EXTERNAL FINANCING FOR INVESTMENTS IN INDIAN FIRMS: DOES EXPORT ORIENTATION MATTER?

Dissertation Submitted to the Jawaharlal Nehru University in Partial Fulfillment Of The Requirements for the Degree of

MASTER OF PHILOSOPHY

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This is to certify that the dissertation entitled **"EXTERNAL FINANCING FOR INVESTMENTS IN INDIAN FIRMS: DOES EXPORT ORIENTATION MATTER?"** submitted by me in partial fulfillment of the requirement for the award of **Master of Philosophy** has not been previously submitted for any other degree of this or any other University.

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We recommend that this dissertation be placed before the Examiners for evaluation.

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To,
My Parents

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"EXTERNAL FINANCING FOR INVESTMENTS IN INDIAN FIRMS:

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Abstract

We examine the effect of entry of domestic firms into foreign markets on corporate investment behavior in India. In particular, we test the relationship between a firm's presence in the export market and its effective cost of borrowing from the domestic capital market. We use data on 256 private firms in India for the period 1993-2002.

First, we examine whether the stock market provides finance for investment in these firms. We find that the equity market is not an important source of external finance or corporate investment in India.

We then estimate an investment equation and find that the sensitivity of investment on cash flow is much higher for firms with significant presence in the export market. Such firms seem to face more capital market imperfections in the domestic capital market. We find that while such firms are not outright credit-constrained, they face a high effective cost of borrowing from the domestic capital market in India.

***Section 1

**Introduction

We examine the importance of financing hierarchy that exists in the domestic capital market in India with a firm's entry in the export market. A firm's entry in foreign market and its consequence on investment is an important area of research. In particular, firms in developing countries face a lot of constraint to export its products. They do not have high quality brand names in the world market. They compete with the other established firms and also new firms from other countries in the world market. In addition, they also face instability in foreign demand, and a myriad of information problems concerning, for instance, prices and qualities of various objects that are for sale in the foreign market.

In the real world, the critical question is how, and how well, do domestic capital markets handle these information problems? Expectations regarding future fundamentals of a firm's investments may differ between insiders and outsiders of the firm in the domestic market. While financing its investment projects, a firm may face constraints regarding external finance. It is possible that when a firm enters a foreign market, the asymmetry of information for outside investors increases. Then export-oriented firms may face additional financing constraints. These problems can get intensified if foreign markets are more volatile (especially for firms of developing countries). In that case domestic firms may become more reliable than export-oriented firms for the domestic investors. This implies that firms that

only sell in the domestic market may have better access to external finance from the domestic capital market.

A firm may face constraints in the domestic capital market in two ways. Firstly, they may not get external funding, i.e., be outright credit-constrained. Secondly, it may get external finance but at a substantially higher effective cost of borrowing.

Empirical and theatrical research on investment financing mainly address two issues. One line of research relies on the assumption that all firms respond similarly to prices set in a centralized security market. Another line of inquiry emphasizes the importance of internal flow of funds as an important determinant of investment. Because of a "financing hierarchy", internal finance has cost advantage over external finance. For a firm that faces constraints in its ability to raise funds externally, movements in internal finance become an important determinant of capital spending. On the other hand, if the cost disadvantage is "small", then retention behavior should contain relatively little information about a firm's investment.

Before including different sources of external funding in our empirical model, we describe in detail the possible sources of external financing available to Indian firms: commercial banks, the stock market, and "all India financial institutions". We find that in India, commercial banks are not a efficient source of long-term financing for investment. The charter of the public sector commercial banks assigns them roles other than to providing long-term investment loans to the industrial sector.

[a] Further, as their long term sources of funds (long term deposits) are not significant, it is problematic for commercial banks to provide long-term loans for investment.

We next study the working of stock market in India. The important question for us is that whether managers, when making investment decisions, follow the signals given by the stock market. Our empirical finding is that the stock market does not provide finance for long-term investments. We also find that managers do not rely on the stock market for investment in India. This is true irrespective of the export orientation of the firm.

Next, we document the workings of the "all India financial institutions", which turn out to be the single important source of external financing for Indian firms. The Indian government had established these institutions to provide long-term financing to the Indian industrial sector. The main informational problem these financial institutions face is that they do not know how the money they lend is being invested.

Our main empirical results are that while Indian firms are not outright credit-constrained, the effective cost of external borrowing is

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[a] share of long term deposit in approximately 11% of total deposit.

significantly higher for export-oriented firms as compared to firms that only sell in the domestic market.

Our empirical findings are consistent with the hypothesis that for a firm that enters the export market, the asymmetric Information problems regarding its investment projects increase in the domestic capital market. These problems adversely affect the firm's investment levels, and in turn may affect its project selection.

The rest of the paper is organized as follows. In section 2, we review some pioneering works on corporate investment and financial constraints. In section 3, we discuss the functioning of commercial banks, "all India financial Institutions", and the stock market in India. We present some possible reasons behind commercial banks' inability to provide long-term finance for investment. Section 4 contains some descriptive statistics of our sample, and definitions of the variables that we use in our empirical analysis. In section 5, we review the literature on the relationship between the stock markets and real investment. There we present a model of the stock market as a source of investment finance, and present our empirical test of whether the Indian stock market acts as a source of external finance for investment. In section 6, we review some previous studies on corporate investment and external financing in India. Section 7 presents our regression models and our main empirical results. We conclude in Section 8.

***Section 2

** **Related literature**

Since the seminal paper by Fazzari, Hubbard, Petersen (1987), a large literature has emerged on the relationship between internal fund and corporate investment. They study using Tobin's "q" model of investment. They show that imperfect information can create financing hierarchy over the use of internal and external finance. It also becomes intensified after tax consideration. Here FHP laid stress on financing hierarchy that is generated primarily by the capital market imperfection. They emphasize on dividend payments as a criterion for external finance constraint. According to them, cash flow should be an even more important determinant of investment if a firm cuts dividend payment. They divide firms on the basis of dividend to income ratio and find that cash flow explaining investment in all cases. Firms, seeing more constraint in the external market, are showing greater sensitivity between investment and cash flow. In addition they get the result that cash flow contributes to investment over and above q.

Kaplan and Zingals (1997) are the most prominent critics of the use of investment cash flow sensitivity as a measure of financial constraints. They criticize FHP on the ground that sensitivity of investment cash flow sensitivity not necessarily increases monotonically with the degree of financing constraints, and establish that it may not be always true. According to them, it depends on some characteristics regarding production and cost function. They test 49 low dividend paying firms of FHPs' study and divide

their sample on the basis of some characteristics, mainly company report. KZ obtain a non monotonic relation between financial constraint and investment cash flow sensitivity. Later FHP (2000) criticize KZ paper for their reliance on Managers' statements and their classification criteria.

The discussion suggests that the interaction between investment and cashflow rather a controversial issue. During our work we are careful about interpretation of our result. FHP mainly study financial constraint that firm may face in equity market due to imperfect information (only they point out that there may be a small range of the value of q when firm will not issue equity but may accept debt finance for their investment). They do not consider investment constraint due to imperfect information in debt market.

Greenward, Stiglitz, and Weiss (1981) develop a consistent set of micro foundations for macroeconomics, based on imperfect information. According to them traditional neo-classical theory has one clear, unambiguous and verifiable prediction that all factors, which have a positive price, are fully utilized. In recent years, there have been several responses to apparent inconsistency between the prediction of neo-classical theory and that observed in reality. They construct theoretically the effect of imperfection in debt and equity markets. According to them the main informational problem banks face is that they do not know how their lending amount is being invested. They explain how these kinds of phenomena affect firms to get external finance. In addition if market face higher cost of debt finance, then it may be possible that more risky projects may be

financed by debt. This may reduce the return to banks. They also discuss some problems related with equity finance due to incomplete information. Some time it may be the case that a good manager can take more debt burden than equity finance. Then equity finance may sometimes covey negative signal to the market about firm's ability. So firm may avoid equity finance.

