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# **Financial Liberalization, Development and Industrial Growth: Evidence from India**

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## **Financial Liberalization, Development and Industrial Growth: Evidence from India**

**Dr. Manjappa.D.Hosamane<sup>a</sup> and Niranjan.R<sup>b</sup>**

**Abstract:** Development economists have long recognized the role of the financial system in the process of economic development. Financial institutions and markets anticipate future growth opportunities, where financial development tends to accelerate growth through new firm formation, increasing access to external financing and boost firm growth. Using Industry level time series data, following Rajan and Zingales (1998), methodology we empirically examined the links between financial sector development, financial structure and industry growth for the post-reform period. The results suggest a positive influence of financial development (FD), and negative influence of financial structure (FS), on the rate of growth of value added of the Industries. One of the contributions of this study is the examination of the influence of industry competitiveness (export intensity and import intensity) and financial liberalization on industry growth where export oriented industries are relatively more dependent on external finance for their growth. Regarding liberalization the results doesn't show any direct effect on industry growth in value added.

**Keywords:** Capital account liberalization, Financial development, Manufacturing

**JEL Classification:** F30, F34, E23

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## **Financial Liberalization, Development and Industrial Growth: Evidence from India**

### **Introduction:**

Manufacturing sector in India has been playing a key role economic growth. It has been observed that this sector undergone significant changes both in its structure and pattern owing to the policy changes. The early 1950s up until the early 1980s the evolution of manufacturing sector was guided by protected industrial and trade policies, which resulted in the slow growth of the economy in general and manufacturing sector in particular. Whereas, the industrial policy framework began to be liberalized from the 80s and this process accelerated with the major economic reforms initiated in 1991, which included deregulation and delicensing of industries, according a greater role to the private sector and a gradual shift from direct physical controls to indirect controls (Chandrasekhar, 1988, Ahluwalia, 1991). Similarly, financial sector reforms shared the centre stage of the economic liberalization. The Narasimhan Committee [GoI 1991a] recommended a gradual deregulation of the financial sector, including phasing out of directed credit, interest rate de- regulation and lowering of SLR and CRR to release resources for private sector. The policy of deregulation has resulted in the abolition of the office of controller of capital issues, giving way to free pricing of capital issues and making equity finance an attractive source of funds for the corporate sector and empowered SEBI for regulation of capital markets. Meanwhile, foreign institutional investors have also been allowed to invest in both equity and debt markets. Access to foreign funds has also been increased through a liberalized external commercial borrowings (ECBs) policy and allowing recourse to global depository receipts (GDRs), American depository receipts (ADRs) and foreign currency convertible bonds (FCCBs). This enabled industries to take advantage of interest rate differentials between domestic and global markets and raise cheaper funds. The Reforms initiated in these areas constituted a major step towards reducing micro economic rigidities and lead to efficient allocation of resources primarily guided by market forces.

Theoretically financial liberalization policies such as interest rate deregulation, opening capital account, and trade liberalization have important implications on financial development. Financial and economic development are jointly determined where, economic growth provides the means for the formation of growth promoting financial intermediaries, while the formation of financial intermediaries accelerates growth by mobilizing savings and efficiently allocating these savings across various investment projects. The financial development usually measured by the level of credit and the size of the stock market which may predict economic growth simply because, the

stock market capitalizes the present value of growth opportunities, whereas the financial institutions lend more to the sectors or industries which have higher growth prospects.

A numerous theoretical<sup>1</sup> and empirical works evolved in explaining the importance of finance in economic growth process. Empirically, the starting point for intensive research on this links is furnished by World Bank (1989) and King and Levine (1993), where they found that higher levels of financial development are positively associated with faster rates of economic growth, physical capital accumulation and economic efficiency improvements in the allocation of capital. Since their pioneering works resulted a large body of empirical evidences emerged at firm level (Demirguc-Kunt and Maksimovic 1996, 1998), industry level (Rajan and Zingales 1998; Wurgler 2000) country - case studies, cross country studies (King and Levine 1993, Levine and Zervos 1998; Beck, Levine and Loayza 2000; Levine, Loayza and Beck 2000) and time series works (Neusser and Kugler 1998; Rousseau and Wachtel 1998) in explaining the strong relationship between finance and growth. Similarly, several researchers<sup>2</sup> evaluated the link between financial structure<sup>3</sup>, industrial development and economic growth. They find that financial structure is not a robust predictor of the firm/industry growth but it is overall financial development which matters for firm/industry and economic growth.

Besides this, (Atje and Jovanovic 1993; Levine and Zervos 1997, 2000; Beck and Levine 2001; Rousseau and Wachtel 2000; Demirguc Kunt and Maksimovic 1996; Boyd and Smith 1996, 1998), clearly evidenced that development of stock markets is strongly and positively correlated with the level of economic development and capital accumulation. Bekaert, Harvey and Lundblad (2005), shows that stock market liberalization promote economic growth particularly in countries with more developed financial markets and higher quality institutions. Nandini Gupta and Kathy Yaun (2008); Barry Eichen green, Rachita Gullapalli and Ugo Panizza (2009), found similar results, where liberalization is followed by an increase in the industry value added, growth in investment and average market globalization. This is consistent with the view that financing constraints are reduced when the stock market is liberalized. Although both the long

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<sup>1</sup>Walter Bagehot (1873), Schumpeter (1911), Gurley Shaw (1955), Goldsmith (1969), Mackinnon and Shaw (1973)

<sup>2</sup>Levine 2002; Beck and Levine 2002, Demirguc Kunt and Maksimovic 2000; Schmukler and Vesperoni 2000)

<sup>3</sup>Financial Structure (degree to which a country has bank based or market based financial system) is an institutional environment which must be able to create new means of financing and preserving its robustness throughout the growth process. Three competing views of financial structure exist, the bank based, the market based and the financial services view.

