

Internal funds and investment financing by Indian manufacturing firms

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Abstract

Objectives: The study investigates the sources of investment financing and easiness of raising external funds through capital market by Indian manufacturing firms after economic reforms.

Methods: A balanced panel of 180 Indian private sector manufacturing firms operating in different areas and producing a wide range of products is chosen from listed BSE-500 firms and divided into four categories by developing a composite index. "Augmented Sales Accelerator" equation has been employed and estimated by Panel data regression technique. Second Stage Least Squares (2SLS) method is used to avoid measurement error and endogeneity problems.

Findings: The result indicates a wide difference between various categories of firms with respect to asset size and financing pattern. As compared to all firms the average cash flow sensitivity is very high for smaller firms (0.49) particularly during 1990s which reflects reliance on internal funds and difficulty in raising external funds for investment projects. Sales income seems to be highly significant for larger firms and borrowings from external sources are important for all categories of firms in investment financing. The overall finding demonstrates that old, experienced and large firms have easy access of external funds from the capital market and thus, less reliant on internal funds while smaller firms are not. There is indication that due to various reform measures in financial market over the period of time, the capital market constraint is declining which is evident from reduced investment cash flow sensitivity for smaller firms since year 2001 onwards.

Application: This study used advanced methodology for analysis and takes into account the balance sheet of only private manufacturing firms which are not subject to financing through government budgetary provisions.

Keywords: Internal Funds, Investment, Cash Flow, Manufacturing, Economic Reforms.

1. Introduction

Manufacturing holds a key position in the Indian economy, accounting for nearly 17 per cent to Gross Value Added and employing nearly 12% of India's labour force*. This sector is treated as the core of overall industrial sector and regarded as backbone for any economy. The role of this sector becomes even more important when it comes for a transitional economy, since it is expected to be an engine for the growth and major absorber of labour force. Additionally with increasing returns to scale and as a major source of income and employment it would be expected to eliminate the poverty levels rapidly.

Manufacturing firms are considered as the engines of growth for any economy. Investments by these firms act as a fuel to run these engines. When there is need for investment and expansion, firms are in need of finance. A firm can choose whether to finance its activities with internally generated funds, like retained profits, or externally managed funds, like debt, equity or a combination of these. The various means of financing investment represent the financial structure of an enterprise. According to Franco Modigliani and Merton Miller [1], under perfect capital markets capital structure is irrelevant and internal and external finance are perfect substitutes of each other. Therefore it does not matter whether investment is financed by debt, equity or internal funds. They referred it as "Financial Irrelevance Theorem" according to which, in a world without market frictions (no taxes, no transaction charges), value of the firm and its overall costs of capital are independent of its choice of capital structure. This theorem assumed that all firms have easy and equal access to capital market, and firms' responses to changes in the cost of capital differ only because of difference in investment demand in a perfect capital market. However, the notion of Financial Irrelevance has been challenged by many empirical researches and studies from western developed economies signifies the presence of a "Financing Hierarchy" caused by market imperfections and friction, in which internal funds have a cost

advantage over new debt or equity issuance. In fact there are many reasons which make internal funds less costly as compared to external funds in the real world. Among the most prominent factors that led the divergence in the two types of funds are transaction costs, tax advantages, agency problems, cost of financial distress and most importantly, asymmetric information. Empirically, the importance of financial factors on investment behaviour of firms' has been emphasised as early as in late 1950s, by the work of Meyer and Kuh (1957) [2] who demonstrated the significance of financing constraints on Firm-level business investment. Empirical results from developed countries show that internal funds have an important influence on firms' investment financing and there seems to be a positive association between the two. If the cash flow (proxy for internal funds) which is a measure of liquidity of a firm is greater, the investment spending will also be greater. It is argued that an external fund is costlier than internal fund and an increase in current cash flow directly increases the stock of low cost internal funds which may be used for current investment. Furthermore with the increase in current cash flow, the firms' net worth also rises and it leads to higher valuation of the firms' position in the market. The net worth of the firms also acts as its collateral in the financial market and higher valuation of the firm in turn discourages premium on external funds. Therefore, increase in the cash flow leads to an increase in the internal funds in the form of increased stocks of funds and simultaneously availability of low cost external funds due to increase in the net worth of the firm [3].