We think, from above study, that if firms face financing constraint from external finance for their investment then it should be reflected by the correlation between investment and cash flow. However the result should be interpreted carefully. Internal finance always has cost advantage over external finance even if market does not suffer by incomplete information. On the other hand if market suffers by higher effective cost of external finance then it may adversely affect firm's project selection.

***<u>Section 3</u>

** **<u>Important external source of finance in India</u>:**

The Indian financial system, as it has evolved, is comparable in much respect with the financial system of most developed countries. It has a well diversified structure of financial institutions and instruments. In other words, it has been observed that financial market development outpaced economic development.

We divide Indian money market into two parts, the organized and unorganized sector. The unorganized sector comprises the indigenous bankers and money lenders. This is not a homogenous sector. Our study only considers organized sector. The organized sector on the other hand is fairly integrated. Both nationalized and private sector commercial banks constitute the core of organized sector. The foreign bank, co-operative banks, RBI, the development and finance houses of India, development finance institutions like IDBI, ICICI, IFCI and investment finance companies like LIC, GIC,UTI are the other institutions which operate in organized sector of Indian money market.

Unlike other developing countries, India has had fairly well developed stock markets and their role in overall financial system has dramatically increased since 80s. Prior to 1992, government in almost every aspect very closely regulated the primary issue market. In 1992 there was a substantial deregulation of stock market took place. Especially with respect to new share issue and new guidelines are less restrictive than those of pre1992.

Broadly speaking the capital market in India can be divided into three constituents—

1. Commercial bank
2. All India financial institutes
3. Security market (where security market can be divided into gilt edge market, ie, market for Government securities & corporate security market)

We discuss some important aspects of commercial banks, All India financial institutes and security market in the following subsections.

* 1. Commercial bank----

In two decades following the enactment of the Banking Regulation Act (1949), the Indian banking system has developed in many respects. It not only grew geographically, but also structurally and functionally. The banking regulation act provides extensive regulatory powers to the RBI and with that it becomes possible for it to carry out various structural reforms in banking system.

On July 1969, fourteen commercial banks with deposits 50 crore or more had been nationalized.

The main reasons towards nationalization were—

a) Removal of control by a few

b) Provision of adequate credit for agriculture, small industry and export

c) Giving a professional bent to management

d) Encouragement of a new class of entrepreneurs

e) Provision of adequate training as well in terms of service for bank staff.

Before nationalization of commercial banks, control of big business houses over commercial banks invariably resulted in concentration of wealth and economic power. Sometimes to provide safeguards against the criticism against favoritism, they financed each other's companies on a reciprocal basis. Both Mahalanobis and Vivian Bose commission had clearly exposed the nexus between banks and big business houses.

Claims for agriculture loans were always turned down in the past by the commercial banks on the plea that agriculture loan did not fall within their preview. Before nationalization, the lending policy of commercial banks was highly discriminatory. The anti small-borrower bias was obvious and the claims of small industrialists were also generally ignored. Prior to their nationalization, commercial banks had shown virtually no interest in opening branches in the countryside primarily due to lack of profitability. Nationalization of commercial banks was the only answer to these problems. Only public sector bank could only subordinate the private profitability objective to resource mobilization objective in the larger interest of society. The nationalization of commercial banks was inspired by social purpose rather than profit earning motive. The nationalization was justified by the government on the ground that major banks could not be any more allowed to remain captive organization of big business. Their policies should be inspired by larger social purpose and be in accordance with the national priorities and objectives. After nationalization of banks, there was a radical change in the credit policy of public sector banks, and the small private banks had no choice but to follow them. The new policy placed special emphasis on credit to priority sector including agriculture and small scale industry, and shares of other sector in bank credit declined over the period. Until mid 60s, the beneficiaries of bank credit were the people having direct or indirect control over the administration of banks. Hence agriculture, small scale industry and other priority sectors failed to get the required bank credit

in spite of their importance in the country's development planning. Towards the end of 1965, a beginning was made to mould the credit policy of the commercial banks so as to make it consistent with planning policies. With these clear objectives in perspective a scheme known as "Credit authorization scheme" was introduced in November, 1965. Later on the scheme of social control over banking was introduced, under which banks were required to allocate bigger amount of credit to the priority sectors. In February 1968, the National Credit council was set up with a view to provide a forum for deciding priority on an all India basis. These measures were soon found inadequate and government thus resorted to nationalization of 14 banks. The extension of credit to small borrowers in priority sectors was the foremost aim of nationalization and therefore, its magnitude is considered to be the real test of its success.

The period since bank nationalization is of great importance from the point of view of banking development as the size and the reach of banking system have registered spectacular progress in this period. Opening of rural branches has improved mobilization of savings in the rural sector. Presently rural deposits account for about 15% of total deposits. Over the years development of banking has been faster in relatively less developed regions of the country, as a result of which regional disparities have declined.

On recommendation of rural credit survey committee the imperial bank of India was converted into State bank of India on July 1955. The RBI had acquired its 92% shares, and thus it had the distinction of becoming the

first state owned commercial bank in this country. Among the factors, which guided the establishment of the State Bank of India the main consideration was that the country should have, a big commercial bank committed to national purpose and should take banking to the countryside even if it was not a commercially viable proposition. In view of this necessity the state bank was required to function as a development agency besides performing the traditional functions of commercial bank. It was made a statutory obligation that it would open at least 400 branches within 5 years from the date of its establishment. Most of the branches were to be set up at un-banked centers. In course of time, this initiative of state bank induced other commercial banks also to move to semi-urban and rural centers. Other commercial banks also worked on the same objectives. In other words, banking system after nationalization worked not with profit maximization motive. It was inspired in the larger social purpose and be accordance with the national priorities and objectives.

In India, after nationalization of 14 major banks, substantial amount of loans has been given for agriculture and also huge working capital to commerce and industry has been provided.

The commercial banking system in India now consists of public sector scheduled banks and private sector scheduled as well as non-scheduled banks. In terms of business, the public sector banks now have a dominant position. Public sector now accounts for more than 80% of entire banking business in recent years. In order to meet the credit requirement of

weaker section, small and marginal farmers, landless labours, artisans and small entrepreneur, the regional rural banks also have been set up in different parts of the country, as foreign banks only operate mostly in big cities.

On July 30, 2000, the country had 42 foreign banks with 186 branches located mainly in big cities. Apart from financing foreign trade, these banks had made significant contribution to the development of banking habits in the country, by performing all functions of commercial banks, including acceptance of deposits and lending to trade and commerce. Of all functions of commercial banks, lending of funds is certainly the most important function. Over a period of 30 years after nationalization of banks, the loan amount have increased have increased 128 times. Today sectoral deployment of bank credit is qualitatively different from what it was at the beginning of the plan era in this country. Agriculture figured nowhere in the credit scheme of commercial banks. With the progress of economic planning and rising accent on industrialization, the scenario changed.

This performance of banking system is definitely impressive, but it has a negative side also, ie; various objectives with mounting expenditure completely erode the profitability of the banks. The overall profitability of the commercial banks remains low in this country.

Some banking sector reforms were also taken place, as per recommendation of .Narasimham Committee Report (April 1998). Until 1991 there was little competition in banking sector. The public sector banks

dominating banking industry in terms of size of assets, acted as monolith. Government now has made some policy changes such as deregulation of interest rates and dilution of consortium lending requirements. Moreover banking sector is now more open for private sector.