run view<sup>5</sup> and short run view<sup>6</sup> of liberalization has documented a positive influence of stock market development on economic growth. The long run view argues that reforms leads to an overall development of stock market whereas the short run view argues that stock market liberalization in general lowers cost of equity capital and induces investment and thereby growth. In the Indian context, there are several studies on this subject where the results are inconclusive. Nagaraj (1996), Singh (1997, 1998) and Nagaishi (1999), find a little or no evidence of increase in aggregate savings as a result of the growth of stock markets. However, a recent study by Azarmi, Daniel Lazar and Joseph Jeyapaul (2005) around the Indian stock market liberalization event finds no support for the hypothesis of the association between stock market development and economic growth. Contrary to these works few studies<sup>7</sup> provide evidence for strong and robust relationship between stock market development and long turn economic growth where stock markets in India is more efficient than the banking system on account of enabling government policies and thereby generating competition between markets and banks for funds mobilization and allocation. However, a pioneering work by Singh and Hamid (1992) examined the financing patterns of the top fifty listed manufacturing corporations in nine developing countries. They find that less developed country corporations use both external finance and equity finance to a much greater extent compared to developed country corporations. On the other hand, in a comparative study Samuel .C (1996) examined the role played by equity market in catering to the financial needs for U.S. and Indian firms for the 1972-1992 periods. He found that in relative basis, the difference between firm financing choices in India and the U.S. relate to the smaller role of internal finance and the bigger role of external debt for Indian firms compared U.S. firms. Overall the evidence suggests that the role of stock market as a source of finance is limited and remarkably similar for Indian firms, despite the vastly different nature of capital markets in the two countries.

With this background, this paper attempts to investigate the impact of financial development, liberalization and industry growth in India for the post reform period. The broad objective is to assess the influence of financial development and financial liberalization on industry growth.

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<sup>5</sup> see Levine and Zervos 1998

<sup>6</sup>see Henry 2000

<sup>7</sup> Shah and Thomas (1997) Biswal and Veerashakarappa (2000), Biswal and Kamaiah (2000, 2001), Agarwal (2000), Chakraborty (2008)

## Data Measurement and Methodology

The data for fifteen industries of the Indian private corporate manufacturing sector for the post liberalization period (1990-2007) is drawn from Centre for Monitoring Indian Economy's (CMIE) computerized database known as PROWESS. The study used Standard National Industry Classification (NIC) to select the industries where, the selected industries are reported in Appendix. In order to estimate empirically the impact of financial development and financial structure on industry growth in India, the study employed following regression model.

$$GRVA_t = \text{Constant} + \beta_1 \text{INDUSTRY}_t + \beta_2 \text{SHARE}_t + \delta_1 (\text{External} * \text{FD}) + \delta_2 (\text{External} * \text{FS}) + \gamma_1 \text{EXINT}_t + \gamma_2 \text{IMPINT}_t + \gamma_3 \text{FLIB}_t + \varepsilon_t$$

$GRVA_t$  is the growth rate of real value added of industry<sub>t</sub> where, Gross Value Added is the sum of wages and salaries, interest payments, rent paid, profit after tax and depreciation, GVA for each industry is deflated by Whole Sale Price Index (WPI).  $Share_t$  is the share of Industry in real gross value added where we expect industries with larger share to grow more slowly and therefore a negative sign for  $\beta_2$ . External is the measure of dependence on external finance for industry. In order to measure the external dependence we use the Rajan and Zingales (1998) methodology, an industry's dependence on external finance is defined as capital expenditures minus cash flow from operations divided by capital expenditure. The study also take into consider the influence of interaction between the external dependence of an industry with both the measures of overall financial development (FD<sup>8</sup>) and financial structure (FS<sup>9</sup>).

The variable FD, the financial development indicator is an average of finance size, finance activity and finance efficiency of the financial sector. However, in order to determine the degree to which an economy has a bank based or market based finance system, that is financial structure T. Beck, A. Demirguc Kunt, R. Levine and V. Maksimovic (2000), uses three measures of financial structure, such as, Structure activity, Structure size, and Structure efficiency. Each of these measures is constructed so that higher values indicate more market based financial systems.

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<sup>8</sup>Finance-activity = log (total value traded as share of GDP x claims on private sector by financial institutions as share of GDP)  
Finance-size = log (market capitalization and claims on private sector by financial institutions as share of GDP)  
Finance-efficiency = log (total value traded as share of GDP divided by banks overhead costs as share of total assets)  
Finance Development = Average of finance-activity, finance-size, and finance-efficiency

<sup>9</sup>Structure-activity = log (total value traded divided by claims on private sector by commercial banks)  
Structure-size = log (market capitalization divided by claims on private sector by commercial bank)  
Structure-efficiency = log (total value traded as share of GDP x banks overhead costs as share of total assets)  
Finance Structure = Average of structure-activity, structure-size, and structure-efficiency

Theoretically, different hypothesis implies different prediction about the sign and significance of FD and FS. The market based view predicts that industries that are dependent on external finance grow faster in economies with market-oriented financial systems and higher levels of financial development thus implying  $\delta_1 > 0$  and  $\delta_2 > 0$  where as the bank based view predicts that industries that are dependent on external finance grow faster in economies with bank oriented financial systems and higher levels of financial development, thus implying  $\delta_1 > 0$  and  $\delta_2 < 0$  (Beck, Thorsten, Asli Demirguc-Kunt, Ross Levine, and Vojislav Maksimovic, 2001).

Finally in order to capture the effects of financial liberalization on industry growth we followed Raghuraman and Prasad (2007), defacto measures of capital account openness. The defacto measures are the ratio of the stock of inward FDI to GDP, the ratio of the stock of inward FDI and portfolio investment to GDP, the net flow counterparts of these two ratios, and the average current account deficit over the period.

### **Estimation Methodology**

Time series data are often encountered with the problem of auto correlation and Non-stationarity. To check for the problem of autocorrelation, the study makes use of Breusch Godfrey Serial Correlation LM test. Similarly, the study tested for the problem of non stationarity of variables under consideration by employing Augmented Dickey Fuller test (ADF). Finally, the study makes use of Generalised least squares or GLS technique for estimation of the model.

### **Empirical Results**

The results of various diagnostic tests are presented in appendix. The BGLM test results shows that, all the industries are significant at 1% and 5% level of significance indicating the presence of autocorrelation in sample industries. The ADF test results shows that all the variables are non stationary in level but become stationary after taking respective difference. The variable indicating capital openness (FLIBDEFAC) and other variables in different industries such as EXFD, in Manufacture of paper and paper products (NIC 21), Rubber and Plastic Products (NIC25), and EXFS and EXFD in Other non Metallic Mineral Products (NIC 26) and IMPINT in Basic Metal industries (NIC 27) are Stationary at second difference, where as all other variables in selected industries are integrated of order one I (1).