India opened its economy during early 1990s and introduced significant liberalisation measures in almost all sectors including financial sector. These reform measures were expected to mitigate the imperfections in financial markets and to bring more transparency in financial markets and easy access of financing to the industrial sector. The reforms have encompassed a large number of areas and includes dismantling of administered interest rate system, removing the barriers to entry in the banking sector to promote finance penetration in the market, standard accounting practices on the part of banks, improving the bank's screening capabilities to mitigate information asymmetry issues, dismantling the credit controls and development of security and financial markets to reduce the cost of external financing.

On account of above factors it is really useful to examine how the financing patterns of the firms/companies are shifting in a post liberalized and competitive environment. The empirical studies from abroad have predicted that with the reduction in capital market imperfections, the dependence on internal funds to finance would decline for constrained firm. It means that with the development of financial sector the firms will have easy access of external funds.

2. Literature survey

Since Modigliani & Miller's publication, the financial economists have developed a number of firms' investment financing theories to explain the sources and pattern of firms' investment financing decisions. Some of the early important work in this regard has been provided by Tobin (1969) [4] and Jorgenson (1963, 1967, 1969, 1971) [5]. Tobin (1969) propounded the 'Q' theory of investment and the theory has been extended by others (Brainard, 1968 [6], Hayashi, 1982 [7]). This theory postulates that, the stock market valuation will act as a good proxy for the marginal benefits of investments even though the investor's judgements of marginal productivity of capital are unobservable. The Tobin's Q is the ratio of market value and book value of any particular physical asset. The market value is the valuation of firm's existing assets at current market price whereas the book value is the replacement cost or production cost indicating prices in the market for newly produced assets. If this ratio is greater than unity, then it indicates more investment opportunities in future.

Although the importance of financial factors has been advocated in the 1950s by Meyer and Kuh (1957), but most applied works since mid-1960s are dominated by M.M.'s (1958) 'Irrelevance Theorem'. A new era in the firms' investment finance literature was started with the publication of the study of Fazzari, Hubbard and Petersen (FHP-1988) [8] which led the revival of the importance of financial factors in firms investment decision making. They acknowledged the importance of internal funds to corporate investments and advocated that investment cash flow sensitivity would be strongest for firms that face the greatest wedge between the costs of internal and external funds, i.e., firms that have high financial constraints. By classifying firms into several categories on the basis of dividend payout ratio (proxy for financial constraints), they presented evidence consistent with the above hypothesis. This work of FHP (1988) proved to be a milestone in firms' investment finance theory which led a new dimension and followed by a number of studies which provided supporting evidence, using data from a variety of contexts.

In the beginning, the research on investment cash flow relationships was directed mainly on firms in the United States (Jorgenson-1967, FHP-1988). However, in the mid-1980s, research coverage widened to Europe and Japan (Nagano, 2003) [9]. In line with this Rajan and Zingales (1995) [10] have attempted to find out whether the determinants of capital structure in other G7 countries are similar with U.S firms or different.

The issue of investment cash flow relationship among firms in developing countries has received little attention in the past for a variety of reasons. One of the recent empirical studies concerning financial reforms and its impact on firm's investment decisions from emerging countries has been provided by Abubakr Saeed (2012) [11]. Using a cross-industries panel of 501 Indian and Chinese non-financial firms, he attempted to analyse the impact of financial reforms introduced in the 90s in relaxing financial constraints to investment. He found that firms from both economies face financial constraints to their domestic as well as foreign investment. Further, results show that financial constraints to overall investment in Indian market decreases with business group affiliation, while state-ownership is beneficial for Chinese firms to overcome market imperfections.

