NSE RESEARCH INITIATIVE

PAPER NO.: 5

Determinants of Financial Performance of Indian Corporate Sector in the Post-Liberalization Era: An Exploratory Study

Ram Kumar Kakani,
Biswatosh Saha and V. N. Reddy

National Stock Exchange of India Limited

Determinants of Financial Performance of Indian Corporate Sector in the Post-Liberalization Era: An Exploratory Study

RAM KUMAR KAKANI, BISWATOSH SAHA AND V. N. REDDY*

This paper attempts to provide an empirical validation of the widely held existing theories on the determinants of firm performance in the Indian context. The study uses financial statement and capital market data of 566 large Indian firms over a time frame of eight years divided into two sub-periods (viz., 1992-96, and 1996-2000) to study Indian firms' financial performance across various dimensions viz., shareholder value, accounting profitability and its components, growth and risk of the sample firms. It reveals that even on the same data, the determinants of market-based performance measures and accounting-based performance measures differ due to influence of 'Capital Market Conditions'. We found that size, marketing expenditure, and international diversification had a positive relation with a firm's market valuation. Apart from these firm attributes that reflect either operating parameters of firms or 'strategic choice' of firm managers, we also found that a firm's ownership composition, particularly the level of equity ownership by Domestic Financial Institutions and Dispersed Public Shareholders, and the leverage of the firm were important factors affecting its financial performance. The different implications of the findings for various stakeholders of a firm are also discussed.

* Ram Kumar Kakani is an Assistant Professor at XLRI, Jamshedpur. Biswatosh Saha is an Assistant Professor at VGSOM, IIT-Kharogpur. V. N. Reddy is a Professor at IIM - Kolkata. The views expressed in this paper are of the authors and not necessarily of NSE.

I. Introduction

The capitalist firm being one of the prime economic institutions of a modern economy, analysis of its performance assumes immense significance. Analysis of the determinants of firm performance is of utmost importance to all stakeholders of a firm, especially to its common equity investors. Though a firm's performance can be analyzed along multiple dimensions, in this study, we remain confined to the financial aspect, engaging in an econometric analysis of the determinants of financial performance of a 'large' sample of 'pubic limited companies' in India – the firm being the unit of analysis.[1] The period of the study spans across the decade of the 1990s – from 1992-93 to 1999-2000, which will be divided into two sub-periods.[2] We will examine how a set of predictor variables that reflect operating characteristics of firms and strategic decisions of firm managers affects multiple measures of financial performance of firms.

The decade of the 1990s, which forms our period of study, has witnessed radical changes in public policy in India that can be expected to have an effect on the macroeconomic environment within which firms always operate (see, Khanna, 1999; and Pal, 2001). There has been, generally, a reduction in the involvement of the State in economic activities – both as a direct participant in the production process and through its indirect control over the process of production and resource allocation in the economy. These changes were manifested in dismantling of the industrial licensing system, a dilution of anti-monopoly laws, withdrawal of directed credit programs, and opening of several economic activities to private sector participation. The financial sector also experienced deregulatory initiatives in the form of unfreezing of interest rate controls and public policy initiatives to encourage the growth of financial markets – for both equity and debt (bonds) instruments. All these changes affect the operating environment of the firm in as much as it increases the 'strategy space' available to managers of firms – decisions on investment, in the form of acquisition or divestment of business, expansion of capacity, and modes of financing these, became more a matter of 'strategic choice' for firm managers. Decisions located within the boundaries of the firm, therefore, played a greater role in driving the financial performance of the firm and its valuation in the equity market, under the new policy regime over the previous decades. A study, such as the present one, therefore, becomes more relevant.

[1] In the context of developing economies such as India, multiple firms owe allegiance to and are controlled by the same business group/family and an argument can be made to consider the '*business group*' (an aggregation of firms in the same business group) as the appropriate unit of analysis. But, a firm level analysis, nonetheless retains its importance. In this study we try to tackle this problem by including 'business group affiliation' as a control variable in the econometric exercises. We would again refer to this problem of dichotomy between choosing the 'firm' or the 'business group' as the proper unit of analysis in the concluding section of the report.

[2] The rationale for dividing the study period into two sub-periods, 1992-96 & 1996-2000, will be discussed later.

