Effects of Capital Inflows: Evidence from the manufacturing sector of India
A firm-level study

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Abstract

The movement of capital flows between different countries, especially developed and developing countries, and its consequent impact is a recurrent theme of debate in literature. In the past few decades, India has emerged as one of the preferred destinations of foreign investors. Manufacturing sector of India receives substantial portions of overall foreign inflows to the nation. This paper takes up a firm level study to evaluate the impact of these capital inflows on the manufacturing sector of India. It is found that capital inflows indeed augment the investment opportunities of the firms, however there is no significant impact on any of the other performance indicators. Also, the large firms in the sample seem to be benefitting from the inflows of foreign capital, the effect on small firms is negligible. This implies that firms who are already large (with large amount of sales) benefit from the inflows but the smaller firms do not gain with this capital movement. In terms of the impact of different financing sources on the firms' performance, domestic finance emerges as a greater (positive) influence on the performance indicators as compared to foreign finance. The overall empirical evidences seem to support the view regarding capital inflows that they augment the investment opportunities of firms in developing countries (like India). However, there is no clear picture of the growth of firms related to them.

Key words: capital inflows, domestic (internal) finance, foreign equity, foreign debt

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I. Introduction

Movement of capital flows has been one of the key questions in international economics. Capital flows have posed a puzzle both in theory and practice. On the one hand, it is frequently suggested that international capital flow movements improve overall economic welfare, both for the importers and exporters of capital. While on the other hand, in almost equal measure, it is argued that this movement of capital can have negative consequences.

Capital flows are expected to augment the investment rate in developing countries. Once this flow of capital from rich countries (where interest rates were low due to capital abundance) to the poor countries (where interest rates were high due to capital scarcity) was viewed as an inevitable measure for the poor nations to escalate on the path of economic development. This view drew heavily from the predictions of the neo-classical growth model which argued that this flow of capital would enable the financial resources to flow from rich nations to poor nations reducing the cost of capital in recipient nations, enhancing their investment rates further leading to an increase in output and employment opportunities.

However, this foreign capital can prove to be detrimental to the recipient countries which are mostly EMEs by exposing them to disruptions and disturbances abroad leading to surges of capital inflows and of massive capital outflows. It is suggested that foreign investment capital can help developing countries reap the benefits of it, when the flows are steady, less-volatile and don't disrupt the financial stability of the economy (Tong and Wei, 2009 and Prasad *et.al.*, 2003).

Kose *et.al.* (2006, 2008) and Prasad and Rajan (2008) suggest that there could be threshold levels of institutional development only above which the benefits of capital flows exceed the costs. This could probably explain why the correlation between growth and the use of foreign capital in strongly positive for industrial economies (developed nations) but not for the low-income countries. In light of all these arguments, the macroeconomic debate on the free flow of capital seems to be far from any conclusive end.

In practice, capital flows to developing nations have grown substantially since the early 1990s, with selected Asian and Latin American countries receiving capital from the developed world in a large scale, owing to the belief in the positive fruits of liberalization. This surge in the movement of capital flows can be attributed to the slowdown in economic activity in the developed world then, followed by a concomitant improvement in the economic prospects of the recipient less developed world. Reinhart (2005) attributes the sustained decline in the interest rates in the industrial world as the most encouraging factor for these flows. Lower interest rates in developed nations attracted investors to the high returns offered by the Asian and Latin American countries.

India has emerged as one of the preferred destinations of the foreign investors lately. The industrial policy reforms of India post 1991 opened opportunities for foreign investment in various sectors including construction, power, and high priority manufacturing industries. The reforms have been in a gradual manner attracting large amount of foreign capital in the Indian economy. The limits and caps have been raised for equity holdings by foreign investors with a belief to boost the financial development of the economy. For instance, from 1991 to 2001, foreign investors could hold up to 24 per cent equity in any Indian firm and up to 20 per cent in a new private bank without prior approval. The Non-resident Indian (NRI)

investment was capped to 40 per cent. In 2001, the limit for foreign equity holding in private banks and the limit for NRI investment were both raised to 49 per cent. In 2013, the RBI hiked the limit for foreign investment in asset construction companies to 74 per cent from the earlier cap of 49 per cent.

With all this in background, the present study aims to capture the effects of capital inflows on the Indian economy undertaking a firm-level study of the manufacturing sector of India for the period 2001 to 2010. One of the advantages of using panel data over aggregate time-series is that it captures the underlying microeconomic biases which may otherwise be concealed by aggregation biases. It is a disaggregate data study and is thus expected to give greater insights into the performance of the economy, to capture the heterogeneity arising out of the behaviour of different entities (firms here) and to capture aspects of their behaviour.

The issues addressed in this study are as follows:

1. Do capital inflows enhance the growth performance of the Indian manufacturing firms?
2. Do these flows help only those firms which are already performing well and leave the low-performance firms segregated?[2]
3. How does the performance of firms differ with differing sources of finance? Do capital inflows necessarily play a significant role in increasing the growth trajectory of firms receiving them?

For the study, firm level data has been extracted from the PROWESS database which includes a normalized database of the financials covering around 1500 data items and ratios per company. The sample consists of 857 firms with 6158 observations. Generalized method of moments (GMM), Arellano and Bond (1991) from the class of dynamic panel-data estimation techniques is employed to estimate the financial performance indicators. This method allows to properly estimate models with endogenous lagged variables to avoid significant biases in the parameter estimates.

The results suggest that capital inflows positively impact the investment parameter of the firms, foreign capital helps the firms increase their investment capacities. However, in case of other performance indicators, the impact of capital inflows is not lucid. Also, for large firms this holds while for small firms there is no effect of capital inflows at all. When compared to other financing sources, capital inflows do not emerge as the main positively affecting source; internal finance seems to be a greater influence on the performance indicators.

The paper is organized as follows: the next section presents a review of the literature, section III presents some stylized facts on the Indian experience with capital inflows. In section IV, dataset, various sources of the data, variables and their derivatives employed are explained. In section V, the methodology employed is discussed followed by empirical analysis in section VI. Section VII presents the concluding remarks.

II. Literature Survey

[2] This issue is not undertaken in this report.

According to the neo-classical growth model, the free flow of capital between countries is beneficial for all. This leads to a more efficient allocation of financial resources increasing investment and employment opportunities further intensifying growth (Fischer, 1999, 2003). However, in various empirical studies this theoretical prediction does not justify itself. Large surge of capital flows have created substantial challenges for the policymakers in special concern with the EMEs (Henry, 2007; Ahmed and Zlate, 2013).

There have been surges in capital flows to EMEs since the early part of the last decade owing to liberalizing economic policies. For many of these EMEs, attracting global investors' attention has been a mixed blessing, of enhanced economic performance and that of macroeconomic imbalances and attendant financial crises and large current account deficits (Reinhart, 2005).

In many studies, the high degree of volatility associated with them has been named the major reason for this. Non-FDI types of capital inflows are said to increase a country's vulnerability to crises while skewness towards FDI flows is believed to alleviate the liquidity constraint (Tong and Wei, 2009). Even during crises, FDI flows have proved to be substantially stable implying that they are governed by concerns of economic prospects of receiving countries in the long-run (Prasad *et.al.* 2003).

