Salaries are defined to include all remuneration in monetary terms and also payable more or less regularly in each pay period to workers as compensation for work done during the accounting year. It includes (a) direct wages and salary (i.e., basic wages/salaries, payment of overtime, dearness, compensatory allowance, house rent and other allowances), (b) remuneration for the period not worked (i.e., basic wages, salaries and allowances payable for leave period, paid holiday, lay-off payments and compensation for unemployment, if not paid from sources other than employers), (c) bonuses and ex-gratia payment paid both at regular and less frequent intervals (i.e., incentive bonuses, good attendance bonuses, productive bonuses, profit sharing bonuses, festival or year-end bonuses, etc.). It excludes lay off payments which are made from trust or other special funds set up exclusively for this purpose i.e., payments not made by the employer. It also excludes imputed value of benefits in kind, employer's contribution to old age benefits and other social security charges, direct expenditure on maternity benefits and crèches and other group benefits. Travelling and other expenditure incurred for business purposes and reimbursed by the

employer are excluded. The wages are expressed in terms of gross value i.e., before deduction for fines, damages, taxes, provident fund, employee's state insurance contribution, etc.

Contribution To Provident Fund And Other Funds includes old age benefits like provident fund, pension, gratuity, etc. and employers contribution towards other social security charges such as employees state insurance, compensation for work injuries and occupational diseases, provident fund-linked insurance, retrenchment and lay- off benefits.

Workmen and Staff Welfare Expenses include group benefits like direct expenditure on maternity, crèches, canteen facilities, educational, cultural and recreational facilities; and grants to trade unions, co-operative stores, etc. meant for employees.

Total Emoluments is defined as the sum of wages and salaries, employers' contribution as provident fund and other funds and workmen and staff welfare expenses as defined above.

Total Input comprises total value of fuels and materials consumed as well as expenditures such as cost of contract and commission work done by others on materials supplied by the factory, cost of materials consumed for repair and maintenance of factory's fixed assets including cost of repairs and maintenance work done by others to the factory's fixed assets, inward freight and transport charges, rates and taxes (excluding income tax), postage, telephone and telex expenses, insurance charges, banking charges, cost of printing and stationery and purchase value of goods sold in the same condition as purchased .

Total Output comprises total ex-factory value of products and by-products manufactured as well as other receipts such as receipts from non-industrial services rendered to others, work done for others on material supplied by them, value of electricity produced and sold, sale value of goods sold in the same condition as purchased, addition in stock of semi-finished goods and own construction.

Depreciation is consumption of fixed capital due to wear & tear and obsolescence during the accounting year and is taken as provided by the factory owner or is estimated on the basis of cost of installation and working life of the fixed assets.

Net Value Added is arrived by deducting total input and depreciation from total output.

PRESENTATION OF DATA

The ASI results presented in the published reports relate to the factory sector i.e. industrial units covered under the census and sample sectors of the ASI. The total of any characteristic was obtained by adding the figures of the census sector and estimates of sample sector.

TECHNIQUES OF ANALYSIS

The present study shall mainly use three techniques of analysis-compounded annual growth rates (CAGR), efficiency ratios and growth accounting equation.

Compounded Annual Growth Rate (CAGR)

The cAGR has been computed on the basis of following equation:

$$Y = Y_0\, e^{mt}$$

Where Y is the variable whose growth rate has to be estimated, T is the time period, e is exponential constant, Y_0 is the estimated value of initial Y and m is the compounded annual growth rate. After taking the log to the base e, the Equation becomes

$$Log\ Y = Log\ Y_0 + mt$$

The equation has been estimated with ordinary least square method. It means that Log Y has been regressed upon the variable time i.e. T to obtain the slope m which is CAGR. The regression analysis has been conducted using SPSS and MS Excel computer packages. The significance of growth rates has been tested using t-statistics.