Considering the importance of banking sector in the growth of this country, it was needed to build up a smooth functioning banking sector and connect it with every important sector of this country. Though it took some cost at initial level but to have a much better tomorrow these steps were needed.

* 2."All India Financial Institutes"

In 1945, the RBI, to explore the possibilities of all India both and regional institutions of Industrial finance carried out a detailed study. It took concrete shape with the establishment of the Industrial finance corporation of India (IFCI) in 1948. The IFCI was the first institution of its kind in India to be set up and began the era of development banking in India.

In view of early experiences of the working of IFCI, the need for the establishment of some more dynamic institutions which could operate as true development agencies was felt. With this goal, National Industrial Development Corporation (NIDC) and Industrial Credit and Investment Corporation of India (ICICI) were created. The original role assigned to NIDC was to act as a financing agency, restricting itself to modernization and rehabilitation of cotton and jute textile industries. Later on, it was

converted into a consultancy organization and thus ceased to operate as a development bank. The ICICI was established in 1955 as a development bank. Though sponsored by World Bank, it was set up with the active co operation of Govt. of India.

The Refinance Corporation for Industries (RCI) was set up in 1958 with the purpose of providing refinance to commercial banks against long and medium term loans granted by them. Since the scope of activities of RCI was narrow, it was not fit to emerge as an apex development bank in this country. The Government, therefore, created an entirely new institution, the Industrial development bank of India (IDBI) to act as apex institute in the sphere of Industrial finance. The IDBI was initially set up as a fully owned subsidiary of RBI. In 1976 IDBI was made an autonomous institution and its ownership passed on from RBI to Govt. of India.

All financial institutions (AFIs) in India can be divided into following categories:

1. All India Development Banks----

a) Industrial Development Bank of India (IDBI).

b) Industrial Finance Corporation of India (IFCI).

c) Industrial Credit and Investment Corporation of India (ICICI).

d) Small Industries Development Bank of India (SIDBI).

e) Industrial Investment Bank of India (IIBI).

2. Investment Institutions----

i. Unit Trust of India (UTI).

ii. Life Insurance Corporation of India (LIC).

iii. General Insurance Corporation of India (GIC).

3. Specialized Financial Institutions---

i. Risk Capital and Technology Finance Corporation Ltd(RCTC).

ii. Technology Development and Information Company of India (TDICI).

iii. Tourism Finance Corporation of India Ltd (TFCI).

4. State level Institutions---

a. State Financial Corporation (SFCs).

b. State Industrial Development Corporation (STDC).

All India development Bank of India:

Industrial Finance Corporation Of India Ltd (IFCI) :

IFCI was the first all India development bank to be set up in the country. It was set up with the objective of providing medium and long term credit to industry.

This institute grants financial assistance in the following form - (i) Granting loans or advances both in rupees and foreign currencies repayable within 25 years. (ii) Guaranteeing rupee loans floated in the open market operation by industrial concerns. (iii)Underwriting of shares and debentures of industrial concerns, and (iv) Guaranteeing deferred payments in respect of imports of machinery, foreign currencies loans raised from foreign institutions, rupee loans raised from scheduled banks and state cooperative banks by industrial

concern. Financial assistance is available from IFCI for new industrial projects as well as for expansions, renovations, modernization or diversification of existing ones. This may include purchase of plant and machinery construction of factory building and purchase of plant for factory. Normally the IFCI does not provide finance for the repayment of existing liabilities. Its funds are not also available for working capital.

Financial resources of IFCI are share capital, bond debentures, and other borrowings. Apart from these, the major financial resources are issue of bonds and debentures, borrowing from Government, RBI, IDBI & foreign loans.

Though opinions differ in respect of IFCI's working over the past five decades, looking at the growth of IFCI's financial assistance and profit, it seems quite impressive.

The Industrial Credit and Investment Corporation of India Ltd (ICICI) :

ICICI was the second all India development bank in India. It was set-up in 1955. The ICICI differs from other DFIs, the IFCI and IDBI in respect of ownership, management and lending operation. Unlike the IFCI and IDBI, which are public sector development banks, the ICICI is a private sector bank. Its distinguished feature is that it provides underwriting facilities, which are generally neglected by other institutions.

The ICICI provides assistance in various forms, the important ones being:

(a) Long or medium term loans or equity participation.

(b) Guaranteeing loans from other private investment sources.

(c) Subscription to ordinary or preference capital and underwriting of new issue or securities.

(d) Rendering consultancy services to Indian industry in form of managerial and technical advice.

The ICICI has provided financial assistance in the form of—

i. Rupee loans including guarantee.

ii. Foreign currency loans.

iii. Underwriting of share and debenture.

iv. Direct subscription of share and debenture.

Financial services in form of deferred credit, leasing, and installment sale and asset credit.

The ICICI in four and a half decades of its existence has played an important role in providing financial assistance to industrial enterprises in the private sector. Its pioneering work like underwriting institution in this country is widely acclaimed.

The Industrial Development Bank of India (IDBI) :

Prior to the establishment of IDBI, though the country had a number of industrial financial institutes, there was no apex organization to coordinate the function of financial institutes. Initially, its owner was RBI, but later ownership was passed to Govt. of India. IDBI not only has link with other organizations but also renders services to them which an apex bank is

expected to perform. Thus it enjoys a unique position in India's development banking system.

The main sources of its funds are share capital, reserve, bonds and debentures issue, deposits from companies and certificates of deposits and borrowing from RBI and Government of India.

Its progress has been spectacular in whole of the period of its existence, particularly in recent years. Considering underdeveloped nature of market as a source of fund for long-term investment, existence of this type of institute is very much needed.

Small Industries Development Bank of India (SIDBI) :

With a view of ensuring larger flow of financial and non financial assistance to small scale sector, the Government of India announced its decision to establish SIDBI as a subsidiary of IDBI. Immediate focal area of attention of SIDBI was on initiating steps towards technology up-gradation, modernization of existing units, expanding channel for marketing of product of small-scale sector and promotion of employment oriented industries, especially in semi urban areas.

The Industrial Investment bank of India—

Government established IRCI to provide financial assistance to sick industrial units.

Investment Institutions--

The Unit Trust of India (UTI) :

UTI is quite popular and has already made rapid progress over the last few decades, as it possesses certain advantages over other forms of intermediation. The primary objective of the UTI is to encourage and mobilize savings of the community and channelize them into productive corporate investments so as to promote the economic growth and diversify of country's economy. A major part of assistance provided by UTI is in the form of underwriting and directs subscription to equity, preference share and debentures.

General Insurance Corporation of India (GIC) :

GIC is a central government organization. It operates all over the country and underwriting various classes of general insurance business.

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Specialized Financial Institute— TH-10763

With the rapid expansion of economic activities in recent years, some specialized financial institutions have been set up. For instance, TDIC is a technology venture finance company that grants project finance to new technology ventures. RCTC provides risk capital and technology finance to innovative entrepreneurs and technocrats for their technology oriented ventures.

State level Institutions (SFC):

The IFCI was set up to offer financial assistance to only large and medium sized undertakings. Therefore, separate state level development banks which could cater to financial needs of small and medium sized undertakings were needed. The SFCs render assistance as (i) Grants of loans

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and advances to industrial concerns for period not exceeding 20 years. (ii) Subscription to debentures repayable within a period of 20 years. (iii) Guarantee of loans raised in the market or from scheduled or cooperative banks for industrial concerns and repayable within 20 years. (iv) Guarantee of deferred payment for purchase of plant and machinery. (v) Underwritting the issue of stock, share, bonds and debentures by industrial undertakings. Financial resources of SFCs consist of (i) Capital and Reserves (ii) Bond and Debentures issue. (iii) Borrowing from RBI. , (iv) Fixed deposits.