In their study of effects of foreign bank entry in EMEs, Giannetti and Ongena (2009) find foreign bank lending to be beneficial for the young firms, even the unlisted ones. They find the bigger and already existing firms, which earlier depended on government or domestic market for their finances, to suffer in this case. Another study by Bluedorn *et.al.* (2013) finds that private capital flows are typically volatile for all countries, advanced or emerging across all point in time and this holds true for most types of flows (including bank, portfolio debt, and equity flows).

In terms of performance of macroeconomic variables, Brument and Dincer (2004) find positive innovations in capital inflows to appreciate the domestic currency, output and money supply and decrease in interest rates and prices in the short run. On the other hand, another study of the same economy by Cemenoglu and Yenturk (2005) argue that the surge of capital inflows leads to an increase in consumption and investment expenditures leading to increase in the pricing of non-tradable sectors, shifting the investment composition in favour of them at the expense of tradable sectors which does not add to the foreign exchange earning capacity of the country making it more vulnerable to currency shock which in the long run can trigger major problems like significant capital outflows, large capital account deficits and currency crises.

Numerous empirical studies trying to discern the effects of capital inflows on economic growth in developing countries have not produced any univocal results. However countries with well-developed financial and institutional framework tend to gain significantly from the inward flow of capital *esp.* FDI (Alfaro *et. al.*, 2004).

There have been large number of empirical and theoretical studies on capital inflows into India and their impact on the macroeconomic variables and on economic growth. And in the Indian context too, the wisdom of capital inflows remains a contentious issue. The proponents argue that such inflows would bring home scarce capital which would be helpful

in triggering investment and output (Rajan, 2009). However, the detractors have blamed capital account liberalization as being the root cause of the financial crises contagion and they also argue that the deck is particularly stacked against developing countries (Nachane, 2007). Specifically, though a positive correlation has been noted between measures of financial openness and growth, this correlation vanishes once other determinants of growth such as financial development, quality of institutions, and macroeconomic policies are controlled for (Kose et.al. 2009).

Though there is significant amount of work on international capital inflows on Indian economy on an aggregate level, disaggregate-level studies are scarce. The papers using aggregate data, in majority of the cases, have found mixed results on the impact of capital flows on Indian economic growth. Seth and Sucharita (2007) and Mazumdar (2005) argue that the amount of capital inflows to the country has neither been enough nor it has been utilized to its full potential. While Mohan (2008) and Kohli (2001) suggest that skilful management of foreign capital inflows is the key for making it pro-growth in India, especially with regards to the infrastructure projects. Shah and Patnaik (2005) assert that India has undoubtedly reaped benefits from the experience of foreign investments in the equity market.

Alfaro and Chari (2009) in their analysis of India's economic structure following the economic reforms, find significant growth in the assets, sales and profits by foreign firms. But Joseph and Reddy (2013) find no clear evidence of any increase in competitiveness and growth performance of domestic firms due to presence of foreign firms.

Therefore, despite the strong theoretical presumption that financial openness should boost growth in developing countries like India, the evidence on the growth benefits of financial openness remains elusive.

III. Capital Inflows: The Indian Experience

Indian experience with capital inflows can be divided into three main phases. In the first phase, from independence to the early 1980s, India's capital inflows were mainly restricted to multilateral and bilateral concessional finance. In the second phase, during the 1980s, when the current account deficit was widening, the major sources of inflows were the short-term borrowings and deposits from non-resident Indians which is part of the reason for the balance of payments crisis of 1991. The third phase started after the crisis of 1991 and the subsequent reforms. Since the reforms of the 1991, India has witnessed the opening up of the capital account in a phased manner. For example, from 1991 to 2001 foreign investors could hold up to 24 per cent equity in any Indian firm and up to 20 per cent in a new private bank without prior approval. The Non-resident Indian (NRI) investment was capped to 40 per cent. In 2001, the limit for foreign equity holding in private banks and the limit for NRI investment were both raised to 49 per cent. In 2013, the RBI further hiked the limit for foreign investment in asset reconstruction companies to 74 per cent from the earlier cap of 49 per cent. Thus, India has followed a managed capital account liberalization which is more like a process rather than an event. It is argued that this gradualist approach towards capital flow liberalization has helped India protect itself from the contagion effect of financial crises in emerging market economies of the 1990s and the recent global financial crisis (Verma and

Prakash, 2011). Goyal (2011) terms India's policy strategy as "middling through". She finds the deregulation strategy of India to be advantageous, protecting the economy against volatility until they are capable of handling volatility.

Chart I depicts the changing pattern of capital flows to the Indian economy in the last two decades. In the last decade (2000s), predominance of non-debt flows to debt flows can be seen. This is primarily due to the robust growth performance of the Indian economy leading to increase in foreign investors' confidence, investor friendly policies, moderate inflation, buoyant capital market, etc. (Verma and Prakash, 2011). Non-debt flows refer mainly to the Foreign Direct Investments (FDI) and Foreign Portfolio Investments (FPI).

Chart I here

Chart II depicts the composition of the total capital inflows post 2000-01. As can be seen, 2001-02 onwards the ratio of net debt flows to net non-debt flows has been quite low. In 2008-09, during the global financial crisis, both types of flows decreased. However, net non-debt inflows surged in the following year but not the net debt inflows. In the latter years, net non-debt inflows also increased.

Chart II here

As can be seen in Chart III, there has been a steady increase in net FDI flows to India since 2000-01. From 2006-07, manifold increase in net FDI inflows was witnessed. Also, even during the global financial crisis, the net FDI inflows were steady. There was no sudden fall in these flows unlike the other components of foreign inflows. FPI inflows, rightly considered as the volatile component of the capital inflows saw a massive outflow during the financial crisis. However, from the following year onwards, FPI flows also soared. ECBs, one of the major components of debt inflows have been in no steady manner; there have been wide fluctuations in ECBs.

Chart III here

Since 2001-02, there has been a continuous increase in the net capital inflows to India with the exception of the year of the global financial crisis during which the net capital inflows dropped to a record low (post 2000) owing to the fall in the levels of ECBs and FPI flows. One more thing worth noticing is that the year preceding the global financial crisis, *i.e.*2007-08, witnessed the greatest amount of net capital inflows to the Indian economy. As per the United Nations Conference on Trade and Development (2009) report titled "Assessing the Impact of the Current Financial and Economic Crisis on Global FDI Flows" India achieved a growth of 85.1 per cent in FDI inflows which was the highest globally for the period 2008-10. Also, UNCTAD Survey 2008-10 termed India as the second most preferred investment destination. Robust economic growth, an improved investment environment and opening up of critical sectors like telecommunications, civil aviation, refineries, construction, etc facilitated the surge of FDI inflows into India.

Chart IV here

IV. Data and Variables

The sample is constructed from the balance sheet and profit and loss account of company annual reports. Data is extracted from the PROWESS database, corporate data directory of the Center for Monitoring of Indian Economy (CMIE) that includes a normalized database of the financials covering around 1500 data items and ratios per company. RBI monthly bulletins are used to get data on price deflators for constructing replacement value of capital stock.[3] The study is based on firms of major industries in the manufacturing sector from 2001 to 2010. The choice of this period is based on data availability of some of the main variables[4].