In looking into firm level financial performance, we will be concerned with two sets of performance measures – one based on capital market valuation of a firm and the other set based on accounting measures of profitability and financial performance. The rationale for choosing two sets of measures lies in the possibility that capital market-based valuations, to the extent that they are shaped by expectation of future profit streams and the presence of speculative bubbles, can get divorced from measures of current profitability (see, Shiller, 1989). We develop these arguments more fully in section II that follows this introductory exposition, wherein we present the research design and the rationale for our choice of independent predictor variables used in the study. Section III contains details about the methodology used in the study, including a definition of various dependent and independent variables and a brief description of the sample of firms. Section IV presents and discusses the results obtained from the econometric analysis of financial performance of the firms. Section V contains a summary of the important results derived from the research and possible implications of the same for practitioners and various capital market participants.

II. Research Design and Choice of Independent Variables

In this section, we will define the research design and the measures of financial performance with which we would be concerned in this study. We will also define the independent variables used and the rationale for our choice of variables. We begin by elaborating the measures of financial performance used in the study.

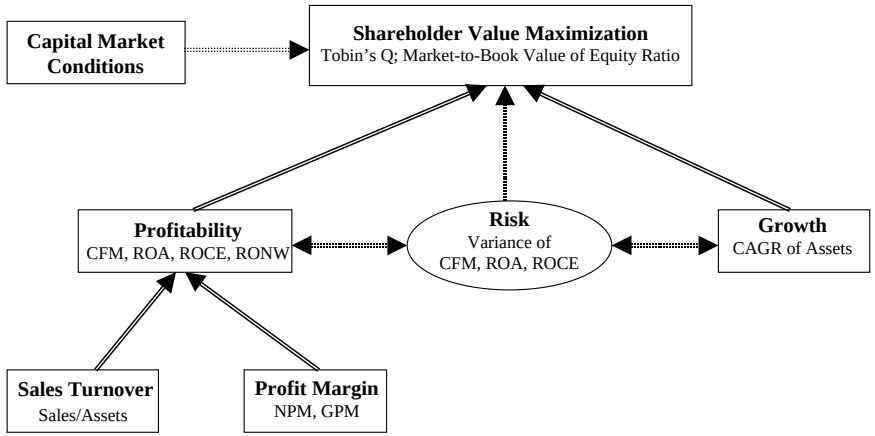
The Anglo-Saxon model of corporate governance places emphasis on shareholder value maximization as the objective of a business organization – shareholder value being derived in terms of market valuation of a firm in the securities market. Thus, the principle of shareholder value maximization provides a conceptual and operational framework for evaluating the performance of firms. Shareholder value, defined as the market valuation of a firm, is dependent on several factors. A firms current profitability, its risk, its growth, which is a proxy for the potential future earning streams of the firm, and existence of speculative bubbles are the four major factors that impinge upon the market valuation of a firm (see, Fruhan, 1979; and Branch & Gale, 1983). There are, however, arguments (Brief & Lawson, 1992; and Peasnell, 1996) that accounting-based measures of financial performance are a sufficient predictor of a firm's market-based valuation and returns. But, we choose to retain multiple dimensions of performance in our analysis. Figure 1 illustrates these various factors that drive market valuation of a firm along with the measures used in this study to capture them.

Current financial performance of a firm directly influences its market valuation. In this study, we use CFM (Cash Flow Measure), ROA (Return on Asset), ROCE (Return on Capital Employed) and RONW (Return on Net Worth) as measures of current profitability of a firm. Profitability, moreover, can be decomposed into its components – sales turnover and profit margin (Figure 1). As

argued by Ross et al. (1996), both these components of profitability can influence the overall profitability of a firm. While a higher sales turnover implies a better utilization of asset base of the firm and hence higher efficiency, a higher profit margin implies that the firm enjoys significant market power and hence can reap what economists call 'producer surplus' or 'rents'. The effect of various determinants of firm performance on the two components of profitability (as identified above) can diverge and that possibility makes the inclusion of profitability dimensions as an object of inquiry an interesting endeavor.