RATIO ANALYSIS

In this study mainly two types of ratios shall be computed namely - profitability and efficiency or productivity. If we divide profit before tax with some assets or input, we get a profitability ratio. Efficiency ratio is a relation between an output and an input. Following ratios have been computed for the purpose of analysis:

(I) share of Variable Cost in Total Cost (VCTC)

The VCTC ratio can help us understanding how the expenses on labour, material and energy are changing in relation to total cost in the industry. The ratio has been computed as:

$$VCTC = \frac{Variable\ cost}{Total\ Cost}$$

(II) Share of Fixed cost in Total Cost (FCTC)

Since fixed cost include expenses on interest, depreciation and rent, which are related to investment on fixed assets, will indicate increase in investment in capital and technology in over all industry. The ratio FCTC has been computed as:

$$FCTC = \frac{Fixed\ cost}{Total\ Cost}$$

(III) Return on Fixed Assets (ROFA)

It is important to analyze the profitability of fixed assets in the manufacturing sector. The ratio return on fixed assets gives the average profitability of the whole of the industry. It has been computed as follow:

$$ROFA = \frac{Industry\ Profit}{Investment\ on\ fixed\ capital\ by\ industry}$$

(IV) Return of Working Capital (ROWC)

Once the investment on fixed assets takes place then the business firms focus on improving the return on current assets. The ratio return on working capital is a good measure to analyze the operational efficiency of the firms. ROWC has been computed as follows:

$$ROWC = \frac{Industry\ Profit}{Investment\ on\ working\ capital\ by\ industry}$$

(V) Return on Capital (ROC)

Although the managers in the firms are mainly interested in operational efficiency but the focus of owners of the firms is on maximizing return on total capital employed which has been computed as follows:.

$$ROC = \frac{Industry\ Profit}{Total\ capital\ employed\ by\ industry}$$

(VI) Return on Labour (ROL)

In the present study, we want to compare the remuneration given to the workers with their contribution to production. Therefore, the ratio of return on labour has been computed as:

$$ROL = \frac{Industry\ Profit}{Number\ of\ workers\ engaged\ in\ industry}$$

(VII) Return on Employees (ROEMP)

In our study, the term 'employee' includes workers and other salaried persons engaged in the industry. The ratio return on employees gives the average profitability of all persons engaged in the industry.

$$ROEMP = \frac{Industry\ Profit}{Total\ persons\ engaged\ in\ industry}$$

(VII). Value Added Per Worker (VALL)

Although the nature of all industries is different in a cross sectional data, but for the purpose of analysis it can be assumed that all firms and industries are making one homogenous product called value added. The ratio, value added per worker shows the average value created by a worker. The value added has been computed by subtracting expenses on fuels and materials from the value of total output.

$$VALL = \frac{Value\ Added}{No.\ of\ workers\ engaged\ in\ the\ industry}$$

(IX) Value Added per Employee (VALEMP)

Similarly, the ratio value added per employee has also been computed as :

$$VALEMP = \frac{Value\ Added}{No.\ of\ total\ persons\ engaged\ by\ industry}$$

(X) Value of Output to Total Wage Bill (VALTWB)

This ratio gives number of times output generated by the total wage bill.

VALTWB = Value of Output

Total Wage Bill

The value of output is the sum of products of quantities and prices of the industry. The total wage bill has been computed by adding the total emoluments, old age benefits, social security benefits, provident fund, welfare expenses and all other benefits paid to all employees in the industry.

(XI) Share of Workers in Value of Output (TWBVAL)

This ratio is inverse of VALTWB and shows the percentage share of total wage bill in the value of output:

$$TWBVAL = \frac{Total\ wage\ bill}{Value\ of\ Output} \times 100$$

(XII) Share of Labour in Total Cost (TWBTC)