The sample consists of 857 firms, listed as well as unlisted after the removal of missing observations and outliers.[5]

Variables Employed[6]:

Among the variables used in the analysis, the main variable of interest in the foreign capital inflows at the firm-level. There are two major components of it: equity and debt. The equity component[7] is calculated as the sum of equity held by foreign promoters, foreign institutional investors and foreign venture capital investors. The debt component is calculated as the sum of secured and unsecured foreign currency borrowings. Secured (unsecured) foreign currency borrowings, in turn, are composed of (unsecured) External Commercial Borrowings (including Euro convertible bonds) and secured (unsecured) foreign suppliers' credit.

Natural log of sales is used to represent size of the firms. To represent maturity of firms, natural log of age is taken. Age is defined as the difference between the years of incorporation of the firms from the year 2011. For leverage, two stock measures are considered: Short-term debt (STD) and Long-term debt (LTD). STD is defined as the loans taken from all sources for a period of less than 12 months. LTD is defined as the loans taken from all sources for a period of more than 12 months[8]. Additionally, interest coverage is used as the flow measure of leverage which represents debt servicing by firms. It is measured as the ratio of interest accrued[9] to profits before taxes, interest payments, dividends and amortization (PBTIDA).

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[3] Perpetual inventory method is employed to construct replacement value of capital stock. This is standard in the literature. Its method of computation is discussed in the appendix.

[4] For example, the variables measuring equity flows have data available only from 2001.

[5] Firms are chosen based on the following criteria:
(i) Data on year of incorporation should not be missing.
(ii) (ii) Manufactured sales of a firm should be at least 75 per cent of total sales for at least two-third of sample period.

[6] The construction of variables is explained in the appendix

[7] Proportion of equity shares (in terms of per cent) that are held by the foreign entities as of date.

[8] Two of debt component of Capital Inflows (secured and unsecured foreign suppliers' credit) are included in the STD as well, but since they constitute a very small portion of overall STD (less than 0.5 per cent), we have not changed the composition of STD while estimating Capital Inflows (debt). The calculations are given in the appendix.

[9] Interest payments on borrowings that were due for payment but were not paid as on the date of the balance sheet are termed as interest accrued and due (prowess database dictionary)

Among other variables, cash flows are considered. They are defined as the sum of retained profits and depreciation. In other words, cash flows is synonymous to internal finance of a firm. Firms with more liquidity are more likely to have greater financial strength than other.

Dividend payout is also considered for the study because firms performing well signal to the market by paying higher dividend. It is defined as the sum of common and preference dividends. Export sensitivity is also considered because firms which export more are more capable of surviving and doing well. It is defined as the ratio of export of goods (fob) to sales.

Firm-type is also considered by categorizing the firms into foreign, private (domestic), public and joint firms.

For capturing the effects of capital inflows on the firms' growth, five variables have been employed which are termed as the performance variables. They are: Sales accelerator, Tobin's q, Return on capital employed (ROCE), Investment (I) and Asset turnover ratio (ATR).

Sales accelerator is defined as the rate of growth of operating income (sales) of a firm in two consecutive years. Tobin's *q* is defined as the ratio of market value of a firm to its book value of assets. Market value of a firm is calculated by adding market value of equity and book value of debt. If the market value reflected solely the recorded assets of a company, Tobin's q would be 1.0. If Tobin's q is greater than 1.0, then the market value is greater than the value of the company's recorded assets. This suggests that the market value reflects some unmeasured or unrecorded assets of the company. High Tobin's q values encourage companies to invest more in capital because they are "worth" more than the price they paid for them[10]. Return on capital employed is calculated as PBDITA divided by capital employed. Capital employed is calculated as total assets minus current liabilities (or fixed assets plus working capital). It is used as a measure of the returns that a company is realizing from the capital it has employed.

Investment is defined as the difference the replacement value of capital stock in two consecutive years. Asset turnover ratio is defined as the ratio of revenue sales and total assets. Asset turnover ratio measures a firm's efficiency in generating sales/revenues. A higher number reflects a better picture of the firm's efficient use of its assets.

Descriptive Statistics:

The sample consists of 857 firms with 6158 observations. Categorizing the firms based on their sizes (derived from log sales), there are 356 small firms and 114 large firms; majority of the firms lie in the medium size with a number of 387.

Table 1 presents year-wise number of observations. Table 2 presents industry-wise number of observations. While the paper and tobacco industries have the minimum number of observations, chemical and textile industries have the maximum observations.

Table 3 presents the summary statistics. The table suggests that the sample comes from a wide range of distribution. The mean value of equity capital inflows is 7.631 per cent of total

[10] It is widely used as a proxy for firm performance when studying the relationship between firm performance and corporate governance.

equity holdings while the median value is close to zero (it's 0.030). In the case of debt capital inflows, the mean is 0.09 while the maximum value is 10.676. These imply that the distribution of capital inflows is highly skewed to the right.

In table 4, total number of observations for each type of firms is presented. There are 783 private firms with 5,604 observations. For the 53 foreign firms, there are 395 observations. Public firms are only 17 with 131 observations.

Table 5 presents correlation matrix of the variables under study. As can be seen, most of the variables are significantly correlated with the performance variables.

The graphs for yearly data of the debt and equity capital inflows are shown in the appendix (figures 1 and 2)

Figures 1 and 2 present the year-wise equity and debt inflows to India respectively. As is evident from figure 1, debt inflows started decreasing from 2009 as a result of the ongoing financial crisis in the global economy then. However, equity flows show a differing pattern over the years.

V. Methodology

The present sample has a large number of cross section units but a small time period (of just 10 years and also effectively for only 8 years because of the employment of replacement value of capital stock). This condition is quite typical of micro panel data on individual entities and this calls for estimation techniques which do not need large time dimensions to render consistent estimates of the parameters. Also, because of the short time period, even the initial conditions/observations play an important role. Hence, those methods are taken into consideration that do not require strict exogenous explanatory variables (or instruments) and that can be extended to models with predetermined (or endogenous) explanatory variables. This is taken into account since strict exogeneity rules out the feedback or linkage effects of current or past shocks on current values of the variable(s). For the sample under study, taking the above points into account, the class of Method of Moments (GMM) estimators is widely used in the literature.

The GMM procedure allows analysis of dynamic relationship in a single equation combining firm heterogeneity and aggregation biases. It is a widely used estimation method and produces consistent and more efficient estimates for the dynamic panels.

The first-step GMM estimator is considered to be consistent in the presence of homoscedasticity. However, a two-step GMM estimator is considered to be more efficient in case the disturbance terms are heteroscedastic. The standard errors are likely to be smaller in the second-step estimation because of small sample bias. Therefore, for hypothesis testing, inferences form one-step estimation is considered to be more useful. For deciding on the model, estimates from two-step GMM is more suitable. (Arellano and Bond, 1991)

The empirical model to examine the impact of capital inflows on the growth of firms can be formulated as:

$$PV_{i,t} = \alpha + \sum_{\tau=t-k}^{t-1} \beta_\tau PV_{i,\tau} + \sum_{\tau=t-k}^{t-1} \gamma_\tau X_{i,\tau} + \sum_{\tau=t-k}^{t-1} \delta_\tau CI_{i,\tau} + \mu_t + \omega_i + \epsilon_{i,t}$$

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where $i = 1, 2\ldots$,n (number of firms) and $t = 1, 2,\ldots$N (time period)

$PV_{i,t}$ is the vector of performance variable at time t.