Finally, the results of the model, assessing the impact of financial development and financial structure on industry growth is presented in the table 1. In all the fifteen industries the coefficient of financial development is positive and significant but in few industries it is insignificant.

Industries such as Manufacture of food and beverages (NIC 15), Manufacture of paper and paper products (NIC 21), Chemical and chemical products (NIC 24), Rubber and plastic products (NIC 25), Other non-metallic mineral products (NIC 26), Basic Metals (NIC 27), Fabricated metal products (NIC 28), and Manufacture of Radio, Television and communication (NIC 32), indicating a substantial impact of financial development on growth of real value added (GRVA). However, the remaining industries such as Manufacture of textiles (NIC 17), Tanning and dressing of leather (NIC 19), Coke and petroleum products (NIC 23), Machinery and equipment (NIC 29), Electrical machinery and apparatus (NIC 31), Motor vehicles trailers and semi trailers (NIC 34) and Other transport equipment (NIC 35), have positive coefficient values for financial development but an insignificant 'p' values. Similarly, descriptive statistics results in table 4, reveals that, industries that are highly dependent on external sources for their financial needs have higher growth in their real value added. Thus our results is in line with the Raghuraman Rajan and Luigi Zingales (1998), view that externally dependent industries relatively grow faster in countries with advanced financial system. Industries such as rubber and plastic products (NIC 25), other non metallic mineral products (NIC 26), basic metals (NIC 27), fabricated metal products (NIC 28), textiles (NIC 17), radio television and communication (NIC 32), motor vehicles (NIC 34), other transport equipment (NIC 35) and chemical and chemical products (NIC 24) are heavily dependent on external finance and similarly, these industries have a higher growth in gross value added. The coefficient of financial structure is insignificant in almost all the industries but it is significant in few industries with a negative coefficient values. The industries such as, manufacture of food and beverages (NIC 15), chemical and chemical products (NIC 24), rubber and plastic products (NIC 25), other non-metallic mineral products (NIC 26) and manufacture of basic metals (NIC 27) have negative coefficient value for financial structure with a significant 'p' values. The findings established a negative relationship between financial structure and industrial growth indicating the insignificance of financial structure in predicting industrial growth patterns. The result supports the past research works (Demirguc Kunt and Maksimovic 2000, Schmukler and Vesporoni 2000) where they upheld the insignificance of



**Table 1 Estimates of Financial Development, Structure and Industry Growth.**  
**Dependent variable: Growth Rate of Real Value Added (GRVA)**