Risk and Growth are the other two dimensions of firm performance that affects its market valuation. We use coefficient of variance of earnings as measures of risk, and annual assets (or sales) growth rate as a measure of growth of the firm. Since, market value of a firm is a function of its return, given the level of its risk (Fruhan, 1979), risk of a firm becomes an important determinant of its valuation. Growth is the other important component influencing valuation because financial markets, it is argued, impute the expected future profit streams as well as in determining in the value of a firm (Varaiya et al., 1987). Since, a high-growth firm can be expected to have a higher future profit stream, growth has a positive influence on valuation of a firm. In this study, we use historical data on growth and risk, assuming that it apprehends or indicates the future risk and growth profile of the firm.

Figure 1: Financial Performance and its Components



In this research, therefore, we would attempt to find the effect of a set of independent variables (about which we discuss shortly) on market-based measures of firm's financial performance and then try to find out how the predictor variables affect current profitability (accounting measures) and its components, i.e. profit margin and sales turnover, risk and growth of the sample firms. One important factor that can influence the market valuation of a firm is the existence of speculative bubbles or what observers call '*stock market fancy*' (Branch & Gale, 1983) remains

beyond our analysis, principally because it does not lend itself to empirical quantification. But, to the extent that the effect of the predictor variables on market-based performance measures and the accounting-based performance measures differ in our study, we can attribute the difference to speculative forces that influence assets pricing in equity markets.

Independent variables

Below, we discuss briefly about each independent variable and our rationale for its inclusion as a possible determinant of firm performance. Broadly, there are three sets of variables - a) factors, such as, the level of marketing spend of a firm, which is (to a large extent) a reflection of 'strategic choice' of firm managers or operating characteristic of the firm; b) factors such as, ownership pattern of the firms' equity that can affect its governance; and c) factors such as, size and age of the firm that are shaped more by the history of its evolution.

- **Size**
  Size is expected to be an important determinant of firm performance. Size can have a positive effect on firm performance, since larger firms can leverage their size to obtain better deals in financial as well as product or other factor markets (Mathur & Kenyon, 1998). This could operate through the ability of large firms' to extract rents from product markets, where they are dominant, or through obtaining better access to key factor inputs, including human and non-human resources (Hill, 1985). Large organizations often get access to cheaper financial resources, as well. These effects are more pervasive in institutional contexts of incomplete or imperfect markets that are more likely to be the case in developing economies such as India. On the other hand, Singh & Whittington (1968), and Banz (1981) argued that size had a negative effect on firm performance – as firm size grows it becomes more difficult for it to sustain impressive financial performance. We therefore include 'firm size' as an independent variable in the study, hypothesizing that large sized firms will have better financial performance.

- **Age**
  Several earlier studies (Batra, 1999, Lumpkin & Dess, 1999) argued that firm age has an influence on its performance. Sorensen & Stuart (1999) argued that organizational inertia operating in old firms tend to make them inflexible and unable to appreciate changes in the environment. Newer and smaller firms, as a result, take away market share inspite of disadvantages like lack of capital, brand names and corporate reputation with older firms. Age, therefore, is included as a variable in our study; the hypothesis being that age will be negatively related to firm performance.

- **Leverage**
  Capital structure of a firm is an important determinant influencing firm performance (Kakani & Reddy, 1996). The classical theory in the traditions

of the Modigliani-Miller hypothesis, held that the financial structure was irrelevant for firm performance – since, in a perfectly competitive world with perfect information and costless enforcement of contracts, it is only real factors that can affect firm performance. But recent advances in theories of finance recognize capital structure of a firm to be relevant for determining its financial performance. Myers' (1984) 'pecking order hypothesis' indicated that firms prefer retained earnings to debt and they prefer debt to new equity as a form of financing new investments. The cost of capital for the firm also depends on the form of financing; retained earnings, debt and equity issues having progressively higher cost to the firm. There are two effects at work here - a 'price' and a 'quantity' effect. Barton & Gordon (1988) suggested that a firm with high earnings rate would maintain a relatively lower level of leverage because of its ability to finance itself from self-generated funds. To the extent that modes of financing and hence the 'capital structure' of a firm influences its cost of capital as well as access to financial resources to fund investments, it has a direct bearing on firm performance. Higher leverage, on the other hand, also leads firms to have higher bankruptcy risk. The capital structure of a firm also affects its governance, to the extent that debt-holders become important stakeholders of a firm with higher leverage. Much of the positive effects of higher leverage and consequent debt financing that Myers (1984) talks about depends on the ability of debt-holders to perform a better monitoring role. In an institutional context, where this does not take place, the negative effects of higher leverage would prevail. (We discuss the Indian situation more fully in next paragraph.) Hence, we included leverage as an independent variable, with the hypothesis that lower leverage would be associated with better performance of firms in India.