The vector of variables $X_{i,\tau}$ is the vector of control variables that includes size, age, leverage, asset tangibility, dividend payout and export sensitivity to control for idiosyncratic effects on firms' financial performance.

CI is the vector of capital inflows.

β , γ and δ are slope coefficient matrices that are to be estimated for each lag distance k.

ω_i is an unobserved firms' fixed effect; μ_t is a time fixed effect; $\epsilon_{i,t}$ is a serially uncorrelated error term.

For estimating the impact of differing sources of finance on the performance variables, the following specification can be employed.

$$PV_{i,t} = \alpha + \sum_{\tau=t-k}^{t-1} \beta_\tau PV_{i,\tau} + \sum_{\tau=t-k}^{t-1} \gamma_\tau X_{i,\tau} + \sum_{\tau=t-k}^{t-1} \delta_\tau FV_{i,\tau} + \mu_t + \omega_i + \epsilon_{i,t}$$

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here $FV_{i,t}$ denotes the vector of different sources of finance of firms at a particular time period. This includes capital inflows, internal finance (cash flows) and finance from the domestic market. $X_{i,t}$ denotes the usual set of control variables but without short term and long term debt. Short-term debt in this case, is used as the domestic finance variable.

VI. Empirical Findings

Fisher type tests are employed to check unit-root of the variables and all of them are found to be stationary. This can be because of the small time horizon. Also, there is no robust check for panel data with smaller time-series and with gaps in panels.

The empirical model 1 is estimated for the performance variables of the firms under study for the period of 2001 to 2010 to explain the implication of capital inflows to firms' financial performance. Table I presents the one-step GMM estimation results of the effect of capital inflows on the firms' financial performance.

As a robustness check, in table IA, the estimation results for all those firms with positive capital inflows over the years are presented. Table IB presents the effects of capital inflows on the financial performance of large firms followed by table IC that presents the effects on small firms.

VI A. The effect of capital inflows on the financial performance of firms

Table I presents the first set of GMM estimations of the impact of capital inflows on firms' financial performance. The parameters on the present and lagged values of equity and debt flows have a mix of both positive and negative signs, varying between -0.006 to 0.047 (not significant at all the places). However, in case of equity inflows, the coefficient associated with its first lag is positive and significant on accelerator. While on Tobin's q, equity inflows has a positive and significant coefficient but its lag has a negative and significant coefficient. In case of Investment, only the equity inflows (at time t) has a positive and significant coefficient implying that investment is initiated and positively influenced by them.

However, the equity inflows seem to have no impact on ATR and ROCE.

In case of debt inflows, their first lag has a positive and significant coefficient on the performance variable Tobin's q. While in the case of investment, the debt inflows reveals positive and significant coefficients in its present (at time t) as well as its second lagged value. In its second lag, debt inflows has a positive but not highly significant coefficient on ATR.

Overall, Investment is one performance indicator which seems to be positively influenced by the capital inflows. Rest of the performance indicators don't seem to be greatly influenced due to these foreign inflows, they show an ambiguous pattern.

VI A.1. Robustness check: firms with positive capital inflows

As a robustness check, in table IA the second set of estimation results is presented. In this case, firms with only positive inflows have been taken. This aims to present a better picture of whether capital flows have helped firms receiving them enhance their financial performance.

The coefficients associated with the equity capital inflows and its lags are positive and significant on ROCE and Investment. The equity inflows positively affects Tobin's q as well. However, on ATR, the first lag of equity flows has a positive and significant coefficient while the second lag has a negative and significant coefficient.

These estimated coefficients indicate that investment is indeed augmented by the inflow of foreign capital. However, the other performance indicators don't reveal any clear picture.

VI A.1 Effect of capital inflows on performance of firms based on their size.

Tables IC and ID present the set of estimation results for the performance indicators of large and small firms respectively.

For large firms (25 per cent in the upper quartile based on log sales), in case of ATR, the coefficients of equity flows as well as the second lag of debt flows are negative but not highly significant (at 5 per cent). For accelerator, the signs are mixed. Debt flows impact ROCE positively and significantly while equity flows have no effect on it. The coefficients associated with equity and debt flows on Tobin's q are mostly positive and significant. For investment, the coefficient on equity flows is positive and significant but the debt flows have no significant impact on it.

In case of small firms, the effect of capital inflows is evident only on Tobin's q and ROCE. While the coefficient of second lag of equity flows is significant and negative on ROCE, on Tobin's q the coefficient of first lag is positive and significant (only at 5 per cent) but of the

second lag is negative and significant (only at 10 per cent). Coefficient associated for debt flows is negative and significant only for Tobin's q.

Overall, the large firms in the sample seem to be benefitting from the inflows of foreign capital, the effect on small firms is negligible.

VI B. The effect of different financing sources (foreign, domestic and internal) on firms' performance

After examining the impact of capital inflows on firms' financial performance, another issue of interest is how do different sources of financing impact the performance indicators? Do the variables of equity and debt inflows affect the performance of firms more than other financing sources *viz.* domestic debt market and internal finance?

In the first set of estimations, all the firms are taken while in the second set, for robustness check, firms with only positive inflows are taken.

Table II reports the results of the impact of capital inflows and firm-specific characteristics on the performance indicators.

In case of ATR, the coefficients of equity and debt inflows are significant but negative. While internal finance has a positive and significant coefficient, its first lag has a negative sign but not with high significance (only at 10 per cent). Domestic finance has a negative and significant coefficient. Overall, in this case, no financing source presents any clear picture of its impact on ATR. A similar pattern is observed for ROCE.

In case of Tobin's q, the coefficients of equity inflows (0.046), the first lag of debt inflows (0.126) and internal finance (0.132) are significant and positive. As is evident, internal finance seems to be positively affecting Tobin's q and in greater intensity than the two foreign sources of financing.

On investment, equity inflows and first lag of debt inflows have positive and significant coefficients of 0.006 and 0.77 respectively. The lags of internal finance have positive and highly significant coefficients too (0.08 and 0.046). Internal finance and domestic finance have negative and significant coefficients while the first lag of domestic finance has a positive and significant coefficient (0.073). Here, capital inflows seem to be benefitting the investment opportunities of firms.

However, capital inflows don't emerge as the greatest positive influence, as a financing source, on the performance indicators of firms.

VI.B.1 Robustness check: firms with positive capital inflows

Table IIA presents the second set of estimation results for firms with positive capital inflows. In this case, internal finance emerges as the major influential factor among the financing sources, positively affecting most of the performance indicators and in much greater intensity compared to the domestic and foreign financing sources.

Also, there is no significant difference in the mean values of the performance variables of firms receiving capital inflows and not receiving them. Two dummies D1 and D2 were generated for firms receiving equity flows and debt flows respectively. the coefficients associated with these two dummies did not come out to be significant implying that there is no significant difference between

the mean performances of firms receiving foreign inflows (equity as well as debt) and those not receiving.