In another study Bhaduri (2005) [12] conducted an empirical study of the determinants of corporate investment for Indian manufacturing firms. His analysis provided a strong influence of sales accelerator on investment determinant and concluded that the optimal capital structure choice is influenced by factors such as growth of earnings, cash flow of the firm, size of the firm, and product and industry characteristics.

2.1. Research gaps

Despite extensive research since the publication of M.M.'s (1958) "Financial Irrelevance Theorem" and finance led investment strategy by Meyer & Kuh (1957), the theory of firms' investment financing remains one of the most controversial issue in modern corporate finance. The investment cash flow sensitivity of firms in developing economies, particularly in India has been debated strongly and determinants of investment financing under underdeveloped capital markets is still a puzzle. Therefore, there is an urgent need to conduct empirical studies on these issues brought by literature review in order to get some further evidence on the corporate finance theory. Specifically, the problem statement of the present study has been presented below:

(i) Although the main objective of these financial reforms in India has been to enhance the availability of credit through reducing the cost of external finance and mitigate the constraints on the supply of funds for both domestic and foreign investment, however, the impact of such reforms on the ease of finance to firms' investment is not well established. In India, this puzzle is quite interesting and slightly more complex. Government's policy of direct credit lending towards small and medium enterprises before economic reforms, characterize different investment cash flow sensitivity pattern as compared to those of developed economies. Previous studies show that prevalence of a high degree of imperfection and underdevelopment of the capital market generally leads to a higher dependence on internal funds (cash flow) for investments. It is, therefore, important to study whether the financial reforms have reduced the financial constraints to firm investment decision through better allocation of funds. Again it would be interesting to investigate how Indian firms finance their investment projects and as this has a direct impact on the growth rate of industrial sector and gross domestic product of the country. This is particularly important because the growth in the industrial sector decides the pace and pattern of overall economic growth and employment in any country. Studies have found that whenever industrial sector experienced a slowdown, the overall growth of the economy collapses.

(ii) The majority of the researches concerning investment behaviour of firms and cash flow sensitivities have been made by using international data and concerning the firms of developed countries. In addition, there has been a great debate among researchers whether cash flow sensitivity is a measure of the rate and level of investment. Most of the research confirms this sensitivity and advocated a positive relation between cash flow and investment. However, there is a lack of literature showing private corporate sector business financing pattern and investment-cash flow relationship in India after economic reforms. The empirical question that arises, therefore, is whether corporate investment is more sensitive to cash flow with a given level of imperfections in Indian capital market or not.

3. Research methodology

3.1. Objectives of the study

The present study aims to fill the gap in literature by empirically examining the investment-cash flow relationship in Indian manufacturing sector after economic reform. As stated earlier the present study is mainly directed towards an analysis of investment and its financing through internal and external funds with a view to

gain insight into the effect of these factors on the growth and development of the industry in question. The specific objectives of this study are mentioned below:

- (i) To estimate the investment equation which is a function of cash flow, BSE Sensex (firms share prices), borrowings and sales growth by using multiple regression analysis.
- (ii) To understand whether along with cash flow and sales, the capital market also influences investment decisions of firms.
- (iii) To understand the ways in which financial investment of individual firms are decided.

3.2. Hypothesis development

In order to achieve different research objectives mentioned above, the present study has formulated the following null hypotheses:

(i) The first hypothesis posits the relationship between investment of firms and factors that influence the financing of firms' investment. Specifically the present analysis utilised the cash flow, sales (changes in sales), borrowings and average share prices as the determinants of firms' investment. Accordingly the hypothesis has been generated as:

H₀: Null Hypothesis - Cash flow, sales, borrowings and average share prices do not influence the investment decisions of firms.

H₁: Alternative Hypothesis - Cash flow, sales, borrowings and average share prices do influence the investment decisions of firms.

(ii) The empirical studies from abroad have predicted that with the reduction in capital market imperfections, the dependence on internal funds to finance would decline for constrained firm. It means that with the development of financial sector the firms will have easy access of external funds. Therefore, the second important hypothesis for the present study is:

H₀: Null Hypothesis – Capital market reforms have not reduced the financing constraint on the part of firms.