| <b>Industry/<br/>Variables</b> | <b>C</b>  | <b>EXFD</b> | <b>EXFS</b> | <b>EXINT</b> | <b>Flibdefacto</b> | <b>IMPINT</b> | <b>Share</b> | <b>R<sup>2</sup><br/>square</b> | <b>DW</b> |
|--------------------------------|-----------|-------------|-------------|--------------|--------------------|---------------|--------------|---------------------------------|-----------|
| <b>NIC 15/Coefficient</b>      | 15.9477   | 26.07014    | -22.59603   | 0.528329     | -3.641582          | -0.524505     | -5.083879    | 0.7205                          | 1.2127    |
| t-statistics                   | 1.7762    | 2.862494    | -3.587918   | 0.141115     | -1.163339          | -0.614826     | -1.455418    |                                 |           |
| Prob                           | 0.1189    | 0.0243**    | 0.0089*     | 0.8918       | 0.2828             | 0.5581        | 0.1889       |                                 |           |
| <b>NIC 17</b>                  | 19.7564   | 7.316886    | 2.575702    | -5.961211    | 2.139489           | 1.779507      | 19.79568     | 0.6612                          | 2.4112    |
| t-statistics                   | 3.1290    | 0.592140    | 0.276459    | -2.594912    | 0.235895           | 0.672810      | 3.285100     |                                 |           |
| Prob                           | 0.0121**  | 0.5657      | 0.7873      | 0.0249**     | 0.8188             | 0.5180        | 0.0095*      |                                 |           |
| <b>NIC 19</b>                  | -30.3515  | 9.023956    | -9.397556   | 2.201697     | -5.762867          | -1.912551     | 203.3707     | 0.7418                          | 1.8306    |
| t-statistics                   | -0.7646   | 0.463019    | -1.080311   | 1.812227     | -0.399208          | -0.519232     | 1.560956     |                                 |           |
| Prob                           | 0.4640    | 0.6543      | 0.3081      | 0.0973***    | 0.6990             | 0.6161        | 0.1530       |                                 |           |
| <b>NIC 21</b>                  | 22.09349  | 5.879137    | 3.285740    | 2.930664     | 10.90191           | -1.765125     | 59.43521     | 0.9212                          | 1.8826    |
| t-statistics                   | 5.733200  | -1.835386   | 1.357909    | 1.015582     | 1.540800           | -0.821875     | 6.634514     |                                 |           |
| Prob                           | 0.0003*   | 0.0996***   | 0.2076      | 0.3364       | 0.1578             | 0.4324        | 0.0001*      |                                 |           |
| <b>NIC 23</b>                  | 19.61467  | 5.886222    | 3.992263    | -14.50998    | 11.31379           | 2.417382      | 239.1740     | 0.8359                          | 1.8728    |
| t-statistics                   | 4.050215  | 1.839388    | 0.782640    | -2.495051    | 1.324152           | 1.888909      | 4.907841     |                                 |           |
| Prob                           | 0.0029**  | 0.5385      | 0.4539      | 0.0341**     | 0.2181             | 0.0915***     | 0.0008*      |                                 |           |
| <b>NIC 24</b>                  | 2.445980  | 38.52684    | -15.60719   | 5.367649     | -4.853713          | 4.444283      | -0.356212    | 0.6263                          | 2.2976    |
| t-statistics                   | 0.415891  | 3.036863    | -2.931728   | 1.359809     | -0.856436          | 2.127125      | -0.239740    |                                 |           |
| Prob                           | 0.6899    | 0.0189**    | 0.0220**    | 0.2161       | 0.4201             | 0.0710***     | 0.8174       |                                 |           |
| <b>NIC 25</b>                  | 14.78108  | 23.77864    | -4.171323   | -0.145167    | 6.388357           | 1.146060      | 43.61657     | 0.8351                          | 2.1538    |
| t-statistics                   | 1.462530  | 2.376412    | -2.804606   | -0.098378    | 1.485765           | 0.995800      | 3.868012     |                                 |           |
| Prob                           | 0.1870    | 0.0367**    | 0.0263**    | 0.9244       | 0.1809             | 0.3525        | 0.0061*      |                                 |           |
| <b>NIC 26</b>                  | -0.453112 | 20.91922    | -25.32713   | 14.33921     | 12.97784           | -4.447873     | 11.54042     | 0.8551                          | 2.4048    |
| t-statistics                   | -0.134705 | 2.041285    | -2.741780   | 1.884730     | 1.405985           | -0.857439     | 2.593167     |                                 |           |
| Prob                           | 0.8966    | 0.0806***   | 0.0288**    | 0.1015       | 0.2025             | 0.4196        | 0.0358**     |                                 |           |
| <b>NIC 27</b>                  | 18.61472  | 21.35207    | -17.83724   | -3.644691    | 6.549579           | -1.973066     | 19.28307     | 0.8732                          | 2.0745    |
| t-statistics                   | 3.671109  | 1.892781    | -2.596484   | -0.764146    | 0.591640           | -0.588858     | 0.994873     |                                 |           |
| Prob                           | 0.0080*   | 0.1003      | 0.0356**    | 0.4697       | 0.5727             | 0.5745        | 0.3412       |                                 |           |
| <b>NIC 28</b>                  | 94.26868  | 20.06892    | 2.162663    | -7.424086    | 4.416964           | -2.819640     | 112.0434     | 0.6742                          | 2.5413    |
| t-statistics                   | 0.650920  | 3.022664    | 0.988835    | -2.347689    | 0.368978           | -1.073784     | 1.244182     |                                 |           |
| Prob                           | 0.5314    | 0.0193**    | 0.3557      | 0.0435**     | 0.7207             | 0.3109        | 0.2449       |                                 |           |
| <b>NIC 29</b>                  | 19.17680  | 1.554147    | -1.845161   | -5.588165    | -5.221266          | 5.354653      | 21.15743     | 0.5674                          | 1.9327    |
| t-statistics                   | 4.145368  | 0.147653    | -0.259371   | -1.000479    | -0.671035          | 1.422921      | 2.162149     |                                 |           |
| Prob                           | 0.0025*   | 0.8859      | 0.8012      | 0.3432       | 0.5190             | 0.1885        | 0.0589**     |                                 |           |
| <b>NIC 31</b>                  | -16.90817 | 14.57727    | -0.076806   | -6.141832    | -1.940184          | -2.508895     | 14.25276     | 0.7054                          | 1.9436    |
| t-statistics                   | -0.362763 | 0.609238    | -0.006608   | -1.306468    | -0.219731          | -0.501924     | 0.850712     |                                 |           |
| Prob                           | 0.7275    | 0.5547      | 0.9949      | 0.2327       | 0.8324             | 0.6311        | 0.4231       |                                 |           |
| <b>NIC 32</b>                  | 22.15615  | -38.00147   | 4.185485    | 0.817056     | 18.90495           | 1.290860      | 29.43627     | 0.9104                          | 2.1417    |
| t-statistics                   | 1.168631  | -3.779777   | 1.439511    | 0.208647     | 1.973394           | 0.787927      | 2.587790     |                                 |           |
| Prob                           | 0.2726    | 0.004*      | 0.1839      | 0.8394       | 0.0799***          | 0.4510        | 0.0293**     |                                 |           |
| <b>NIC 34</b>                  | 16.56830  | 41.05934    | 15.95333    | -0.567439    | 9.478982           | -2.027093     | 25.04404     | 0.7440                          | 1.2752    |
| t-statistics                   | 2.865582  | 0.772830    | 0.850803    | -0.079271    | 1.110065           | -0.752300     | 3.929149     |                                 |           |
| Prob                           | 0.0186**  | 0.4559      | 0.4169      | 0.9386       | 0.2957             | 0.4711        | 0.0035**     |                                 |           |
| <b>NIC 35</b>                  | 25.96833  | 1.170429    | -1.742339   | 4.826552     | -3.032431          | 0.714722      | 30.10010     | 0.9025                          | 2.2568    |
| t-statistics                   | 4.537983  | 0.192642    | -0.665409   | 0.906589     | -0.291410          | 0.512384      | 1.316700     |                                 |           |
| Prob                           | 0.0014*   | 0.8515      | 0.5225      | 0.3883       | 0.7773             | 0.6207        | 0.2147       |                                 |           |

\* 1%, \*\*5% and \*\*\* 10% level of significance

financial structure in meeting industrial growth. Thus it is argued that it is the overall financial development that influences industry growth and its financing decisions and not the single financial structure as such.

On the other hand, the coefficient of export intensity (EXINT), which is depicted in column five is significant in industries such as manufacture of textiles (NIC 17), tanning and dressing of leather (NIC 19) and fabricated metal products (NIC 28). The mean value of export intensity is highest in all these industries where textiles having 21.58, leather with a highest mean value of about 36.92 and fabricated metal products of about 11.63 and therefore an increase in exports has a positive influence on gross value added of these industries. Similarly, few other industries have a higher mean value of export intensity, such as manufacture of electrical machinery and apparatus (NIC 31, 18.79), rubber and plastic (NIC 25, 12.78), and basic metals (NIC 27, 10.34) but they are not statistically significant, this might be because of higher volume of sales with higher exports in these industries. These export oriented industries are relatively externally dependent with higher mean values of external financial dependence. Thus our results is in line with Beck (2003) and Manova (2008), where they evidenced that financially dependent sectors export more and have stronger trade balances with better developed financial systems. The impact of import intensity on the growth of value added is positive and statistically significant for manufacture of coke and petroleum products (NIC 23) and chemical and chemical products (NIC24).

It is found that except above two industries import intensity is not statistically significant in any of the other thirteen industries concerned. The mean values of import intensity for manufacture of coke and petroleum (NIC 23) and chemical and chemical products (NIC 24) is 18.89 and 15.08 respectively, which is relatively a higher value compared to other industries. Similarly, manufactures of radio and television and communication (NIC 32; 21.19) rubber and plastic (NIC 25; 12.27), fabricated metal products (NIC 28; 10.17) and motor vehicles, trailers and semi trailers (NIC 34; 10.15), have higher mean values of import intensity but they are not statistically significant in explaining industry growth. These industries have substantial amount of imports but they are over shadowed by higher volume of sales, indicating the insignificant association between import intensity and industry growth.