A change in this ratio shows the relative share of workers in total cost, computed as:

$$TWBTC = \frac{Total\ Wage\ Bill}{Total\ Cost} \times 100$$

(XIII) Efficiency Ratios

The efficiency of fuel, material and total cost can be judged by their changing shares in total cost. For this purpose three ratios have been computed as:

a) Share of Fuel in Total Cost

$$FUELTC = \frac{Total\ Fuel\ Expenses}{Total\ Cost} \times 100$$

b) Share of Material in Total Cost

$$MATTC = \frac{Expenses\ on\ Material}{} \times 100$$

Total Cost

c) Share of All Inputs in Total Cost

$$INPUTTC = \frac{All\ input\ expenses}{Total\ Cost}$$

d) Ratio of value of output of inputs

$$VALINPUT = \frac{Value\ of\ output}{Expenses\ on\ all\ inputs}$$

(XIV) Ratio of Total Cost to Variable Costs

This ratio is inverse of VCTC but can be taken as an indicator of improvement in technology.

$$TCVC = \frac{Total\ Cost}{Variable\ Cost}$$

(XV) Average Wages and Salaries

These ratios give average wages and salaries considering all workers and employees as homogeneous. The basic purpose of computing them is to compare the contribution of labour with their contribution.

a) Average Wage Rate (AWAGE)

$$AWAGE = \frac{Total\ Wage\ Expenses}{No.\ of\ Workers}$$

b) Average Salary (ASALARY)

$$ASALARY = \frac{Total\ emoluments\ to\ all\ employees}{No.\ of\ person\ engaged\ in\ the\ industry}$$

c) Average Wage Rate at Constant Prices (AWCP)

$$AWCP = \frac{AWGER}{} \times 100$$

WPI (1992-93)

d) Average Salary at Constant prices

ASALARY

$$\text{ASCP} = \frac{\text{ASALARY}}{\text{WPI (1992-93)}} \times 100$$

WPI (1992-93)

e) Remuneration of Managers & Executives (MREM)

(Total Emoluments – Total wages)

$$\text{MREM} = \frac{\text{(Total Emoluments – Total wages)}}{\text{(No. of Persons engaged- No. of workers)}} \times \text{WPI 1992-93}$$

(No. of Persons engaged- No. of workers)

Growth Accounting Equation Analysis the total factor productivity growth (TFPG) shall be estimated by Solow Index Method which uses a growth accounting equation based on cobb-Douglas production function as:

$$Q = AL\alpha \; L\beta$$

Where Q, L and K stands for output, labour and capital respectively. The parameters A, α and β represent total factor productivity, labour elasticity of output and capital elasticity of output respectively. The growth accounting equation for the cobb-Douglas production function will be as follows:

$$\frac{dQ}{Q} = \frac{dA}{A} + \alpha\frac{dL}{L} + \beta\frac{dK}{K}$$

where $\frac{dQ}{Q}, \frac{dA}{A}, \frac{dL}{L}$ and $\frac{dK}{K}$ are growth rates of output, total factor productivity, labour and capital.

In the present study ASI data aggregated at industry level from year 1980-81 to 2007-08 shall be used to compute the values of $\frac{dA}{A}$ (TFPG), α and β. One way to calculate these three unknowns is that we can estimate the Equation 2.4 with regression if we assume $\frac{dA}{A}$, α and β constant for certain period. Assuming constant return to scale i.e. $\alpha + \beta = 1$, the Equation becomes

$$\frac{dQ}{Q} = \frac{dA}{A} + (1-\beta)\frac{dL}{L} + \beta\frac{dk}{K} \quad \text{or}$$

$$\frac{dQ}{Q}\left[\frac{dL}{L} - \frac{dA}{A} + \right]+ \frac{dK}{K}\beta\left[\frac{dL}{L} - \right] \quad \text{or}$$

$$\frac{dQ*}{Q} = \frac{dA}{A} + \beta\frac{dK*}{K}$$

where $\frac{dQ*}{Q}$ $\frac{dQ}{Q}\left[\frac{dL}{L} = \; - \; \right]$ and

$$\frac{dK*}{K} = \frac{dK}{K}\left[- \frac{dL}{L}\right]$$

To analyze the impact of liberalization, we introduce a dummy variable D such that when D = 0, there is no liberalization and when D = 1, liberalization has been introduced. If we also allow the effect of liberalization on TFPG and β then the Equation will become:

$$\frac{dQ*}{Q} = \frac{dA}{A} + \beta\frac{dK*}{K}\left[\;\right] + \beta1\, D + \beta2\frac{dK*}{K}\left[\;\right]$$

The coefficient $\beta1$ will show the differential effect in dA/A i.e. TFPG after liberalization and the coefficient $\beta2$ will show the differential effect in the coefficient β due to liberalization.