* 3. Security Market--:

Business enterprises can raise capital from various sources. Short-term as well as Long-term funds can be raised either through issue of securities or by borrowing from certain institutions. The capital market is a central market through which resources are transferred to industrial sector of the economy. The existence of such institution encourages people to invest in productive channels rather than unproductive sector. The existence of stock exchanges enables companies to raise permanent capital. The investors cannot commit their fund for a permanent period but companies require funds permanently. The stock exchanges resolve this clash of interest by offering an opportunity to investors to buy or sell their securities while permanent capital remains unaffected. The element of easy marketability makes investment in securities, more liquid, as compared to other assets. The

prevailing market prices of a security and relative yields are the guiding factors for the people to channelize their funds in a particular company.

On the other hand, currently almost 98% of the secondary market transaction in debt instruments relate to government securities, treasury bills and bonds of public sector companies. The quality of secondary market debt trading is very poor. Most of the corporate entities have been depending on loans from banks and financial institutions and hardly have shown any interest to raise resources from the market through bonds and commercial paper. In addition even the corporate units, which raise funds through public deposits, are not interested in issuing bonds.

****Commercial banks, as source of finance for long term investment?-**

Considering importance of banking sector in the growth of this country, it was needed to build up a smooth functioning financial system and connect it with every important segments of this economy. Since Nationalization the main objective of public banks has been linked with financing agriculture sector. On the other hand Government decided to establish "All financial institutes" to provide finance industry for their long term investment.

We think, in order to provide long term finance by any financial institutes, it is also necessary to have long term source of fund. In "Appendix A", we give average value of different term deposits as a percent of total deposit, over the period 1994 to 2001. We find that long-term source of fund for commercial bank is very weak. We find on an average percentage of

deposit is highest for the term deposits more than "one year but less than two years". Long term deposits nearly have the lowest share. Though the return is secured, it seems that as long term deposits are less liquid, cost of keeping money in long-term deposits in Indian commercial banks is very high. This may be one of the main reasons that commercial banks cannot provide finance investment significantly.

***Section 4

**Data description

Our data set is a firm-level panel of annual data. The variables are extracted from the "PROWESS" database of the Center for Monitoring the Indian Economy (CMIE). We have yearly data for the 1993-2002 periods.

Our sample selection procedure is as follows. First, we consider only private firms of Indian manufacturing sector. Second, we delete any firm with missing or inconsistent data. Third, in our sample, firms are in existence for length of the time period. So, it is a balanced data set.

In "Appendix B" we give some definitions of our variable. In table 1(a) and 1(b), we give some descriptive statistics about our sample of firms.

We use single criteria to identify extent of firm entry in foreign market, percentage of export goods out of their total sales of manufacturing goods (rex). We split our sample into three sub samples on this basis.

In our sample, "Domestic" sub sample has mean value of percentage of export out of total sale to be 0.284. In some particular year they export their product. But 90% of the firm year they do not export 1% of their total sale. The coefficient of variation of ratio of sales export (rex) is 2.77, quite high compared to coefficient of variation of other group of firms (given latter). It is more than 3.5 times of "Medex" and "Highex" firms. This is due to their very few entries in the export market. Our "Medex" sub sample has mean value of percentage of export out of sale is 6.961. In some particular year they do not export their goods, but it is rather less than 5% of firm years. Most of the firm year, they export their goods more than 5% of their sales. Their coefficient of variation of percentage of export is 0.79, which is quite low, compared to "Domestic" firm. Our last sub sample, "Highex" has the mean of percentage of export is 27.987. In some particular year sometimes these firms do not export their goods, but it is rather less than 1% of the total firm year. Its coefficient of variation of percentage of export is 0.73. Our "Domestic" firms hardly see export market. Their mean is also low enough but export in any particular year leads to give us a high coefficient of variation. They mainly concentrate in the domestic market. Our "Medex" firms have small coefficient of variation of "rex" compared to "Domestic" firms which is similar to firms of "Highex" sub sample. Here mean of percentage of export (rex) of "Medex" is more than 24 times relative to "Domestic" firms and "Highex" is 4 times relative to "Medex" firms. The similarity of coefficient of variation between "Medex" and "Highex" reflects the fact that they face similar kind of variation of sale in

foreign market. As firm's export increases it faces more fluctuation in their sale in foreign market, which can be seen from standard deviation of percentage of export (rex) between "Medex" and "Highex" sub-sample. So in our sample we can say that our sub sample "Domestic" firms are mainly concentrating into domestic market. Our sub sample "Medex" firms are in midway towards significant sale of their product in foreign market. Our sub sample "Highex" firms have relatively significant sales position in foreign market. Our sample split is robust to the character "firm entry" in foreign market.

We divide sales, capital stock, cash flow and borrowings from financial institutes from Prowess data set by price index of manufacturing sector (base year 1993) to compute in real terms. Our investment is the change in capital stock. Variables in our sub samples for regression, borrowing from "All India financial Institutes" (rbfk), investment (ringk), cashflow (rcafk) and change in sale (crsmk) are scaled by previous year's capital stock, show similar variation (coefficient of variation).

Stock price data are not quite impressive in India. We use yearly closing Percentage change in stock price relative to prior year as stock return (cstre). This is not quite impressive for every sub sample. Similarly we use percentage of change in number of outstanding share. These variables are not consistent and we find large standard deviation in every sub sample.

***Section 5

**Related literature on stock market

Randall Morck, Andrei Shleifer and Robert W. Vishny. (1990) study empirically the broader question of how stock market affects investment. They identify mainly four theories. The first says that stock market is a passive predictor of future activity that managers do not rely on stock market for their investment decisions. According to this passive informant hypothesis, managers of the firms know more than public. So, stock market does not provide any information that would help managers to take investment decisions.

The second theory says that in making investment decisions, managers rely on the stock market as a source of information. This active informant hypothesis assigns a greater role to the stock market. It says that stock market predicts investment. It conveys to the managers information useful in making investment decisions which may or may not be correct about future fundamentals.

The third theory that is perhaps the financing hypothesis of stock market's influence says that the stock market affects investment through its influence on cost of funds and external finance. Many people believe that the stock market plays a key role in helping firms to raise capital. However when stock market is subject to investors' sentiments, firms likely choose equity finance when market overvalues them, making cost of capital irrationally low. In other words, firms issue equity when equity is over priced.

Finally, the fourth theory that is stock market pressure hypothesis, says that stock market may exert pressure on investment even though without conveying any information to the managers, or effecting the cost of security issue, the stock market can influence investment by exerting pressure on managers. Because managers have to cater to investors' opinions in order to protect their livelihood. Their empirical analyses mainly look for evidence on whether sentiments effect investment through stock market.

According to first two hypotheses the stock market's main role is to convey information. The remaining two views assign the stock market a more active role. They use change in sale, profit and stock return as their explanatory variable. Their result rejects the importance of financing effects of stock market. There is no evidence that high return leads to significantly more equity financing. They also find that stock market do not provide new information to managers. Though there is some market pressure on managers but it is not a dominant force to explain investment. Sometimes it is argued that stock market is the first sunspot and everything else follows, but this may be stretching it a bit. Overall a fair reading of the evidence is that stock market is a sometimes-faulty predictor of future which does not receive much attention and can not influence investment.

We think that it is very difficult to accept stock market as an important source of finance for investment. This is the scenario even in many developed countries. But before any conclusion we test it in the following subsection for Indian firms

****Hypothesis development**

A simple model:

We use a simple model to develop testable hypotheses about equity dependent firm.