H₁: Alternative Hypothesis – Capital market reforms have reduced the financing constraint on the part of firms.

3.3. Methodology discussion

Among the most important and widely used empirical approach to show the impact of money and capital market imperfections on firm's investment decisions is "Augmented Sales Accelerator Approach". It is derived by adding an internal-funds (cash flow) variable to the standard accelerator and Tobin's Q models** [13]. For example, to analyse the financial effect on investment spending, FHP (1988) include a cash flow variable in "q" model. They hypothesised that if the capital market is imperfect (as is the general case) because of transaction costs, taxes, and information costs then internal funds such as retained earnings would be less costly as compared to external funds, such as debt or new equity issues. This will lead to a wedge between internal and external costs of funding and the interdependence between the two sources of financing. FHP (1988) presented a general form of the reduced-form investment equations which reads as follows:

$$(I/K)_{it} = f(X/K)_{it} + g(CF/K)_{it} + \varepsilon_{it}$$

Where I_{it} represents investment in plant and equipment for firm i during period t ; X represents a vector of variables, possibly including lagged values that have been emphasised as determinants of investment from a variety of theoretical perspectives; and ε is an error term. The function g depends on the firm's internal cash flow (CF); it represents the potential sensitivity of investment to fluctuations in available internal finance after investment opportunities are controlled for through the variables in X . All variables are divided by the beginning-of-period capital stock K . According to this equation for financially constrained firms the coefficient of function g would be positive and significant while for unconstrained firms it would be insignificant. In other words, if a firm cannot afford external financing its investment decisions are expected to depend on available internal funds. Present study also utilised this approach for analysing investment cash flow sensitivity for manufacturing firms in India.

Since this study is restricted to the analysis of investment cash flow sensitivity in the manufacturing sector of India, the investigator has derived sample from the listed firms under Bombay stock exchange - 500 (BSE-500) firms. After removing nonmanufacturing firms, foreign owned firms (with full or majority ownership), and government owned firms (since these firms could be financed through budgetary provisions) from BSE-500 resulted into 180 Indian private sector manufacturing firms operating in different areas and producing a wide

range of products and services. The main source of data for this study is the panel data compiled by Centre for Monitoring Indian Economy (CMIE) and distributed through its software 'Prowess' [14]. Data for analysis on the required variables such as sales, assets, profits, investments and cash flows has been directly obtained from the database or easily computed.

The time period selected for present analysis is 1992 to 2012. Since the period of present study is starting with year 1992, there were many firms which were either non-existed or not listed with BSE at that time. Further some firms did not had sufficient data for the starting period and some firms attracted foreign ownership rights in their domestic firms due to liberalisation measures introduced by Government. After excluding such firms and outliers from list, the analysis left with a balanced panel of 117 Indian manufacturing firms. It means the final sample consists of 117 manufacturing firms listed on BSE-500 for 20 years period with 2340 (117 * 20) observations.