Meanwhile, the coefficient of FLIBDEFAC TO is statistically insignificant in almost all of the industries except manufacture of radio, television and communication (NIC 32). The result

suggests that liberalizing capital account doesn't seem to have any direct effect on industry growth in value added.

Finally, the coefficient of share is positive and significant in industries such as textiles, paper and paper products, coke and petroleum, rubber and plastic, non metallic mineral products, machinery and equipment, radio and television and motor vehicles. Industries which are having lower mean share value such as textiles (NIC 17; 0.33), paper and paper products (NIC 21; 2.14), coke and petroleum (NIC 23; 0.58), rubber and plastic products (NIC 25; 1.72) non metallic minerals (NIC 26; 7.88), fabricated metal products (NIC 28; 0.66), radio television and communication (NIC 32; 2.36), machinery equipment (NIC 29; 5.60), electric machinery and apparatus (NIC 31; 1.13), have positive coefficients and they are statistically significant explaining that the lower share firms are having a significant growth rate in gross value added. However the findings corroborate the earlier empirical works where they found a significant and positive relationship between industry share and growth of value added.

### **Conclusion**

Using industry wise time series data the paper attempted to empirically examine the links between financial sector development, financial structure and industry growth for the post reform period. The empirical results suggest that financial development (FD) has a substantial positive influence on the rate of growth of value added of all the industries, where as financial structure (FS), does not have influence on the industry growth, where the findings indicate a negative coefficient value in almost all the industries. The results is in line with earlier empirical works, evidencing that it is overall financial development (FD) that influences industry growth and not a particular financial system as such.

One of the contributions of this study is the examination of the influence of industry competitiveness (export intensity and import intensity) and financial liberalization on industry growth. Meanwhile, export intensity and import intensity are significantly influencing gross value added only in few industries. One of the significant findings of this study is that, export oriented industries are relatively more dependent on external finance for their growth.

Regarding liberalisation the results suggests that financial opening doesn't show any direct effect on industry growth in value added. Even though the data indicate a yearly increase in gross value added in all the industries, financial liberalization doesn't have substantial influence on industry growth. Finally, the study hypothesized that larger industries are expected to grow slowly

compared to smaller industries with lesser share value in overall manufacturing gross value added. The result supports the hypothesis with expected signs.

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## APPENDIX

**Table 1 Sample of Industries**

| NIC CODE | INDUSTRY   |
|----------|--|
| NIC 15   | Manufacture of Food Products and Beverages                   |
| NIC 17   | Manufacture of Textiles                                      |
| NIC 19   | Manufacture of Tanning and Dressing of Leather               |
| NIC 21   | Manufacture of Paper and Paper Products                      |
| NIC 23   | Manufacture of Coke, Refined Petroleum products              |
| NIC 24   | Manufacture of Chemicals and Chemical Products               |
| NIC 25   | Manufacture of Rubber and Plastic Products                   |
| NIC 26   | Manufacture of Other non-metallic mineral products           |
| NIC 27   | Manufacture of Basic Metals                                  |
| NIC 28   | Manufacture of Fabricated Metal Products                     |
| NIC 29   | Manufacture of Machinery and Equipment                       |
| NIC 31   | Manufacture of Electrical Machinery and Apparatus            |
| NIC 32   | Manufacture of Radio, television and communication Equipment |
| NIC 34   | Manufacture of Motor Vehicles trailers and Semi trailers     |
| NIC 35   | Manufacture of Transport Equipment                           |

**Table: 2 Industry wise Breusch Godfrey Serial Correlation LM Test for Financial Development, Structure and Industry Growth.**

| Industry | Breusch Godfrey Serial Correlation LM Test |             |               |                     |
|----------|--|-------------|---------------|---------------------|
|          | F statistics                               | Prob F(2,9) | Obs*R-squared | Prob.Chi-Square (2) |
| NIC 15   | 2.990892                                   | 0.1009      | 7.186869      | 0.0275**            |
| NIC 17   | 0.284248                                   | 0.7591      | 1.069438      | 0.5858              |
| NIC 19   | 0.909776                                   | 0.4367      | 3.027105      | 0.2201              |
| NIC 21   | 1.208675                                   | 0.3428      | 3.811069      | 0.1487              |
| NIC 23   | 1.448136                                   | 0.2849      | 4.382289      | 0.1118              |
| NIC 24   | 0.921135                                   | 0.4326      | 3.058479      | 0.2167              |
| NIC 25   | 9.422736                                   | 0.0062      | 12.18218      | 0.0023*             |
| NIC 26   | 3.392773                                   | 0.0798      | 7.737447      | 0.0209**            |
| NIC 27   | 2.924084                                   | 0.1051      | 7.089564      | 0.0289**            |
| NIC 28   | 0.21781                                    | 0.8084      | 0.831018      | 0.6600              |
| NIC 29   | 1.060911                                   | 0.3857      | 3.43404       | 0.1796              |
| NIC 31   | 2.458067                                   | 0.1407      | 6.358835      | 0.0416**            |
| NIC 32   | 0.955798                                   | 0.4203      | 3.15341       | 0.2067              |
| NIC 34   | 1.260492                                   | 0.3291      | 3.9387        | 0.1395              |
| NIC 35   | 0.214175                                   | 0.8112      | 0.81778       | 0.6644              |