Another way to calculate these three unknowns is to make three equations from the data on four points of time. since the values of $\frac{dQ}{Q}, \frac{dL}{L}$ and $\frac{dK}{L}$ can be computed from the time series ASI data on the industry.

Therefore, only three unknowns i.e. $\frac{dA}{A}$, α and β are left to be computed in equation. In this method all the coefficients are computed mathematically and statistical estimation can be avoided which involves a number of assumptions. To compare the values of estimated coefficients before and after liberalization statistical estimation has also been done for periods 1980-81 to 1989-90 and 1990-91 to 2005-06. The main focus of the study shall be on analysis of industrial growth profitability, efficiency, employment and wages.

LIMITATIONS & SCOPE

The major limitation of the study can be that it shall use the data on industries at aggregate level. At higher aggregations, a lot of variation is lost and it becomes difficult to get significant values of parameters. The study shall attempt to explain the causes of growth in terms of the information internal to the secondary sector in isolation without considering other important variables like investment climate; state policy; political

and administrative systems; culture, geography and environmental changes; input systems like power, fuel water, raw materials; physical infrastructure including transport, communications; social infrastructure including health and education and linkages with agriculture & service sector.

It can be said that computed annual growth rates and average return, profitability & efficiency ratios to be used in the study shall be able to avoid the effects of inflation. However, the tools, which will be used for analysis are simple and easy to understand. This is a problem with all econometric methods that their efficiency improves with increasing number of observations. Sometimes, the contribution of a factor cannot be measured, even if it is highly significant just because we have fewer observations. The total factor productivity, growth accounting or production function analysis is based upon a number of neo-classical assumptions- such as less interference of state, rational choice by firms, homogeneous factor units, decreasing marginal rate of substitution etc. which are highly restrictive. If we relax any of the assumptions, the data requirements increase tremendously as compared to the explanatory power of the estimated functions.

However, the growth accounting equation is totally free from all kinds of measurement units and is expressed with pure numbers. (i.e. growth rates and elasticities) eliminating the effects of inflation etc. Still, it does not measure the true contribution rather just distributes the growth in labor, capital and technical change. The value of total factor productivity is not measured but its growth is assessed. At the aggregate industry level data, the total factor productivity growth shows the changing quality of political, legal, administrative, infrastructure and knowledge systems of the economy. There is a need to break the total factor productivity into various other causes through further research. If the study is conducted at individual industry levels then various elasticities of output for each industry can be computed separately and can be compared to identify those industries and technologies, which augment employment growth. Then the state can focus to nurture those industries, which add to faster employment growth than the growth rate of labor force generation to include one and all in sharing fruits of economic liberalization.

REFERENCES:

Blanchard, Olivier Macroeconomics, Prentice Hall, ISBN 013013306X .

Blaug, Mark , Great Economists before Keynes , Brighton: Wheatsheaf.

Friedman, Milton , Essays in Positive Economics, London: University of Chicago Press, ISBN 0-226-26403-3 .

Heijdra, B. J.; Ploeg, F. van der , Foundations of Modern Macroeconomics, Oxford University Press, ISBN 0-19-877617-9 .

Mishkin, Frederic S. , The Economics of Money, Banking, and Financial Markets, Boston: Addison-Wesley, p. 517

Snowdon, Brian, and Howard R. Vane, ed. An Encyclopedia of Macroeconomics, Description & scroll to Contents-preview links.

Snowdon, Brian; , Howard R. Vane , Modern Macroeconomics: Its Origins, Development And Current State, Edward Elgar Publishing, ISBN 1-84376-394-X .

Gärtner, Manfred , Macroeconomics, Pearson Education Limited, ISBN 978-0-273-70460-7 .

Warsh, David , Knowledge and the Wealth of Nations, Norton, ISBN 978-0393059960