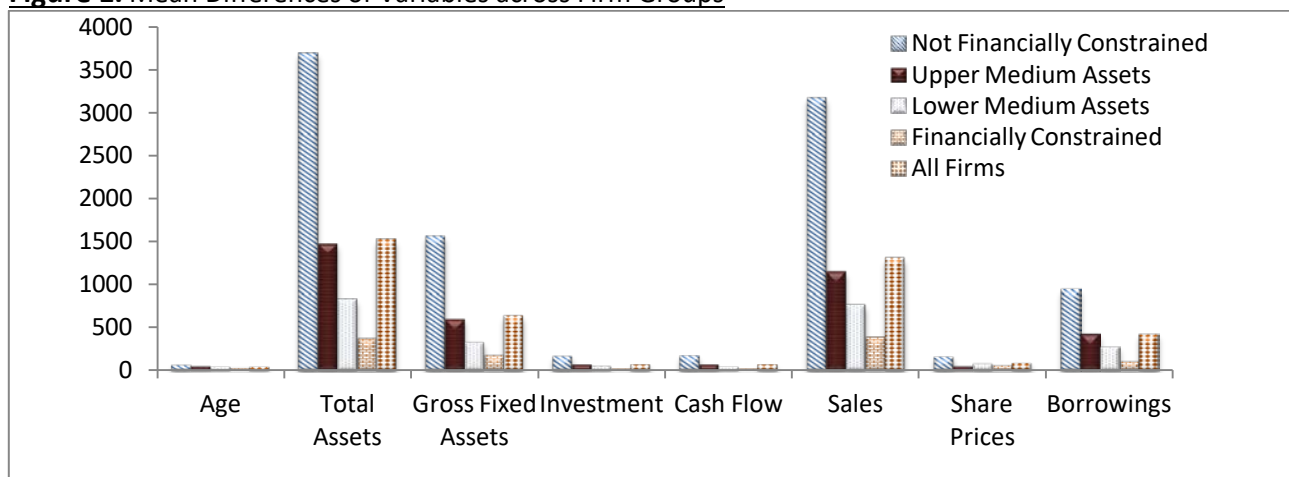
To convert nominal values of the variables into real variables the appropriate price index series have been used for each sector. The explanatory variables such as net sales, changes in net sales, profit after tax and retained profits have been deflated by creating a uniform Wholesale Price Index (WPI) series for manufacturing products at 1993-94 prices. In order to convert nominal gross fixed assets and nominal net fixed assets of manufacturing firms into real terms the present study used the aggregate regular manufacturing fixed capital formation price index series. This study closely followed the literature on investment-cash flow sensitivities and used an improved classification scheme to distinguish between constrained and unconstrained firms. The firms have been divided into four categories according to the degree of financing constraints and years of operation into the industry. These groups of firm are:

- i. Not Financially Constrained (NFC) firms
- ii. Upper Middle Asset (UMA) firms
- iii. Lower Middle Asset (LMA) firms
- iv. Financially Constrained (FC) firms

For the purpose of classification a composite index has been prepared by combining firms beginning year real total assets, end year real total assets and age since incorporation. Median values of the above three variables have been calculated to classify firms into two groups (upper median firms and lower median firms) and assigning scores.***

A comparison of these four groups and all firms on various financial and real variables has been presented Figure 1 (figure callout) below. Figure 1 presents a very simplistic view of the firm's characteristics and its functioning based on several financial and general indicators. It can be seen that there are substantial differences between various classes of firms on the basis of given financial indicators. In absolute terms NFC firm

Figure 1. Mean Differences of Variables across Firm Groups



have 10 times larger mean real asset base, 8 times larger mean sales income, more than 8.5 times larger mean gross fixed assets and almost 9 times greater mean cash flow income than the FC firms. Again NFC firms are older (mean age 70.8 years) than FC firms (mean age 31.9), have 7 times greater investment level and borrow 9 times more money from the market than FC firms. The differences between various groups of firm do not vanish even after measuring different financial parameters by median values. In absolute median terms NFC firms have 7.7 times larger real asset base, 8.2 times larger sales income, more than 8.5 times larger gross fixed assets and

almost 4.7 times greater cash flow income than the FC firms. Again NFC firms are older (median age 63.5 years) than FC firms (median age 32.5) have 7.8 times greater investment level and borrow 8.6 times more money from the market than FC firm category. Overall, descriptive statistics indicate that chosen classification schemes successfully captured the desired cross-sectional characteristics, since the financial ratios are higher for unconstrained firms, and lower for constrained ones.