VII. Conclusion

There is a vast literature on the wisdom of capital inflows to developing countries. This flow of capital would enable the financial resources to flow from rich nations to poor nations reducing the cost of capital in recipient nations, enhancing their investment rates further leading to an increase in output and employment opportunities. However, this foreign capital can prove to be detrimental to the recipient countries which are mostly EMEs by exposing them to disruptions and disturbances abroad leading to surges of capital inflows of massive capital outflows.

In case of India, post the liberalization policy of 1991, capital inflows to India started increasing. There is a huge amount of literature on the impact of capital inflows on the Indian economy. While aggregate data based studies in this concern are immense, disaggregate data based studies are scarce.

To explore the issue of the impact of capital inflows on the firm performance, firm data from the PROWESS database are analyzed. GMM one-step estimation method is employed that allows the analysis of dynamic relationship in a single equation taking into account both firm heterogeneity as well as aggregation biases.

The results suggest that capital inflows, both equity and debt flows positively and significantly impact the investment opportunities of firms. That is, foreign inflow of money helps boost investment of firms. However, capital inflows do not substantially impact the other performance variables. This can be interpreted as: foreign money helps increase investment capacity of firms but their impact on the overall financial performance of the firms is ambiguous. Also, the large firms in the sample seem to be benefitting from the inflows of foreign capital, the effect on small firms is negligible. This implies that firms who are already large (with large amount of sales) benefit from the inflows but the smaller firms do not gain with this capital movement.

In terms of the impact of different financing sources on the firms' performance, internal finance emerge as a more (positive) influence on the performance indicators as compared to foreign finance. This result is somewhere close to the pecking order theory.

The overall empirical evidences seem to support the view regarding capital inflows that they augment the investment opportunities of firms in developing countries (like India). However, there is no clear picture of the growth of firms related to them.

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Appendix A: Replacement value of capital stock

$K_{i,t}$ represents the capital stock of firm *i* at the beginning of period *t*. The replacement value of capital stock can be estimated from book value using the Perpetual Inventory Method[11] as follows:

$$K_{i,t} = \left[K_{i,t-1}\left(\frac{P_t^K}{P_{t-1}^K}\right) + i_{i,t}\right]\left(1 - \frac{1}{L_t}\right) \tag{A.1}$$

here, P_t^K denotes the price of capital goods, $i_{i,t}$ is firm's capital spending, L_t is average life of capital goods implicit in the firm's depreciation costs.

L_t is computed using the double declining balance method[12] as

$$L_t = \frac{K_{i,t-1}^r + i_{i,t}}{D_{i,t}} \tag{A.2}$$

with K_t^r denoting the reported value of the capital stock at period t and $D_{i,t}$ denoting depreciation in period t.

The following assumptions are made in this computation:

- Firm's capital has an identical useful life L_t.
- Firm's initial end-of-period capital stock equals the book value of net fixed assets in current rupees.
- Firms use the straight-line method of depreciation and actual depreciation is exponential with depreciation $1/L_t$.
- All investments are made at the beginning of the year and all depreciation is subtracted at the end of the year.

[11] See Salinger and Summers (1983), Gomes (2001).

[12] See Gomes (2001).

Appendix B: Tables, Charts and Figures

Table: 1 Year-wise no. of obs.

Year	Freq.
2002	666
2003	662
2004	665
2005	643
2006	697
2007	710
2008	722
2009	706
2010	687
Total	6158

Table :2 Industry-wise no of observations in the sample

NIC	Industry name	Freq.
10	Manufacture of Food Products	534
11	Manufacture of Beverages	139
12	Manufacture of tobacco products	9
13	Manufacture of textiles	872
14	Manufacture of wearing apparel	48
15	Manufacture of leather and related products	43
16	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plating materials	46
17	Manufacture of paper and paper products	199
18	Printing and Reproductioon of recorded media	2
19	Manufacture of Coke and refined petroleum products	80
20	Manufacture of Chemicals and Chemical Products	1,055
21	Manufacture of pharmaceuticals, medicinal Chemical and botanical products	323
22	Manufacture of rubber and plastic products	522
23	Manufacture of other non-metallic mineral products	406
24	Manufacture of basic metals	589
25	Manufacture of fabricated metal products, except machinery and equipment	98
26	Manufacture of Computer, electronic and optical products	135
27	Manufacture of electrical equipment	219
28	Manufacture of machinery and equipment n.e.c.	260
29	Manufacture of motor vehicles, trailers and semi-trailers	59
30	Manufacture of other transport equipment	470
31	Manufacture of Furniture	0

32	Other Manufacturing	50
	Total	6158

Table 3: Summary Statistics

Variable	Max	Mean	Min	Median	SD
ATR	7.745	1.094	0.000	0.954	0.708
ROCE	7.034	0.161	-11.556	0.150	0.270
Accelerator	10.507	0.166	-0.991	0.122	0.460
Tobin's q	9.717	1.088	0.028	0.826	0.868
Investment	0.994	0.012	-47.140	0.069	1.184
Equity CI	97.450	7.631	0.000	0.030	16.123
Debt CI	10.676	0.090	0.000	0.000	0.367
Age	4.736	3.419	1.609	3.332	0.467
Size	12.208	5.212	-4.605	5.142	1.634
Asset tangibility	4.955	0.806	0.033	0.774	0.353
STD	23.517	0.615	0.000	0.318	1.287
LTD	44.943	0.684	0.000	0.432	1.297
Export Sensitivity	4.794	0.169	0.000	0.060	0.244
Dividend Payout	1.965	0.028	0.000	0.005	0.084
Cash flows	13.696	0.207	-6.130	0.132	0.526

Table: 4 Firm types and their frequency

Types of firms	Freq.	No.
Public	131	17
Private	5,604	783
Foreign	395	53
Joint	28	4
Total	6158	857

Table: 5 Correlation matrix

	ATR	ROCE	Accelerator	Tobin's q	Invest	Equity CI	Debt CI	Size	Asset tang	Leverage	Export Sens	Cash flows
ATR	1											
ROCE	0.134*	1										
Accelerator	0.064*	0.066*	1									
Tobin's q	0.002	0.108*	0.084*	1								
Investment	-0.003	-0.006	0.043*	0.0601*	1							
Equity CI	-0.034*	0.077*	0.015	0.2559*	0.027*	1						
Debt CI	-0.082*	-0.027*	0.020	0.0730*	0.026*	0.081*	1					
Size	0.218*	0.119*	0.075*	0.1370*	0.125*	0.209*	0.100*	1				
Asset tang	-0.091*	-0.102*	-0.032*	-0.0291*	-0.017	-0.136*	-0.140*	-0.342*	1			
Leverage	-0.03*	-0.068*	-0.006	0.0248	-0.297*	-0.075*	0.292*	-0.153*	-0.185*	1		
Export Sensitivity	-0.139*	-0.032*	0.007	0.0315*	0.001	0.045*	0.13*	0.05*	-0.111*	0.0902*	1	
Cash flows	0.088*	0.246*	0.063*	0.0748*	-0.363*	0.044*	0.065*	-0.004	-0.196*	0.1990*	0.0429*	1