Consider a firm that can invest I at time "0", that yields a gross return of f(I) at time "1". Here f(I) is an increasing, concave function. For simplicity we assume discount rate as zero. So net preset value of this investment is {f(I)- I}. Here in the market, equity (e) may be mis-priced by a percentage δ relative to efficient market value, either over priced ($\delta > 0$) or under-priced ($\delta < 0$). Firm also can issue or purchase equity (e). There is some upper bound "e^{max}" and lower bound "e^{min}" (where $e^{min} \leq 0$ & $e^{max} > 0$). So $e \geq e^{min}$ & $e \leq e^{max}$. Financing and investment are linked by a leverage constraint, $\{e + W - I \times (1-D) \geq 0\}$, where "W" is the firm's pre existing wealth and "D" is the fractional debt capacity of new assets. Assuming "D" is not affected by δ, the irrational variation of stock prices.

Our maximization problem is given by ---

Maximize: $f(I) - I + \delta e$

I,e

Subject to

$e + W - I \times (1-D) \geq 0$

And, $e^{max} \geq e \geq e^{min}$

Results are as follows--:

Case I

If $\delta > 0$

Define $f'(I_f)=1$

Then $I=I_f$ & $e=e^{max}$. An overvalued firm invests at the first best level (I_f) and issues as much equity as possible.

Case II

If $\delta < 0$ and $W \geq I_f \times (1-D)$

Thus undervalued firms with sufficient wealth invest at the first best level (I_f) and avoid issuing equity but may purchase it.

Case III

If $\delta < 0$ and $W < I_f \times (1-D)$

[Firm's wealth position is not sufficient for first best (I_f) level investment]

This admits two sub-cases---

Define I_s by $f'(I_s) = 1 - \delta \times (1-D)$ [where $I_f > I_s$, here I_s is second best level investment]

a) If $W < I_s \times (1-D)$ it follows that $I = I_s$ and $e + W > I_s \times (1-D)$ ie firm issue equity and accept second best level investment (I_s).

b) If $W > I_s \times (1-D)$ then firm invest at second best level (I_s) and will not issue equity but it may repurchase equity.

This model predicts that if the equity financing is an important channel or if firms are equity dependent then there is likely to be a positive relationship between irrational variation of stock return and issue of new equity.

** **Empirical Design:**

We think that if a firm is equity dependent then there should be some positive correlation between firm's equity issue and non-fundamental component of its stock return. We test the hypothesis whether Indian firms are equity dependent. Our fundamental variables are change in sale and cashflow scale by total fixed asset of previous year. Here change in sales reflects as future demand for firms and serves as a measure of investment profitability. Here cashflow measures future fundamentals, both because it reflects current and future profitability. Cash flow also facilitates investment if a firm is constrained in capital market.

We test the hypothesis for "full sample", "Domestic", "Medex" and "Highex" group of firms. We use fixed effect logit model. [b] Our dependent variable is dummy variable, which is equal to 1 if firm increases its outstanding share more than 10% and 0 otherwise.

Our explanatory variables are change in sale scale by fixed asset of previous year (crsmk), cash flow (rcafk) scale by fixed asset of previous year, and rate of capital gain or stock return by holding company's share for one year (cstre).

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[b] dummy variable =1 if change in outstanding share>10% is arbitrary, we test it also for dummy variable =1 if change in outstanding share >0 and also for > 5% , in both cases results remain same.

We find from the logit model that coefficient of capital gain or stock return (cstre) -.005 for "full sample"(Table 4(a)), -.002 for "Domestic" firms (Table 4 (b)), -.007 for "Medex" firms and -.008 (Table 4(c)) for "Highex" firms (Table 4(d)). We also find the marginal effects at 25%, 50%, 75% and 90% percentile value of capital gain or stock return of company's stock. We find marginal values significant but very small negative coefficient {Table 4(a)} of stock return (cstre) in every percentile for full sample, this is the case with "Medex" {Table 4(c)} and "Highex" {Table 4 (d)} firms too. For "Domestic" firms {Table 4(b)}, we get marginal values have insignificant coefficient in every percentile of stock return (cstre). We interpret this result to mean that the probability of an equity issue is not related to stock return.

We think from the above result, Indian firms are not equity dependent. Stock market is not an important financing channel for Indian firms. So we reject stock market's impact as a source of finance on investment. We find, though stock return varies significantly, we do not get corresponding firm's response towards it. It seems that managers of firm do not follow stock market for their investment decisions.

***<u>Section 6</u>

** <u>**Study related with investment constraint on Indian firms**</u>

Kumar , Sen and Vaidya (2001) study the presence of financial constraint on the investment behavior of firms using Indian manufacturing sector as a case study. They find that outward orientation rather than firm size

should be the criterion to study the financial constraint firms. Useing 718 Indian firms, they discuss size and outward orientation, to demarcate into high information cost and low information cost category firms. The paper argues that firm's outward orientation is more reveling to the suppliers of fund. Their regression result finds that outward oriented firms are less financially constraint where domestic firms are more financially constrained. But on the other hand, on the basis of firm size, result does not give any particular outcome. So they conclude that outward orientation should be the criterion for detecting financially constrained firms.

In another paper Kumar, Sen and Vaidya (2002) focus financing constraint that firms face from different external source of fund. They study outward oriented firms and non outward oriented firms of India. According to them firms in India obtain their funds from three sources - commercial banks, Development financial institutes and capital market. Here DFIs are the dominant player. According to them these firms (mainly for developing country context) depend on external sources. The dependent variable in their analysis is investment and independent variables are change in sale, loan from DFI, loan from Commercial bank and firms' equity capital. KSV exclude internal finance from their regression analysis and find that Investment is most sensitive to DFI borrowing with relative to other external sources. Outward oriented firms face lower level of financial constraint from commercial bank and capital market but face higher financial constraint from financial institutes like DFI. So they conclude, though other providers of funds are able to succeed in the increasing

competitive environment brought by the economic reforms, DFIs do not seem to adopt such criteria. KSV offer two reasons to support their findings. Firstly, DFI provide long term finance for investments while commercial banks mainly provide working capital to industry. Secondly, in the pre reform period the DFIs were merely passive conduits of funds with little active involvement in the screenings of firms.

We notice some problems in the above-mentioned study. First, in their first paper (2001) they talk of cashflow as an important determinant for investment while in second paper (2002) they reject cashflow as an important determinant of investment. Secondly, though they think commercial banks provide mainly working capital to industry, they include it in their regression function. Third, only value of coefficient of a particular source of fund in investment model can not reflect constraint from that source of fund. Nothing can be said only on the basis of value of coefficient in this case. We think it is also rather an idealistic argument that firms' own profit is not a determinant of investment decision. Fourthly, it is not always possible to criticize banks if firms are facing financing constraint. Though it is said that firms have more information regarding the fundamental value of investment, but some times firms may take some investment decisions, which are risky to banks, but if successful, give higher return. Banks on the other hand to keep themselves safe side, may not provide finance to firms in these cases.

***Section7

**Determinants of financing constraints

From the discussion of previous sections, we come to the conclusion that commercial banks and stock market do not provide external finance for long-term investment to Indian firms. All India financial Institutes are the only source of external finance for long-term investment for Indian firms.

It may be possible that there may be certain other irregular sources, which provide a small fraction of external finance within our sample period. Considering the insignificant role of these alternate avenues, our panel data analysis only include borrowings from Indian financial institutes, as a source of external finance for long term investment in India.

At the time of borrowing, firm pays some effective cost of fund. This effective cost of fund includes not only rate of interest but also the collateral etc. Market becomes clear if effective cost drives out excess supply or demand from loan market. But if market imperfection exists, cost of fund cannot clear the market, and the firms face constraint for its investment financing.