4. Results and discussion

4.1. Instrumental variable 2SLS estimation

This study adopted the panel data regression model approach similar to what had already been used by FHP (1988), Athey and Laumas (1994) [19] etc., in their study of investment-cash sensitivity. Panel data is the pooling of observations on a cross-section of units over the prescribed time periods and it has many advantages over cross sectional data. According to Antoniou et al. (2002) [20], panel data approach gives higher degrees of freedom, larger number of observations, reduces the multicollinearity among the explanatory variables and gives more efficient estimates. In particular the present study has used an “augmented sales accelerator model” based on modified Tobin’s q approach. It has been argued that, this model is one of the most successful models in empirical literatures to measure investment-cash flow sensitivity. Estimating models using Ordinary Least Squares (OLS) and Fixed effect estimators may be problematic due to measurement error and endogeneity problems in variables which are considerably large in most of the investment studies. When it is hypothesised, that the observed variables (firms size, investment, sales, profits etc.) as the outcome of an optimization process, a change in one of the variables is likely to affect the optimal value of the other variables. Moreover, it is also difficult to distinguish between specific variables which are treated as fixed, and variables which are set to maximise the firm’s objective function. Therefore, the present study estimates the above model using an instrumental variable technique. The greatest advantage of instrumental variable estimation procedure is that, it controls for the fact that the explanatory variables are likely to be correlated with the error term and the firm specific effect, and deals with the possible endogeneity problems. The 2SLS model discussed above will look like:

$$\frac{I_{it}}{TA_i} = \beta_0 + \beta_1 \frac{\widehat{CF}_{it}}{TA_i} + \beta_2 \frac{S_{it}}{TA_i} + \beta_3 \frac{SHP_{it}}{ASP_{it}} + \beta_4 \frac{BRW_{it}}{TA_i} + \mu_i + \tau_t + \varepsilon_{it}$$

where $\frac{\widehat{CF}_{it}}{TA_i}$ refers to predicted value of CF resulting from the first stage estimation, $\mu_i + \tau_t$ are firm and time specific fixed effects.

Table 1. Instrumental Variable 2SLS Result

(S_{it}/TA_{it}) - is sales income scaled by median real total assets, (CF_{it}/TA_{it}) - is cash flow scaled by median real total assets, (SHP_{it}/ASP_{it}) adjusted share prices scaled by mean share prices, (BRW_{it}/TA_{it}) - is total borrowings scaled by median real total assets. Cash flow has been assumed to be an endogenous variable in the model. In parentheses are the t ratios and calculated by robust (Huber/White/sandwich estimator) standard errors. One year lagged values of the variables have been used as instruments.

Model → Independent Variables ↓	All Firms	Not Financially constrained firms (NFC)	Upper Middle Asset Firms (UMA)	Lower Middle Asset Firms (LMA)	Financially Constrained Firms (FC)
(S_{it}/TA_{it})	.0646004 (1.05)	.1275845 (1.04)	.1116203* (2.75)	.0234809 (0.23)	.076764 (1.15)
(CF_{it}/TA_{it})	.2538425 (1.57)	-.0766997 (-0.25)	-.1795181 (-0.59)	.2543042** (2.21)	.4666221** (2.32)
(SHP_{it}/TA_{it})	.0167717*** (1.70)	.0190045 (0.87)	.0162837 (1.09)	.0534171 (1.56)	-.0213087** (-2.27)
(BRW_{it}/TA_{it})	.1139351* (2.75)	.1739313** (2.39)	.0959674* (5.91)	.0969*** (1.81)	.1406992* (3.13)
Constant	-.0062668 (-0.32)	.0293819 (-1.16)	.011619*** (1.71)	-.0145448 (-0.40)	.00353 (0.21)
R-squared	0.2258	0.4545	0.2062	0.2060	0.2633
Observations	2223	494	551	684	494