Table I: GMM estimation for performance variables

	ATR	ROCE	Accelerator	Tobin's q	Investment
Self					
lag 1	0.455***	0.008	-0.300***	-0.048*	-0.021
lag 2	-0.139**	-0.276***	-0.112***	-0.010	0.000
Equity CI	-0.002	0.003	-0.006*	0.047***	0.007***
Lag 1	0.001	0.000	0.004**	0.001	0.000
Lag 2	-0.003	-0.001	-0.006***	-0.006**	0.001
Debt CI	-0.020	0.007	0.010	-0.021	0.117***
Lag 1	-0.002	-0.018	0.030	0.095*	-0.012
Lag 2	-0.027*	0.000	-0.035	-0.060	0.025*
Log sales				0.060	0.020
Lag 1				-0.115*	-0.063***
Lag 2				-0.175***	0.001
Asset Tangibility	0.785***	-0.409***	-0.353*	0.193	-0.061
Lag 1	-0.560***	0.065	-0.002	0.365**	-0.024

Lag 2	0.297***	0.078*	0.511***	0.249*	-0.040
Export Sensitivity	0.132*	-0.094	0.350**	0.564**	0.066
Lag 1	-0.031	-0.050	-0.207**	0.212*	-0.052
Lag 2	0.052	-0.021	-0.072	0.285**	-0.021
STD	-0.033***	-0.019*	-0.042**	-0.041*	-0.064***
Lag 1	-0.010	0.002	-0.012	-0.023	0.058***
Lag 2	-0.008	0.003	-0.012	0.026*	0.007
LTD	-0.021*	-0.048***	-0.013	-0.009	-0.112***
Lag 1	0.035***	0.020**	0.030*	0.016	0.096***
Lag 2	0.022***	0.007	0.038***	0.004	-0.021***

Table IA: Robustness Check for performance variables

	ATR	ROCE	Accelerator	Tobin's q	Investment
Self					
lag 1	0.285***	-0.270***	-0.309***	-0.110**	-0.255***
lag 2	-0.007	-0.679***	0.080*	-0.127**	-0.047***
Equity CI	-0.002	0.002**	-0.007*	0.026***	0.004***
Lag 1	0.003*	0.001**	0.002	-0.002	0.001*
Lag 2	-0.003**	0.000	-0.001	-0.005	0.001
Debt CI	0.061*	0.024*	-0.006	0.071	0.044*
Lag 1	0.017	0.022*	-0.034	0.512***	-0.062**
Lag 2	-0.066*	0.021*	-0.096	-0.066	0.047*
Log sales				0.153	0.109***
Lag 1				-0.342*	-0.051*
Lag 2				-0.236*	-0.083***
Asset Tangibility	0.638***	-0.123**	0.231	-1.022*	-0.253**
Lag 1	-0.463***	-0.015	0.203	0.568	0.044
Lag 2	0.300**	0.209***	0.270	0.949**	-0.166**
Export Sensitivity	0.054	0.121**	1.121***	0.463	0.018
Lag 1	0.083	-0.069*	-0.505*	0.337	-0.113*
Lag 2	0.110	0.091**	-0.068	0.538	-0.078
STD	-0.028	-0.005	-0.102*	-0.022	-0.067***
Lag 1	-0.026	-0.002	-0.067	-0.359**	0.096***
Lag 2	0.050	0.007	0.044	0.231*	-0.002

LTD	-0.122***	-0.070***	-0.067	-0.003	-0.112***
Lag 1	-0.004	-0.034***	0.026	-0.148*	0.119***
Lag 2	0.052*	-0.034***	0.013	-0.100	-0.083***

Table IB: Impact of capital inflows on the performance variables of large firms

	ATR	ROCE	Accelerator	Tobin's q	Invest
Self					
Lag 1	0.280***	-0.099***	-0.350***	-0.086*	-0.207***
Lag 2	0.057*	-0.085***	0.025*	-0.071*	-0.069*
Equity CI	-0.005**	-0.001	-0.007***	0.039***	0.003**
Lag 1	0.002	0.001	-0.002*	-0.006	0.000
Lag 2	-0.001	-0.001	0.002*	-0.010**	0.000
Debt CI	0.041	0.049*	-0.074*	0.335*	-0.015
Lag 1	-0.007	0.026	-0.070*	0.320**	-0.027
Lag 2	-0.087*	0.006	0.000	-0.197*	0.006
Log Sales	0.438***	0.099***	1.650***	0.444**	0.172***
Lag 1	-0.284***	-0.011	-0.978***	-0.475**	-0.113***
Lag 2	-0.127***	-0.073**	-0.548***	-0.145	-0.069**
Asset Tang	0.936***	0.478***	0.453*	0.572	0.024
Lag 1	-0.518***	0.144**	0.047	0.584*	-0.081*
Lag 2	0.224**	0.029	-0.143*	0.252	-0.134**
Export Sens.	-0.253*	-0.078	0.396**	0.309	0.126
Lag 1	0.402***	0.087	-0.045	0.363	-0.067
Lag 2	0.163	0.007	-0.102	0.214	-0.063
STD	-0.052***	-0.001	0.000	0.046	-0.037***
Lag 1	0.029*	0.005	-0.001	0.009	0.016*
Lag 2	-0.023*	0.006	-0.004	0.016	0.000
LTD	-0.083**	-0.065**	0.010	-0.186*	-0.034*
Lag 1	0.024	-0.013	0.010	0.025	0.060***
Lag 2	0.118***	-0.011	-0.056**	0.014	-0.038**

Table IC: Impact of capital inflows on performance variables of small firms

	ATR	ROCE	Accelerator	Tobin's q	Investment
Self					
Lag 1	0.244***	-0.186***	-0.280***	0.099*	-0.050*
Lag 2	0.079*	-0.258***	-0.123***	-0.027	0.007*

Equity CI	0.002	0.000	0.000	-0.003	0.000
Lag 1	0.000	-0.002	0.001	0.011**	0.000
Lag 2	-0.002	-0.006**	-0.001	-0.007*	-0.001
Debt CI	0.035	-0.087	0.049	-0.600***	0.118
Lag 1	-0.031	-0.049	-0.080	-0.014	-0.067
Lag 2	-0.047	0.018	-0.003	0.090	0.079
Log Sales	0.318***	0.040	0.755***	0.037	0.022
Lag 1	-0.106***	-0.009	-0.880***	0.055	-0.006
Lag 2	-0.058*	-0.054	-0.258***	-0.076	0.015
Asset Tang.	0.498***	-0.146	-0.109	0.639**	-0.012
Lag 1	-0.206**	0.103	-0.086	0.116	0.074
Lag 2	0.012	0.202*	0.212**	0.099	-0.035
Export Sens.	-0.069	-0.013	-0.052	0.310*	0.070
Lag 1	-0.104**	-0.069	-0.110*	-0.104	-0.070
Lag 2	0.023	-0.058	0.059	0.099	-0.046
STD	-0.025*	-0.013	-0.028*	0.006	-0.046**
Lag 1	-0.003	0.022	-0.006	0.009	0.086***
Lag 2	-0.014	0.024*	-0.015	0.061**	0.013
LTD	-0.063***	-0.084***	-0.057***	0.003	-0.147***
Lag 1	0.052***	0.015	0.011	-0.051*	0.097***
Lag 2	0.024**	-0.012	0.014	0.000	-0.016