So we arrive at the conclusion that market imperfection may adversely affect investment in the following two ways.

I. First, many firms face credit constraint from some external source of fund. Thus it is the availability of credit, not the price that they have to pay, which restricts their investment.

II. Second, firms that are not credit constrained from some external source of fund may still face an increase in the effective cost of capital, which may induce them to reduce their investment.

We find borrowings from "Indian financial institutes" are the most important external source of fund for investment. We test here the constraint that Indian firms face due to market imperfection. We test it for three sub-sample ie "Domestic" , "Medex" and "Highex".

At the time of interpretation of our result we consider carefully some arguments regarding cashflow sensitivity analysis. It is often argued that the relationship between investment and measure for internal fund may suffer from the fact that internal fund may be proxy for the profitability of investment. In that case, a positive relationship between internal fund and investment may be expected, since firms with more liquidity are doing well and have better possibilities to invest. This may imply cashflow coefficient may not be interpreted in terms of capital market imperfection. We think cashflow sensitivity is necessary to capture the effect of capital market imperfection. We think that if a firm faces more imperfect information in capital market, then cashflow sensitivity or coefficient of cashflow increases because in that case firm faces more constraint to get external finance. We think that a relative study may help in this context.

From the previous study, we consider only two important variables as sources of finance to explain investment. The first one is cashflow and the second one is borrowing from all India financial institutes for Indian firms.

We use standard sales accelerator type model for our regression. In this model, if a firm faces constraint from external finance then, the regression coefficient of cashflow and coefficient of borrowing from all India financial institutes should reflect it.

** **Model for regression analysis-**

For "i" th firm and year "t"

*Model-I

$(ringk)_{it} = \alpha_i + \beta_1 (crsmk)_{it} + \beta_2 (rcafk)_{it} + \beta_3 (rbfk)_{it} + \epsilon_{it}$

*Model -II (for the sub sample consist "Medex" and "Domestic" firms)

$(ringk)_{it} = \alpha_i + \beta_1 (crsmk)_{it} + \beta_2 (rcafk)_{it} + \beta_3 (rbfk)_{it} + \beta_4 (dd1 \times rcafk)_{it} + \epsilon_{it}$

dd1=1 if firm is "Medex" and dd1=0 if firm is "Domestic"

*Model-III (for the sub sample consist " Medex" and "Highex" firms)

$(ringk)_{it} = \alpha_i + \beta_1 (crsmk)_{it} + \beta_2 (rcafk)_{it} + \beta_3 (rbfk)_{it} + \beta_4 (dd2 \times rcafk)_{it} + \epsilon_{it}$

dd2=1 if firm is "Medex" and dd2=0 if firm is "Highex"

Here "ringk" is the investment scaled by total asset of the previous period, "crsmk" is the change in sales scaled by the total asset of the previous period, "rcafk" is the cashflow scaled by total asset of previous period and "rbfk" is the borrowing from all India financial institutions scaled by total asset of the previous period.

We estimate the proposed model through panel data for analysis. We use fixed effect model using instrumental variable. Considering information financial institutes need is related to the investment demand of firms. Loans from these institutes also depend on the firm's investment demand. So within a single system investment and borrowing from financial institutes are simultaneously determined in any period. It leads to the conclusion that in our regression model "rbfk" is endogenous. So, we use instrumental variable for "rbfk". Here in this model instruments are one period lag value of "rbfk" and "crsmk" and other exogenous variables. Other two variable "crsmk" and "rcafk" are determined in the market. So, we take these two variables as exogenous variables. We regress for full sample and three-sub sample. The regression results are presented in table 2 and table 3.

** **Regression results**--

* Result - Model I

From Model I, the full sample consists of 256 firms. We find that firms are not facing any credit constraint from "all India financial institutions". The coefficient β_3 is insignificant (at 5% level of significance). Firm's investment is very much correlated with cash flow. β_2 is significant (at 5% level of significance). The result signifies that investment increases nearly 50% of their cash flow increment.

For "Domestic" firms, we have 80 firms in our sub sample. We find that firms are not facing any credit constraint from "all India financial institutions". The

coefficient β_3 is insignificant (at 5% level of significance). For these firms' investment is less correlated (compared to other sub sample) with cash flow. β_2 is also significant (at 5 % level of significance). The result shows that investment increases nearly 27% of cash flow increment.

For "Medex" firms, we have 88 firms in our sub sample. We find that firms are not facing any credit constraint from "all India financial institutions". The coefficient β_3 is insignificant (at 5 % level of significance). Here β_2 is significant (at 5 % level of significance). The result shows that investment increases nearly 59% of cash -flow increment.

For "Highex" firms, we have 88 firms in our sub sample. We also find that firms are not facing any credit constraint from "all India financial institutions". The coefficient β_3 is not significant (at 5 % level of significance). Here β_2 is significant also (at 5 % level of significance) . Result says that investment increases nearly 73% of cashflow increment.

* Result - Model II

We get β_2 is significant, β_3 is insignificant while β_4 is significant (at 5% level of significance). So, we find that difference in the coefficient of cash flow (β_4) between "Domestic" and "Medex" firms is significant (at 5% level of significance).

Here β_2 is coefficient of cashflow, β_3 is coefficient of borrowing from all India financial institutes and β_4 is used to measure difference in the coefficient of cashflow between sub samples.

* Result - Model III

We find β_2 is significant, β_3 is insignificant while β_4 is insignificant (at 5% level of significance).So, we find that difference in the coefficient of cashflow (β_4) between "Medex" and "Highex" firms is insignificant (at 5% level of significance).

**Analysis of result:

We analyze the simple statistics of firm's variables (given in table 1(a) & 1(b)). We look at the statistics of investment and cashflow variable and borrowing from all India financial institutes and changes in sale for three-sub sample. Then the coefficient of variation of "ringk" (investment) is compared. The coefficient is 3.06 for "Domestic" firm, 2.65 for "Medex" firms and 2.75 for "Highex" firms. These are very close to each other. Also if we compare coefficient of variation of "rcafk" (cashflow), we find 1.44 for "Domestic", 1.04 for "Medex" and 1.41 for "Highex". The coefficient of variation of "rbfk" (borrowing from financial institutes) for "Domestic" is 1.38, "Medex" is 1.36 and for "Highex" it is 1.15. The coefficient of variation of "crsmk" (change in sale) for "Domestic" is 5.00, "Medex" is 5.46 and for "Highex" it is 5.31.

From the regression result of Model I for three sub sample, we find that regression coefficient (β_2) on cash flow (rcafk) in the case of "Domestic" firms is 0.26, while that of "Medex" firms is 0.59 and that of "Highex" firms is 0.72 and all three are significant (at 5 % level of significance). For more export oriented firms this coefficient is higher. We find that coefficient of

borrowing (β_3) from all India institutes (rbfk) is insignificant, for all types of firms (Model I).

We find that between the sub samples variations of investment, cash flow and borrowing from financial institutes and change in sale are very close. We also find significant difference (at 5% level of significance) between coefficient of cash flow (β_4) of "Domestic" (Model II) and "Medex" firms and insignificant difference (at 5 % level of significance) between coefficient of cashflow (β_4) between "Medex" (Model III) and "Highex" firms. We think that difference in coefficient of cashflow between domestic and export-oriented firms exist because export oriented firms are facing constraint from external finance. On the other hand we find insignificant coefficient of borrowing from financial institutes (β_3) (Model I) for "Domestic", "Medex" and "Highex" firms. This implies that firms are not credit constrained to external finance (β_3).

So, we arrive at a conclusion that export oriented firm or that firm makes entry in foreign market face constraint from domestic capital market due to high effective cost of borrowing.