\* 1% and \*\*5% level of significance

**Table 3: Results of Unit Root (ADF) Test at Level for Financial Development, Structure and Industry Growth**

| Variables<br>Industry | Share     |        | IMPINT   |        | GVA      |        | FLIBDEFCT |        | EXPINT   |        | EXFS     |        | EXFD     |        |
|-----------------------|-----------|--------|----------|--------|----------|--------|-----------|--------|----------|--------|----------|--------|----------|--------|
|                       | t-stats   | Prob   | t-stats  | Prob   | t-stats  | Prob   | t-stats   | Prob   | t-stats  | Prob   | t-stats  | Prob   | t-stats  | Prob   |
| NIC 15                | -2.129790 | 0.2364 | 0.205809 | 0.9631 | -4.63175 | 0.0023 | 2.375373  | 0.9998 | -1.71115 | 0.4083 | -2.18996 | 0.2163 | -1.15531 | 0.6678 |
| NIC 17                | -2.366006 | 0.1648 | -1.68655 | 0.4198 | -4.04879 | 0.0073 | 2.375373  | 0.9998 | -2.03936 | 0.2689 | -1.27230 | 0.6170 | -1.49930 | 0.5097 |
| NIC 19                | -2.865997 | 0.0715 | -3.48562 | 0.0240 | -4.58370 | 0.0025 | 2.375373  | 0.9998 | -2.31443 | 0.1788 | -2.60264 | 0.1155 | -1.32804 | 0.5914 |
| NIC 21                | -2.098297 | 0.2474 | -2.60331 | 0.1115 | -4.60163 | 0.0024 | 2.375373  | 0.9998 | -1.73875 | 0.3955 | -1.88986 | 0.3286 | -0.75150 | 0.8056 |
| NIC 23                | -1.26625  | 0.6197 | -1.25474 | 0.6248 | -3.57093 | 0.0186 | 2.375373  | 0.9998 | -0.92566 | 0.7540 | -4.07742 | 0.0069 | -3.85144 | 0.0107 |
| NIC 24                | 2.382667  | 0.9998 | -1.48237 | 0.5163 | -3.83450 | 0.0111 | 2.375373  | 0.9998 | 0.407774 | 0.9769 | -1.66458 | 0.4290 | -1.14793 | 0.6709 |
| NIC 25                | -2.456898 | 0.1424 | -2.39341 | 0.1586 | -3.00505 | 0.0545 | 2.375373  | 0.9998 | 0.019193 | 0.9473 | -1.41541 | 0.5501 | -1.80112 | 0.3664 |
| NIC 26                | -2.618958 | 0.1086 | -1.65340 | 0.4354 | -2.51505 | 0.1294 | 2.375373  | 0.9998 | -1.97983 | 0.2918 | -1.03841 | 0.7142 | -1.40997 | 0.5527 |
| NIC 27                | -1.438185 | 0.5392 | -0.84249 | 0.7789 | -4.77490 | 0.0017 | 2.375373  | 0.9998 | 0.750935 | 0.9892 | -1.48103 | 0.5185 | -1.43962 | 0.5385 |
| NIC 28                | -2.699059 | 0.0945 | -0.70871 | 0.8173 | -5.39597 | 0.0005 | 2.375373  | 0.9998 | -3.18934 | 0.0387 | -1.22381 | 0.6385 | -1.48021 | 0.5189 |
| NIC 29                | -1.229145 | 0.6361 | -0.43500 | 0.8819 | -4.01413 | 0.0078 | 2.375373  | 0.9998 | 0.409971 | 0.9770 | -1.55370 | 0.4833 | -1.37403 | 0.5698 |
| NIC 31                | -4.585797 | 0.0028 | -0.95936 | 0.7426 | -4.34561 | 0.0044 | 2.375373  | 0.9998 | 0.741912 | 0.9887 | -1.95142 | 0.3028 | -2.07818 | 0.2546 |
| NIC 32                | -2.495806 | 0.1345 | -2.44537 | 0.1451 | -3.99723 | 0.0080 | 2.375373  | 0.9998 | -2.87840 | 0.0687 | -1.34710 | 0.5808 | -1.38217 | 0.5659 |
| NIC 34                | -1.438169 | 0.5392 | -2.00013 | 0.2839 | -4.25454 | 0.0048 | 2.375373  | 0.9998 | -1.20554 | 0.6464 | -1.55915 | 0.4806 | -1.46415 | 0.5267 |
| NIC 35                | -1.764366 | 0.3838 | -1.09850 | 0.6909 | -5.30826 | 0.0006 | 2.375373  | 0.9998 | -2.63672 | 0.1053 | -3.29206 | 0.0319 | -3.40540 | 0.0256 |

**Table 4: Results of Unit Root (ADF) Test at difference for financial development, structure and industry growth**

| Variables<br>Industry | Share     |        | IMPINT    |        | GVA     |        | FLIBDEFCT |        | EXPINT    |         | EXFS      |         | EXFD      |        |
|-----------------------|-----------|--------|-----------|--------|---------|--------|-----------|--------|-----------|---------|-----------|---------|-----------|--------|
|                       | t-stats   | Prob   | t-stats   | Prob   | t-stats | Prob   | t-stats   | Prob   | t-stats   | Prob    | t-stats   | Prob    | t-stats   | Prob   |
| NIC 15                | -4.350081 | 0.0044 | -5.124820 | 0.0012 |         |        | -5.637709 | 0.0034 | -4.291206 | 0.0049  | -4.337592 | 0.0045  | -3.507825 | 0.022  |
| NIC 17                | -5.137597 | 0.0010 | -4.05520  | 0.0077 |         |        | -5.637709 | 0.0034 | -3.3020   | 0.0324  | -3.57802  | 0.0192  | -3.8089   | 0.0124 |
| NIC 19                |           |        |           |        |         |        | -5.637709 | 0.0034 | -5.5520   | 0.0009  | -2.98774  | 0.0590  | -3.3623   | 0.0289 |
| NIC 21                | -4.852166 | 0.0017 | -7.24742  | 0.0000 |         |        | -5.637709 | 0.0034 | -5.1619   | 0.0010  | -4.12098  | 0.0068  | -3.9263   | 0.0138 |
| NIC 23                | -3.314106 | 0.0316 | -3.15006  | 0.0429 |         |        | -5.637709 | 0.0034 | -4.2197   | 0.0062  |           |         |           |        |
| NIC 24                | -4.447851 | 0.0036 | -2.72911  | 0.0909 |         |        | -5.637709 | 0.0034 | -5.0456   | 0.0012  | -4.64528  | 0.0028  | -2.7373   | 0.0896 |
| NIC 25                | -3.310572 | 0.0319 | -2.822528 | 0.0772 |         |        | -5.637709 | 0.0034 | -7.5910   | 0.00000 | -3.32598  | 0.0310  | -4.5111   | 0.0036 |
| NIC 26                | -4.209300 | 0.0057 | -4.08769  | 0.0073 | -3.8884 | 0.0114 | -5.637709 | 0.0034 | -2.86376  | 0.0718  | -4.46924  | 0.0039  | -4.9400   | 0.0017 |
| NIC 27                | -5.081279 | 0.0011 | -4.59741  | 0.0035 |         |        | -5.637709 | 0.0034 | -5.25057  | 0.0008  | -3.62389  | 0.0176  | -3.5855   | 0.0190 |
| NIC 28                |           |        | -12.6077  | 0.0000 |         |        | -5.637709 | 0.0034 |           |         | -3.32939  | 0.0308  | -4.4702   | 0.0035 |
| NIC 29                | -3.719095 | 0.0147 | -4.68787  | 0.0023 |         |        | -5.637709 | 0.0034 | -3.62670  | 0.0175  | -3.25656  | 0.0352  | -3.6869   | 0.0156 |
| NIC 31                |           |        | -4.10404  | 0.0070 |         |        | -5.637709 | 0.0034 | -6.03731  | 0.0002  | -3.34804  | 0.0297  | -3.1282   | 0.0460 |
| NIC 32                | -3.620475 | 0.0188 | -5.42096  | 0.0006 |         |        | -5.637709 | 0.0034 |           |         | -8.19155  | 0.00000 | -3.6972   | 0.0153 |
| NIC 34                | -4.168616 | 0.0062 | -4.4373   | 0.0037 |         |        | -5.637709 | 0.0034 | -3.33104  | 0.0307  | -3.24846  | 0.0402  | -2.9006   | 0.0673 |
| NIC 35                | -4.746262 | 0.0021 | -4.05077  | 0.0078 |         |        | -5.637709 | 0.0034 | -4.65636  | 0.0025  |           |         |           |        |