Table II: GMM estimation of performance variables with different sources of finance

	ATR	ROCE	Accelerator	Tobin's q	Investment
Self					
Lag 1	0.379***	-0.142**	-0.321***	-0.032	0.042
Lag 2	0.116***	-0.135**	-0.064***	-0.011	0.002
Equity CI	-0.005***	0.001	-0.001	0.046***	0.006***
Lag 1	0.000	-0.001	0.000	0.000	0.000
Lag 2	-0.001*	0.000	0.001	-0.006**	0.000
Debt CI	-0.072***	-0.063**	-0.048**	-0.007	0.020
Lag 1	0.016	0.009	0.005	0.126**	0.077***
Lag 2	-0.007	0.012	-0.009	-0.052	0.001

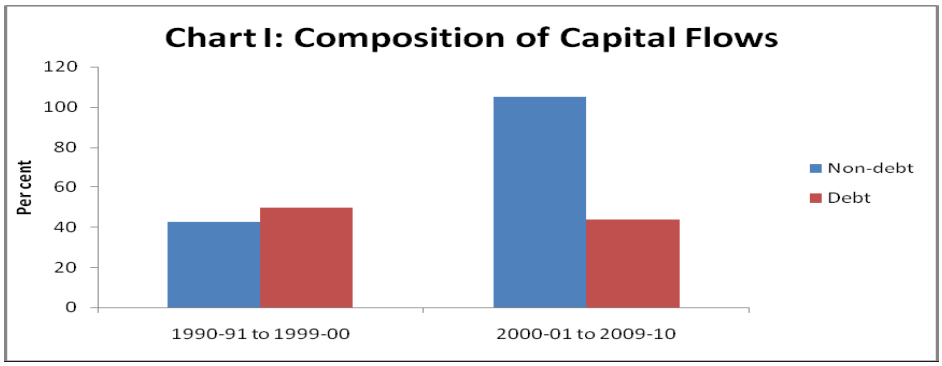
Internal Fin	0.082***	0.164***	0.001	0.132***	-0.127***
Lag 1	-0.026**	-0.026**	-0.010	-0.045*	0.080***
Lag 2	0.001	0.001	-0.005	-0.048*	0.046***
log sales	0.387***	0.036*	1.199***	0.037	0.046**
Lag 1	-0.259***	0.001	-0.891***	-0.110*	-0.077***
Lag 2	-0.133***	-0.043**	-0.308***	-0.156***	-0.004
Asset Tang	1.069***	-0.207**	0.218**	0.231	-0.118*
Lag 1	-0.463***	0.071	0.020	0.279*	0.030
Lag 2	0.006	0.049	0.171***	0.228*	-0.027
Export Sens.	0.002	-0.081	-0.010	0.578**	0.041
Lag 1	-0.027	-0.037	-0.120**	0.208*	-0.081*
Lag 2	0.071*	0.005	0.092**	0.275*	-0.002
Domestic Fin	-0.029***	-0.033***	-0.013*	-0.035*	-0.077***
Lag 1	-0.003	-0.003	-0.005	-0.018	0.073***
Lag 2	0.001	0.004	0.001	0.033*	0.003

Table II A: GMM estimation of performance variables with different sources of finance (robustness check)

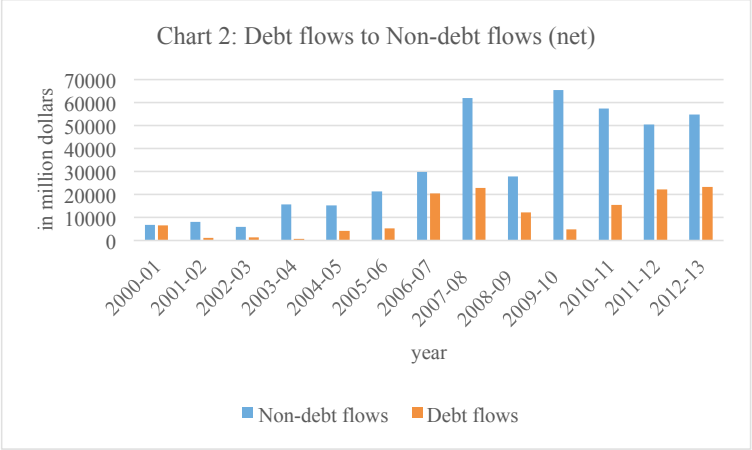
	ATR	ROCE	Accelerator	Tobin's q	Investment
Self					
Lag 1	0.403***	-0.250***	0.068	-0.137**	-0.346***
Lag 2	0.034	-0.652***	0.038*	-0.143***	-0.002
Equity CI	-0.002*	0.001*	-0.006***	0.030***	0.002*
Lag 1	0.002*	0.001**	0.000	-0.001	0.001
Lag 2	-0.002*	-0.001	0.002*	-0.006	0.001
Debt CI	-0.044*	-0.025**	-0.038	0.048	-0.026
Lag 1	0.033	-0.004	-0.032	0.300**	0.085***
Lag 2	-0.005	-0.010	-0.076**	-0.174*	-0.009
Internal Fin	0.162***	0.209***	-0.165**	1.003***	-0.270***
Lag 1	-0.051	0.078***	0.110*	-0.198	0.138***
Lag 2	-0.015	0.171***	0.005	0.002	0.242***
log sales	0.414***	0.044**	1.807***	0.014	0.185***
Lag 1	-0.303***	-0.028*	-1.680***	-0.275*	-0.106***
Lag 2	-0.095**	-0.007	0.050	-0.132	-0.112***

Asset Tang	0.877***	-0.046	0.805***	-0.841*	-0.267**
Lag 1	-0.526**	-0.010	0.203*	0.357	0.115*
Lag 2	0.145*	0.203***	-0.266**	1.011**	-0.113*
Export Sens.	-0.044	0.080*	0.195	0.981*	-0.086
Lag 1	0.250**	-0.032	-0.061	0.457	-0.103
Lag 2	0.093	0.112***	-0.091	0.692*	-0.066
Domestic Fin	-0.002	0.021*	-0.001	0.076	-0.120***
Lag 1	-0.024	-0.052***	0.001	-0.538***	0.097***
Lag 2	0.079***	0.020*	-0.033	0.328**	0.014