significant at 1% level, **significant at 5% level, ***significant at 10% level

The estimated result of the above equation has been presented in table 1 (table callout). The 2SLS estimation indicates that cash flow coefficients have expected positive sign for full sample firms, LMA firms and FC firms. These coefficients are highly statistically significant for LMA and FC firms indicating that cash flow (retained profit) is important determinant of investment for these firms. Cash flow coefficients for NFC and UMA firms are negative and insignificant. The important point to be mentioned here is that the cash flow coefficient is 0.466 for FC firms which are significantly higher than the NFC and UMA firms which is -0.0766 and -0.179 respectively. This strengthens our proposed hypothesis that cash flow plays a dominant role in the investment of small manufacturing firms. This result is consistent with the existence of a financing hierarchy. Cash flow provides the only source of finance for those firms that are liquidity constrained, and for those firms that do have access to external market, cash flow provides a relatively cheaper form of finance (Mills et al. 1994) [21]. The sales coefficient has expected sign for all categories firms but significant only for the UMA firms. Share price has expected sign for all categories of firms except FC firms. Another important finding of the result is that borrowing has expected sign for all categories of firms and is highly significant across all groups of firm. It means that accumulation of debt does not hinder outside financing. This goes against the basic theoretical understanding of its negative association with investment based on agency-cost arguments in the presence of asymmetric information. Finally the R-squared of 20%-25% across all groups is a good sign that model explains the data well. Sargan and Basmann test of over identifying restrictions has been used to check the overall validity of the instruments. If and only if an equation is over identified, we may test whether the excluded instruments are appropriately independent of the error process. Durbin and Wu-Hausman F test has been carried out to test endogeneity of the model.

Numerous studies have found that, current investment of firms may be also influenced by the previous level investments. Thus, the investigator experimented with another regression on the above model by including lagged dependent variable as an explanatory variable. The result of this specification has been reported in the Table 2 (table callout).

From the table it can be said that there is only marginal improvement in overall explanatory power of the model as R squared of the full sample firms increased from 22.5% to 23.6%. Sales coefficient for NFA firms became smaller and insignificant with the inclusion of lagged investment in the model. The value of cash flow coefficients for LMA and FC firms increased than before and it is again much higher as compared to other categories of firms. Share price of the firms which were earlier significant for majority of group firms, became insignificant. Borrowing of the firms is still significant for most of the firms demonstrating the importance of it in investment decisions making.

Table 2. Instrumental Variable 2SLS With Lagged Dependent Variable Result

(S_{it}/TA_{it}) - is sales income scaled by median real total assets, (CF_{it}/TA_{it}) - is cash flow scaled by median real total assets, (SHP_{it}/ASP_{it}) - adjusted share prices scaled by mean share prices, (BRW_{it}/TA_{it}) - is total borrowings scaled by median real total assets. Cash flow has been assumed to be an endogenous variable in the model. In parentheses are the t ratios and calculated by robust (Huber/White/sandwich estimator) standard errors. One year lagged values of the variables have been used as instruments.

Model → Independent Variables↓	All Firms	Not Financially constrained firms (NFC)	Upper Middle Asset Firms (UMA)	Lower Middle Asset Firms (LMA)	Financially Constrained Firms (FC)
(I_{it-1}/TA_{it-1})	.0603334 (0.12)	-1.362531** (-2.27)	-.428588*** (-1.53)	.2269585 (0.36)	-.8915719 (-1.33)
(S_{it}/TA_{it})	.0621391 (1.13)	.4370655** (2.40)	.1022414* (3.12)	.030127 (0.42)	.1165123*** (1.69)
(CF_{it}/TA_{it})	.2434883 (0.63)	-.3543842 (-1.08)	.1084641*** (1.47)	.1307107 (0.26)	.5546967*** (1.69)
(SHP_{it}/TA_{it})	.0159388 (0.70)	.0162999 (0.69)	.0103994 (1.33)	.0517963 (1.21)	-.0177781 (-1.37)
(BRW_{it}/TA_{it})	.1052474** (1.89)	.4305701* (4.98)	.1304872* (4.05)	.0711639 (1.34)	.2568278** (2.25)
Constant	-.0056056 (-0.29)	-.0612508 (-3.56)	.0161478** (2.24)	-.0122301 (-0.37)	.0154665 (0.71)
R-squared	0.2367	.	0.0409	0.2464	.
Observations	2223	494	551	684	494