- **Domestic (Financial) Institutional Investors**
  Domestic Institutional Investors (DIIS) ownership refers to the equity stake owned by the public sector financial institutions and nationalized banks in public limited companies. In India, prior to the 1990s, the financial markets were segmented, with banks providing working capital support to industry and financial institutions extending long-term investment resources, either as debt or through subscription to the equity issues by the firm. Equity subscription in public limited companies promoted in the private sector by the financial institutions took two main forms – subscription to rights issues or underwriting of public issues and through conversion of debt to equity in case of financial distress of the indebted firms in some cases.[3] Financial institutions also provided debt finance to fund the investment requirement of large firms. Financial institutions in India, therefore, have both equity and debt exposure to large firms. Such combined debt-equity positions had led

[3] (a) Conversion of debt to equity in case of financial distress of indebted firms; and (b) Subscribing to devolved public issues; are usually routes for DIIS ending up with large-scale equity holdings in failing firms.

to institutional arrangements where lending institutions exercised substantial management control over enterprises, particularly during times of distress, in economies such as Japan and Germany (see, Allen & Gale, 1995). Such structures also helped firms in gaining access to financial resources (often at a cheaper rate, as financial institutions often provided cheap credit as part of industrial policy initiatives of the Government) that funded their aggressive growth. But, in India, it is widely believed that political economy factors led to inadequate monitoring of firms by financial institutions. Chakravarty (1985) for instance, emphasizes that financial institutions in India were prevented from exercising their legitimate rights as equity holders in large private sector companies. So, the positive effects of funding by financial institutions may be absent in India. It has also been argued that DIIS ownership tempers a firm's performance by constraining their strategies, since consent from financial institutions may be required before major decisions can be taken (Chaganti & Damanpour, 1991; Sridev, 1998). We include domestic institutional ownership as a variable in our study, hypothesizing that there can be a negative relation between DIIS ownership and firm performance.

- **Minority (Public) Shareholders**
  Broadly there are five types of investors in India: (a) Owner(s)/Director(s); (b) Foreign Investor(s); (c) Domestic Institutional Investor(s); (d) Mutual Fund(s); and (e) Minority shareholders (also known as Public holding or Floating Stock). Agency theory argues that firms where the divorce between management and ownership is less acute would be performing better since managers and owners often have different and contradictory goals and aims with regard to the firm (Fama & Jensen, 1983). It is argued that Foreign Investors and Mutual Funds use their formal authority, social influence, and expertise to 'capture' property rights and strongly influence organizational performance wherein they have higher stake (see, Kang & Sorenson, 1999; Chibber & Majumdar, 1999). Minority public shareholders (PUBLIC) stake is the stake held by retail investors, who are usually very small and dispersed. They often do not have the incentives or the capability to monitor firm performance. This argument obviously depends on the premise that pricing in financial markets serves only as an imperfect signal of firm performance and firm monitoring based on pricing signals is imperfect at best. So *ceteris paribus*, higher the PUBLIC holding, worse should be the governance of the firm and hence poorer should be its financial performance. Consequently PUBLIC ownership has also been used as an independent variable of firm performance.

- **Net Exports**
  Most economies often provide their exporting firms with fiscal and tax incentives (Saha, 2001). Exporting firms in India have access to EXIM (Export and Import) credit facilities and various tax benefits, such as, Sec. 80HHC of

the Income Tax Act (Puliani & Puliani, 2000). These benefits can lead to better financial performance of exporting firms. This support of the state could even have a secondary effect. This may lead to net exporters having better discounting in the equity markets than others may, *ceteris paribus* (Kakani & Reddy, 1996), leading to exporters having a lower cost of equity. Exporters would also be able to learn from their experience in competing in more dynamic global markets and adopt those learning's, including technological innovations, in domestic markets as well, to gain advantage over their competitors not having the same international exposure. Exports of a firm can also be a signal that the firms' operations are efficient and that is why they are successful in the export market. Net exports of a firm can thus be positively linked with its financial performance.