## Descriptive Results for Financial Development, Structure and Industry Growth

**Table 4: Mean**

| Industry/Variables | EXFD     | EXFS     | EXINT    | FLIBDEFCTO | GVA      | IMPINT   | SHARE    | EXDEP    |
|--------------------|----------|----------|----------|------------|----------|----------|----------|----------|
| NIC 15             | 1.365532 | 2.178785 | 6.552819 | 0.997607   | 16.41357 | 6.160259 | 6.710429 | 0.5094   |
| NIC 17             | 2.172309 | 3.99303  | 21.58212 | 0.997607   | 19.93526 | 8.511744 | 7.259533 | 0.983478 |
| NIC19              | 1.700255 | 1.34005  | 36.92356 | 0.997607   | 26.85459 | 10.51623 | 0.339575 | 0.123446 |
| NIC 21             | 0.876735 | 1.88178  | 3.845851 | 0.997607   | 21.91103 | 10.66041 | 2.149509 | 0.437459 |
| NIC 23             | -1.61245 | -3.34087 | 1.801097 | 0.997607   | 19.3002  | 18.89167 | 0.584736 | -0.86637 |
| NIC 24             | 1.293268 | 2.112945 | 8.336725 | 0.997607   | 14.92746 | 15.0811  | 22.47122 | 0.502438 |
| NIC 25             | 1.969656 | 2.909031 | 12.78176 | 0.997607   | 22.43618 | 12.27622 | 1.729529 | 0.641986 |
| NIC 26             | 1.295606 | 2.601268 | 6.019455 | 0.997607   | 22.96864 | 5.757882 | 7.889609 | 0.658957 |
| NIC 27             | 1.069236 | 2.315108 | 10.34936 | 0.997607   | 22.26238 | 14.48543 | 23.96764 | 0.588764 |
| NIC 28             | 1.203956 | -0.00086 | 11.63175 | 0.997607   | 27.9586  | 10.71642 | 0.664854 | -0.2368  |
| NIC 29             | 0.96152  | 1.356061 | 7.093754 | 0.997607   | 17.6956  | 8.909187 | 5.605911 | 0.293634 |
| NIC 31             | 2.743316 | 12.74549 | 18.79839 | 0.997607   | 6.637992 | 1.505689 | 1.131663 | 0.313045 |
| NIC 32             | 1.943003 | 3.017875 | 4.54624  | 0.997607   | 21.44144 | 21.19111 | 2.368043 | 0.684176 |
| NIC 34             | 0.929296 | 1.885305 | 6.878158 | 0.997607   | 22.38942 | 10.15561 | 9.131709 | 0.488303 |
| NIC 35             | 0.524255 | 1.625158 | 3.77047  | 0.997607   | 26.39623 | 1.860153 | 14.62821 | 0.514964 |

**Table 4.1: Maximum**

| Industry/Variables | EXFD     | EXFS     | EXINT    | FLIBDEFCTO | GVA      | IMPINT   | SHARE    | EXDEP    |
|--------------------|----------|----------|----------|------------|----------|----------|----------|----------|
| NIC 15             | 2.808251 | 4.248913 | 8.243123 | 4.006385   | 46.79292 | 15.11344 | 8.015807 | 0.990852 |
| NIC 17             | 5.26204  | 8.27329  | 29.95416 | 4.006385   | 83.1253  | 12.92915 | 8.593618 | 1.756474 |
| NIC19              | 4.508856 | 6.821947 | 47.40111 | 4.006385   | 178.5832 | 20.66803 | 0.5252   | 1.590887 |
| NIC 21             | 3.970823 | 7.853843 | 7.340177 | 4.006385   | 101.3944 | 14.14321 | 3.109753 | 1.855674 |
| NIC 23             | 2.035759 | 3.225113 | 4.369121 | 4.006385   | 66.55916 | 30.39175 | 0.87479  | 0.880536 |
| NIC 24             | 3.215848 | 5.056146 | 14.75851 | 4.006385   | 36.19929 | 21.63069 | 25.96267 | 1.291634 |
| NIC 25             | 5.711501 | 9.962802 | 21.1474  | 4.006385   | 82.39138 | 21.05251 | 2.206607 | 2.039174 |
| NIC 26             | 3.990785 | 6.274548 | 7.819332 | 4.006385   | 78.62873 | 7.803374 | 10.45271 | 1.293239 |
| NIC 27             | 4.330902 | 7.554567 | 21.06033 | 4.006385   | 55.51806 | 24.34459 | 32.98037 | 1.546259 |
| NIC 28             | 5.613151 | 9.791245 | 15.052   | 4.006385   | 127.7213 | 14.83034 | 0.853648 | 2.00406  |
| NIC 29             | 2.960766 | 4.479671 | 11.58097 | 4.006385   | 56.02475 | 13.13635 | 6.995462 | 1.044665 |
| NIC 31             | 3.581853 | 17.31766 | 77.19665 | 4.006385   | 10.03945 | 5.624627 | 3.434623 | 1.211859 |
| NIC 32             | 4.658383 | 5.807518 | 6.276374 | 4.006385   | 143.439  | 29.39265 | 3.477797 | 1.315346 |
| NIC 34             | 2.622607 | 4.764933 | 9.486195 | 4.006385   | 74.91658 | 14.64029 | 11.62771 | 1.236661 |
| NIC 35             | 2.13083  | 8.396848 | 6.432877 | 4.006385   | 127.7297 | 3.317991 | 28.90112 | 2.856752 |