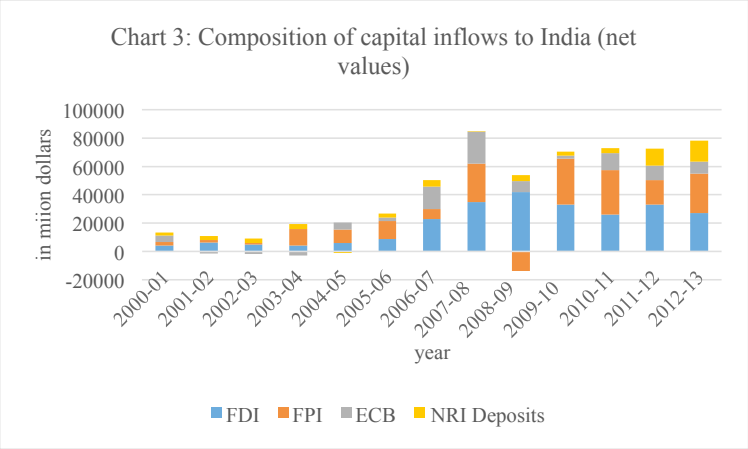
Charts



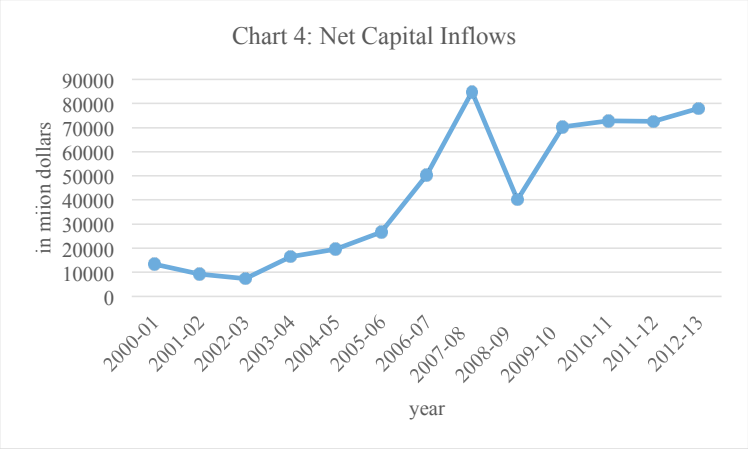
Source: Verma and Prakash (2011)



Source: RBI, www.rbi.org.in



Source: RBI, www.rbi.org.in



Source: RBI, www.rbi.org.in

Figures

Figure 1: Year-wise equity capital inflows to India

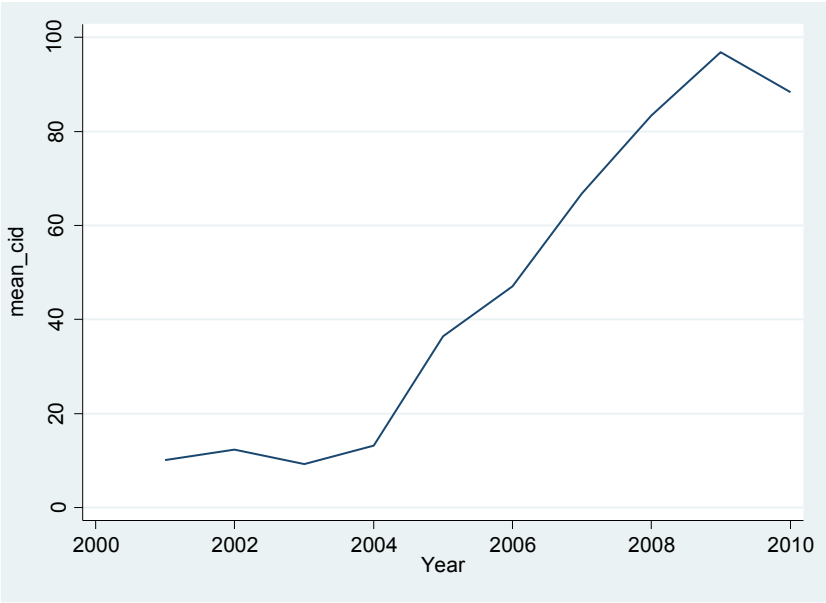
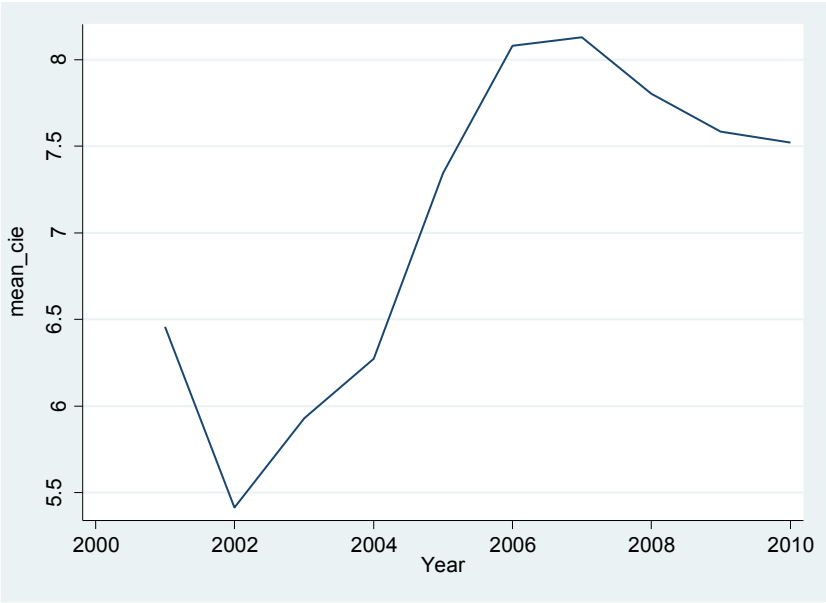


Figure 2: Year-wise debt capital inflows to India



Appendix C: Construction of Variables

1. Capital inflows equity = Foreign Promoters + Foreign Institutional Investors + Foreign Venture Capital Investors (all in % share of equity)
2. Capital Inflows Debt = secured + unsecured foreign currency borrowings
3. Age = 2011 – year of incorporation
4. Sales Accelerator = (sales (t) – sales (t-1))/sales(t-1)
5. Dividend = Final dividend (including special dividend) + Preference dividend
6. Leverage:
   (i) Short-term debt = secured short term bank borrowings + secured short term financial institutional borrowings + secured deferred credit + secured domestic suppliers credit + secured foreign suppliers credit + unsecured short term bank borrowings + unsecured deferred credit + unsecured domestic suppliers credit + unsecured foreign suppliers credit + commercial papers + current portion of secured and unsecured long term debt and interest accrued
   (ii) Long-term debt = Borrowings – Short-term debt
7. Export Sensitivity = Export of goods(fob) / sales
8. Tobin's Q
   (i) Market value of equity = Shares outstanding * closing price
   (ii) Market value of a firm = market value of equity + Borrowings
   (iii) Tobin's Q = Market value of a firm/ assets
9. Return on capital employed = PBDITA/capital employed; Capital employed = assets – current liabilities
10. Book value of fixed capital stock
    (i) Book value of capital = Plant & machinery / computers / electrical installations + Transport & communication equipment / infrastructure
    (ii) Investment (Plant & machinery) = Plant & machinery / computers / electrical installations (t) - Plant & machinery / computers / electrical installations (t-1)
    (iii) Investment (Transport & communication) = Transport & communication equipment / infrastructure (t) - Transport & communication equipment / infrastructure (t-1)
    (iv) Book Investment = Investment (Plant & machinery) + Investment (Transport & communication)
11. Life of capital stock = [book value of capital (t-1) + Book Investment]/depreciation
12. Replacement value of capital stock[13] :
    Capital = [Book value of capital (t-1) * (price index /price index (t-1)) + Book Investment] *[1-1/ Life of capital stock]
13. Investment = capital – capital (t-1)
14. Asset Tangibility = Gross fixed assets / total assets
15. Asset turnover ratio = sales/total assets

[13] We call it capital instead of replacement value of capital stock in our paper.