***<u>Section 8</u>

** <u>Conclusion</u>

Our empirical analysis leads us to the following conclusions. First, the Indian stock market cannot be regarded as a source of finance for long-term investment. Second, from the statistics of variables and coefficient of cash

flow and coefficient of borrowing from all India financial institutes, we conclude the following. From the full sample regression, we find that all private firms in India face constraints to get external finance. Though the firms are not denied credit outright, the effective cost of external finance is very high in India. In this regard, we find the firms operating only in the domestic market are better off. In contrast to these "domestic" firms, export-oriented firms ("Medex" and "Highex" firm) face a significantly higher effective cost of external finance.

Our findings are consistent with the story that when an Indian firm makes an entry into the export market, it typically faces additional constraints regarding external financing due to imperfect information in the domestic capital market. These constraints considerably enhance the effective cost of borrowing.

We would like to conclude by noting the following. The high cost of external finance for export-oriented firms will certainly have the effect of reducing their levels of long-term investments. In addition to this inefficiency, there may be an additional inefficiency regarding "project selection". As we know from Stiglitz and Weiss (1983), a higher borrowing rate can induce firms to undertake projects with lower probability of success, but higher payoffs when successful. So it is possible that the high effective cost of borrowing pushes the export-oriented firms to undertake "riskier" projects. This, in turn, will lead to higher default rates on long-term loans.

In recent days, one of the main problems that Indian financial institutions face is of non-repayment of loans. Our analysis provides one clue as to why this might be the case. But further research on project selection by firms is needed to come to a firmer conclusion.

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***Table 1(a)

ringk (investment) :

	Std.Dev	Median	Mean	Coeff.Var
Full Sample	0.273	0.034	0.0	2.84
Domestic Firm	0.300	0.026	0.098	3.06
Medex	0.231	0.039	0.087	2.65
Highex	0.286	0.037	0.104	2.75

rcafk (cashflow) :

	Std.Dev	Median	Mean	Coeff.Var
Full Sample	0.207	0.127	0.157	1.31
Domestic Firm	0.250	0.126	0.173	1.44
Medex	0.159	0.134	0.153	1.04
Highex	0.207	0.121	0.147	1.41

rbfk (borrowing from financial institutes) :

	Std.Dev	Median	Mean	Coeff.Var
Full Sample	0.180	0.069	0.138	1.30
Domestic Firm	0.167	0.042	0.121	1.38
Medex	0.157	0.053	0.115	1.36
Highex	0.205	0.130	0.178	1.15

crsmk (change in sale) :

	Std.Dev	Median	Mean	Coeff.Var
Full Sample	0.524	0.048	0.098	5.35
Domestic Firm	0.665	0.062	0.133	5.00
Medex	0.431	0.038	0.079	5.46
Highex	0.457	0.047	0.086	5.31

rex (% of export of total sale) :

	Std.Dev	Median	Mean	Coeff.Var
Full Sample	17.175	05.889	12.102	1.42
Domestic Firm	00.786	00.000	00.284	2.77
Medex	05.474	06.299	06.961	0.79
Highex	20.543	23.085	27.987	0.73

**NB:- Here ringk is investment scaled by previous year's capital stock.
Similarly rcafk is cashflow (profit +depreciation) scaled by previous year's capital stock, rbfk is borrowing fund from all India financial institutes scaled by previous year's capital stock and crsmk is change in sales scaled by previous year's previous year's capital stock.

***Table 1(b)**

cstre(% change of stock closing price) :

	Std.Dev	Median	Mean	Coeff.Var
Full Sample	81.716	-18.469	-1.493	-054.73
Domestic Firm	87.964	-16.932	0.511	172.14
Medex	74.619	-17.373	-2.191	-034.06
Highex	82.661	-21.428	-2.618	-031.57

pcos (% of change in number of outstanding share) :

	Std.Dev	Median	Mean	Coeff.Var
Full Sample	167.1777	0	20.762	8.05
Domestic Firm	065.575	0	12.637	5.19
Medex	152.421	0	21.799	6.99
Highex	232.643	0	27.111	8.58

cstre (% change of stock closing price) :

	25% percentile:	50% percentile:	75% percentile:	90% percentile
Full Sample	-44.04	-18.46	14.94	67.99
Domestic Firm	-47.53	-16.93	19.26	75.00
Medex	-41.52	-17.37	16.66	64.45
Highex	-45.29	-21.42	09.37	62.81

pcos (%change in number of outstanding share) :

	25% percentile:	50% percentile:	75% percentile	:90% percentile
Full Sample	0	0	0.00	49.95
Domestic Firm	0	0	0.00	34.10
Medex	0	0	0.00	49.92
Highex	0	0	0.04	50.00

***Table 2

Model I
Fixed effect using instrumental variable.

Dependent variable "ringk"

	" Domestic"	"Medex"	"Highex"	Full sample
Explanatory variables				
rbfk	-0.214 (.248)	-0.049 (.204)	-0.268 (.244)	-0.169 (.133)
crsmk	0.070 (.021)	0.026 (.023)	0.040 (.028)	0.046 (.013)
rcafk	0.268 (.093)	0.592 (.096)	0.729 (.096)	0.509 (.054)
Number of firms	80	88	88	256
Wald chi2 (3)	111.98	144.47	155.96	394.98

Intrumented : rbfk
Instruments : crsmk, rcafk, lag of crsmk, lag of rbfk

NB-:

* Standard deviations are in parenthesis.

** Here ringk is investment scaled by previous year's capital stock.
Similarly rcafk is cashflow (profit +depreciation) scaled by previous year's capital stock, rbfk is borrowing fund from all India financial institutes scaled by previous year's capital stock and crsmk is change in sales scaled by previous year's previous year's capital stock.

*** **Table 3**

Fixed effect using instrumental variable.

Dependent variable "ringk"

	Model II	Model III
Explanatory variables		
rbfk	-0.146 (.160)	-0.165 (.158)
crsmk	0.055 (.015)	0.033 (.018)
rcafk	0.299 (.081)	0.735 (.087)
(dd1× rcafk)	0.267 (.126)	_
(dd2 × rcafk)	_	-0.137 (.127)
Number of firms	168	176
Wald chi2 (4)	250.70	305.10

Intrumented : rbfk
Instruments : crsmk, rcafk, lag of crsmk, lag of rbfk

NB-:
* Standard deviations are in parenthesis
** Here ringk is investment scaled by previous year's capital stock.
Similarly rcafk is cashflow (profit +depreciation) scaled by previous year's capital stock, rbfk is borrowing fund from all India financial institutes scaled by previous year's capital stock.
crsmk is change in sales scaled by previous year's previous year's capital stock.

****Table 4(a)

"Full Sample"

Fixed effect Logit Model

dependent variable dpcos=1 (dummy variable) if change in number of outstanding share more than 10 %, dpcos=0 otherwise.

Explanatory variables	crsmk	rcafk	cstre
	0.220	4.021	-0.005
	(0.155)	(0.652)	(0.001)

LR chi(3) = 72.50
Log likelihood = -132.72

Marginal effect

	at--- cstre=-44.04:	cstre=-18.46:	cstre=14.94:	cstre=67.99
cstre	-0.0011	-0.0012	-0.0012	-0.0013
	(.0002)	(.0003)	(.0003)	(.0004)
crsmk=.112	0.0448	0.0479	0.0506	0.0540
	(.0318)	(.0337)	(.0358)	(.0382)
rcafk=.162	0.8170	0.8659	0.9217	0.9839
	(.0969)	(.1072)	(.1238)	(.1480)

Number of firms 189 (67 firms dropped due to all positive or all negative outcome)

NB-:
* We compute marginal effect at 25%, 50%, 70% and 90% percentile value of % change in stock closing price or stock return (cstre), where crsmk (change in sale) and rcafk (cash flow) are kept constant at the value near to their mean value. Values are- crsmk=.112, rcafk=.162

** Standard deviations are in parenthesis.

*** rcafk is cashflow (profit +depreciation) scaled by previous year's capital stock, crsmk is change in sales scaled by previous year's previous year's capital stock.