**Table 4.2: Minimum**

| Industry/Variables | EXFD     | EXFS     | EXINT    | FLIBDEFCTO | GVA      | IMPINT   | SHARE    | EXDEP    |
|--------------------|----------|----------|----------|------------|----------|----------|----------|----------|
| NIC 15             | -0.04164 | -1.01736 | 4.792747 | 0.008617   | -1.98691 | 0.915856 | 5.595663 | -0.39697 |
| NIC 17             | -0.15752 | 0.280613 | 8.08125  | 0.008617   | -11.7361 | 3.584483 | 5.402989 | 0.080069 |
| NIC19              | -0.68864 | -16.44   | 11.57608 | 0.008617   | -31.0511 | 4.769774 | 0.19662  | -6.41482 |
| NIC 21             | -5.64523 | -6.52448 | 1.264236 | 0.008617   | -53.8201 | 6.972261 | 0.966837 | -2.12062 |
| NIC 23             | -13.3204 | -24.2014 | 0.381514 | 0.008617   | -30.1725 | 4.528675 | 0.312814 | -6.28107 |
| NIC 24             | -0.25822 | -1.14982 | 3.721021 | 0.008617   | -1.99972 | 8.378731 | 15.68327 | -0.3554  |
| NIC 25             | -0.81308 | -3.62276 | 5.405597 | 0.008617   | -7.4055  | 7.963679 | 0.782883 | -1.11976 |
| NIC 26             | -0.26936 | -0.26141 | 3.096711 | 0.008617   | -13.2826 | 3.024723 | 6.351309 | -0.05903 |
| NIC 27             | -1.4514  | -1.89236 | 3.542359 | 0.008617   | -19.7948 | 9.6846   | 18.26752 | -0.42818 |
| NIC 28             | -2.18931 | -9.75468 | 6.734614 | 0.008617   | -20.0571 | 2.6066   | 0.481345 | -3.26293 |
| NIC 29             | -0.45018 | -2.79639 | 4.793986 | 0.008617   | -9.41231 | 7.138235 | 3.97496  | -0.79792 |
| NIC 31             | 1.938974 | 8.032622 | -11.7975 | 0.008617   | 4.58532  | -2.9621  | -0.48745 | -0.89615 |
| NIC 32             | 0.064699 | -5.3956  | 2.285859 | 0.008617   | -31.4842 | 15.42291 | 0.882553 | -2.03441 |
| NIC 34             | -0.131   | 0.554181 | 4.501899 | 0.008617   | -13.7504 | 7.098479 | 5.99799  | 0.129241 |
| NIC 35             | -4.7435  | -10.4671 | 1.751186 | 0.008617   | -34.2683 | 0.720593 | 4.607694 | -2.44105 |

**Table 4.3: Standard Deviation**

| Industry/Variables | EXFD     | EXFS     | EXINT    | FLIBDEFCTO | GVA      | IMPINT   | SHARE    | EXDEP    |
|--------------------|----------|----------|----------|------------|----------|----------|----------|----------|
| NIC 15             | 1.061054 | 1.620563 | 1.001762 | 0.980468   | 11.47887 | 4.052764 | 0.817507 | 0.39622  |
| NIC 17             | 1.804339 | 2.471528 | 6.487779 | 0.980468   | 25.22004 | 2.466496 | 0.929814 | 0.519223 |
| NIC19              | 1.505738 | 5.530551 | 11.86207 | 0.980468   | 46.59779 | 3.730981 | 0.093001 | 1.86684  |
| NIC 21             | 2.255302 | 3.73324  | 1.893011 | 0.980468   | 38.0276  | 1.696096 | 0.576138 | 0.973469 |
| NIC 23             | 3.289801 | 5.822953 | 1.09665  | 0.980468   | 26.01599 | 8.029261 | 0.159937 | 1.555401 |
| NIC 24             | 1.231847 | 1.967012 | 3.631828 | 0.980468   | 10.76386 | 3.783363 | 2.760552 | 0.474479 |
| NIC 25             | 1.941567 | 3.629689 | 4.437543 | 0.980468   | 26.14396 | 3.55302  | 0.420705 | 0.894569 |
| NIC 26             | 1.2656   | 1.69014  | 1.380159 | 0.980468   | 24.03603 | 1.554933 | 1.143124 | 0.362406 |
| NIC 27             | 1.677818 | 2.584209 | 4.958098 | 0.980468   | 24.87033 | 3.978678 | 3.994967 | 0.584213 |
| NIC 28             | 1.985328 | 5.779316 | 2.656987 | 0.980468   | 36.72565 | 3.019109 | 0.114213 | 1.654312 |
| NIC 29             | 1.102698 | 2.176729 | 2.522052 | 0.980468   | 18.09481 | 1.790782 | 0.884811 | 0.578354 |
| NIC 31             | 0.425971 | 2.435287 | 24.73177 | 0.980468   | 1.507723 | 2.625555 | 1.38042  | 0.657784 |
| NIC 32             | 1.483134 | 2.699146 | 1.467306 | 0.980468   | 45.46477 | 3.670687 | 0.69137  | 0.779697 |
| NIC 34             | 0.849043 | 1.145169 | 1.45147  | 0.980468   | 23.75534 | 2.007364 | 1.80742  | 0.273236 |
| NIC 35             | 1.65211  | 3.820832 | 1.143464 | 0.980468   | 45.77371 | 0.742704 | 6.115079 | 1.028853 |