*significant at 1% level, **significant at 5% level, ***significant at 10% level

4.2. Post reform changes in ICFS

One of the objectives of this study is to analyse the impact of capital market imperfection on firm's investment decision making. It is known that India introduced a number of reform measures in various sectors since 1991. Financial sector reforms were also carried out in different segments of financial market since 1992. Earlier it was hypothesised that there is a possibility that with the introduction of capital market reforms the degree of credit constraints and the problem of asymmetric information will decline. This will lead to reduction in the borrowing constraint and increased investment activity particularly to the smaller firms. This in turn will lead to a decline in the investment cash flow sensitivity of smaller firms as credit availability of market finance at easy terms will become possible.

In order to investigate the impact of financial market reforms on cash flow and investment the present study produced investment cash flow sensitivity (ICFS) of FC firms and full sample firms in Table 3. It can be shown that decline in ICFS for FC firms started only since 1997-98. After 1998 there is no any trend in ICFS as it increased up to 2009-10 and decreased in the last year of observation. There is no trend in ICFS for full sample firms as this sensitivity registered wide fluctuations over the study period. For the purpose of extracting micro level trends the investigator further divided the study period into two parts-

- (i). Period of 1990s (i.e., 1994-2000) and
- (ii). Post 2000 period (i.e., 2001-12)

Table 3 (table callout) represents the ICFS for FC and full sample firms for the period of 1993-94-2011-12. It can be seen that, for FC firms the average ICFS has declined from 0.49 during 1994-00 to 0.18 during 2001-12. This demonstrates that financial liberalization has reduced or relaxed the dependence of small firms on internal funds. This is in accordance with the findings that capital market reforms will necessarily bring down the imperfections and lead to a reduction on ICFS. Again it has been found that, trend increase or decrease in ICFS of FC firms has been followed by simultaneous increase or decrease in the ICFS of full sample firms. There was significant decline in ICFS for all categories of firms since 1999-00 and up to 2004-05. After 2005-06 the ICFS of firms registered an increase and it reached at considerably high level in 2009-10. From the regression it can be argued that at aggregate level the ICFC of FC firms have declined significantly in second period (2001-12) but there has been wide yearly fluctuations in this sensitivity. However, the overall result indicates that changes in financial markets do not seem to have similar effects on full sample firms' financing behaviour. The average ICFS has increased for these firms during 2001-12 periods as compared to earlier period.

Table 3. Cash Flow Sensitivity

Year	Financially Constrained Firms	All Firms
1993-94	0.28	-0.14
1995-96	0.83	0.18
1997-98	0.77	-0.36
1999-00	0.36	0.41
2001-02	-0.28	-0.01
2003-04	-0.79	-0.08
2005-06	-0.29	0.79
2007-08	0.45	0.26
2009-10	0.71	0.91
2011-12	0.25	0.04
1994-00	0.49	0.03
2001-12	0.18	0.10

5. Conclusion

Using a panel of 117 Indian non-financial firms for a period of 21 years, this study examined investment cash flow sensitivity of Indian manufacturing firms among various groups of firms and impact of financial reforms on firms' investment. From the above analysis it can be concluded that, cash flow coefficient is highly significant for smaller firms especially during first period (1994-2000) and sales are significant for larger firms in their investment decision making. Average share prices of the firms are insignificant for most of the firms and borrowings are one of the most important sources of investment finance. It can be said, that, measures of deregulation in financial markets have had its impact of mitigating resource constraints in terms of external

finance for firms. However, at aggregate level the reduction in credit constraint is more evident for FC firms than full sample firms. In fact there is a need to speed up financial market reforms and relaxing norms for raising finances by private corporate firms from the capital market. Hence, the terms of credit possibly need to be reviewed.

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The Publication fee is defrayed by Indian Society for Education and Environment (www.iseeadyar.org)

Cite this article as:

Ansari Abdul Rahim. Internal funds and investment financing by Indian manufacturing firms.
Indian Journal of Economics and Development. Vol 5 (6), June 2017.