****Table 4(b)

"Domestic Firms"

Fixed effect Logit Model

dependent variable dpcos=1 (dummy variable) if change in number of outstanding share more than 10 %, dpcos=0 otherwise.

Explanatory variables	crsmk	rcafk	cstre
	-0.008	3.005	-0.002
	(.214)	(1.08)	(.002)

LR chi(3) = 12.74
Log likelihood = -132.72

Marginal effect

	at--- cstre=-47.53:	cstre=-16.93:	cstre=19.26 :	cstre=75
cstre	-0.0006	-0.0006	-0.0006	-0.0006
	(.0004)	(.0005)	(.0005)	(.0005)
crsmk=.157	-0.0018	-0.0018	-0.0019	-0.0020
	(.0478)	(.0491)	(.0505)	(.0521)
rcafk=.183	0.6696	0.6880	0.7073	0.7308
	(.2001)	(.2102)	(.2232)	(.2424)

Number of firms 54 (26 firms dropped due to all positive or all negative outcome)

NB-:
* We compute marginal effect at 25%, 50%, 70% and 90% percentile value of % change in stock closing price or stock return (cstre), where crsmk (change in sale) and rcafk (cash flow) are kept constant at the value near to their mean value. Values are- crsmk=.157, rcafk=.183

** Standard deviations are in parenthesis.

*** rcafk is cashflow (profit +depreciation) scaled by previous year's capital stock, crsmk is change in sales scaled by previous year's previous year's capital stock.

*** **Table 4(c)**

"Medex Firms"

Fixed effect Logit Model

dependent variable dpcos=1 (dummy variable) if change in number of outstanding share more than 10 %, dpcos=0 otherwise.

Explanatory variables	crsmk	rcafk	cstre
	0.965	3.055	-0.007
	(.303)	(1.06)	(.002)

LR chi(3) = 27.76

Log likelihood = -156.85

Marginal effect

	at-- cstre=-41.52:	cstre=-17.37:	cstre=16.66:	cstre=64.45
cstre	-0.0015	-0.0016	-0.0017	-0.0018
	(.0005)	(.0006)	(.0006)	(.0007)
crsmk=.092	0.1973	0.2118	0.2283	0.2406
	(.0623)	(.0666)	(.0722)	(.0760)
rcafk=.167	0.6245	0.6703	0.7224	0.7613
	(.1713)	(.1919)	(.2231)	(.2585)

Number of firms 64 (24 firms dropped due to all positive or all negative outcome)

NB-:

* We compute marginal effect at 25%, 50%, 70% and 90% percentile value of %change in stock closing price or stock return (cstre), where crsmk (change in sale) and rcafk (cash flow) are kept constant at the value near to their mean value. Values are- crsmk=.092, rcafk=.167

** Standard deviations are in parenthesis.

*** rcafk is cashflow (profit +depreciation) scaled by previous year's capital stock, crsmk is change in sales scaled by previous year's previous year's capital stock.

***Table 4(d)

"Highex Firms"

Fixed effect Logit Model

dependent variable dpcos=1 (dummy variable) if change in number of outstanding share more than 10 %, dpcos=0 otherwise.

Explanatory variables	crsmk	rcafk	cstre
	-0.044	6.025	-0.008
	(.298)	(1.14)	(.003)

LR chi(3) = 45.81
Log likelihood = -164.67

Marginal effect

	at-- cstre=-45.29:	cstre=-21.42:	cstre=9.37:	cstre=62.81
cstre	-.0014	-.0015	-.0017	-.0019
	(.0004)	(.0005)	(.0006)	(.0007)
crsmk=.092	-.0078	-.0086	-.0095	-.0108
	(.0522)	(.0577)	(.0642)	(.0723)
rcafk=.167	1.057	1.168	1.299	1.463
	(.1249)	(.1353)	(.1767)	(.2538)

Number of firms 71 (17 firms dropped due to all positive or all negative outcome)

NB-:
* We compute marginal effect at 25%, 50%, 70% and 90% percentile value of % change in stock closing price or stock return (cstre), where crsmk (change in sale) and rcafk (cash flow) are kept constant at the value near to their mean value. Values are- crsmk=.097, rcafk=.142

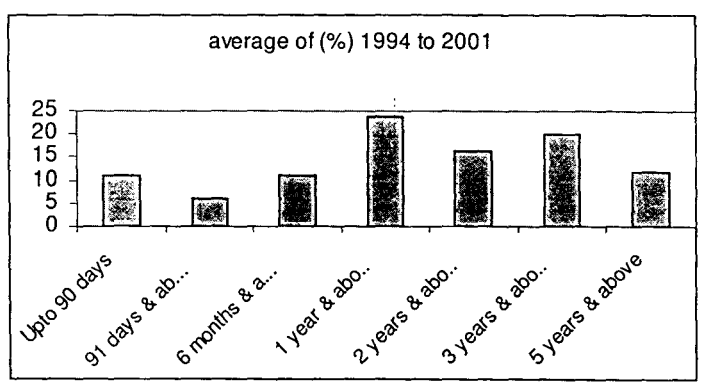
**Standerd deviations are in parenthesis.

*** rcafk is cashflow (profit +depreciation) scaled by previous year's capital stock, crsmk is change in sales scaled by previous year's previous year's capital stock.

*** **Appendix A**

Maturity Pattern	Average of % of total deposit (1994 to 2002)
Upto 90 days	11.14
91 days & above but<6 mounth	06.05
6 months & above <1 year	10.94
1 year & above but <2 year	**23.59**
2 years & above but <3 year	16.35
3 years & above but <5 year	20.14
5 years & above	11.78
Total	100.00

Source: RBI (website)



***Appendix B

Definition of variables

Total fixed asset (K_t)
Our total fixed asset is value of gross fixed asset. We collect value of gross fixed asset from Prowess data set (CMIE).
These are the fixed assets that are used for producing goods and services.
Investment (I_t)
Our investment is change in Total fixed asset ($I_t = K_t - K_{t-1}$)

Sales (S_t)
Our sale is value of sale of manufactured goods.
This is the sales generated by an enterprise through sale of it's own manufactured goods.
Change in sale $dS_t = S_t - S_{t-1}$

Cashflow (CF_t)
Our cashflow is net profit after tax plus depreciation.

Borrowing from " All India financial Institutes" (BF_t)
It is institutional borrowing from in prowess data set.
It is Borrowing sourced from all India financial institutions and others. Financial institutions include development banks. and their subsidiaries. Lending from insurance companies also form part of institutional borrowing. Debentures privately placed with financial institutions do not form part of borrowing from financial institutions.

Stock price (P_t)
Our stock price of the year is the closing stock price on Bombay stock exchange

Percentage of export out of total sale
"rex" = ratio of export= (value export of goods / value of manufactured goods) *100

"ringk"= I_t / K_{t-1}

"rcafk"= CF_t / K_{t-1}

"rbfk"= BF_t / K_{t-1}

"crsmk" = dS_t / K_{t-1}

stock return= $((P_t / P_{t-1})-1)$ *100

*NB- all variables (excluding stock price and number of outstanding share) scaled by price index of manufacturing sector (1993-94 base year). Cashflow and borrowing from financial institutes scaled to capture the purchasing power of these variables.

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