- **International Diversification**
  International Diversification involves producing/procuring the same products (or services) but developing a wider geographical reach. Many authors (Slocum, 1997; Rees, 1998) stated that international diversification offers several advantages. First, it allows firms to take advantage of new market possibilities (Wan, 1998). International diversification also allows firms to exploit their core competencies and distinctive capabilities across units in different international markets (Hoskisson & Hitt, 1990). Moreover, firms that are significantly exposed to international markets are able to integrate their operations across national markets, achieve enhanced benefits of innovation and economies of scale (Caves, 1982). Based on the above discussion, we believe international diversification to be an important factor affecting firm performance - the hypothesis being that there is a positive relation.[4]

- **Marketing Expenditure**
  The intensity of marketing expenses often influences the financial performance of a firm. Marketing expenses allow a firm to create entry barriers for its competitors by building intangible assets (say, brands) leading to higher profitability for the firm (Aaker, 1984). This is particularly important in industries where manufacturing technology is mature and firms rely on creating these marketing assets to create entry barriers. Marketing expenses in building brands can also help firms get over difficult years and protect their market share and sales volume, and defy industry trends (see, Mathur & Kenyon, 1998). Hence, we considered marketing expenses as an explanatory variable determining firm performance - hypothesizing on a positive relationship with firm performance.

[4] Note that international diversification differs from net exports, in that it includes '*exports and imports (additive)*', while net export is '*exports minus imports*' as a percentage of sales.

- **Working Capital Ratio**
  Solvency position of a business group is basically an expression of how much in liquid assets the firm currently has to build its business, fund its growth, and produce value. Long-term solvency position of a firm is usually given by its working capital ratio (WCM). It is often a function of the industry in which the firm operates and is given by {current assets - current liabilities}/{total sales}. So by using WCM as a variable we are also trying to catch the industry influences on a firms performance by way of a continuous variable. Each component of working capital (namely inventory, receivables and payables) has two dimensions, time and money. If a firm can get money to move faster around the cycle or reduce the amount of money tied up in the business, it will generate more cash. As a consequence, a firm could reduce the cost of bank interest or it will have additional free cash available to support additional sales growth or investment. Similarly, if it can negotiate improved terms with suppliers, the firm can effectively create finances to help fund future sales (Johnson et al., 1982; Gup, 1983). If a corporate is growing and its current activity represents a considerable increase over the corresponding period of the previous year; the firm may experience a reduction in its long-term solvency position. The faster a firm (or the industry in which it is working in) expands, the more cash it will need for working capital and investment (Martin et al., 1991). If WCM of an industry in which a firm performs dips too low, the firm risks running out of cash. Based on the above discussion we perceive WCM to be an important factor influencing a firm's performance and hence take it as a variable.

- **Industry Effects**
  Porter (1980, 1987) argued that the industry of operation of a firm has a significant effect on the financial performance of a firm. Empirical analysis of firm performance in other countries, particularly in United States, (Schmalensee, 1985; Rumelt, 1991; McGahan & Porter, 1997) show that industry fixed effects exist and are important in determining firm performance. So, we will include industry fixed effects in our study, mainly as a control variable, the primary industry in which a firm operates being its industry affiliation.

- **Business Group Affiliation**
  Business houses are often initiated by a family/trust and bound together by equity cross-ownership and common board membership (Encarnation, 1989). Business group affiliates often share a common brand identity, draw a common labor pool, and rely on each for financing (Dutta, 1997). Groups through interlocks, would allow knowledge about technical advances, market opportunities, and innovative strategies, to pass among the group affiliates (Keister, 1998). On the other hand membership in diversified groups can be associated with conflicts of interests between controlling group shareholders

and minority shareholders, apart from owner managers possibly destroying value due to lack of expertise in a variety of industries (Kakani, 2001b). The intrusion of family roles into the professional sphere, poor demarcation of responsibility and instability due to not-well-laid succession plans create problems for group affiliates (Pant & Rajadhyaksha, 1996). Thus, we took business group affiliate as an independent dummy variable in the study, to control for its effects.

This study, therefore, attempts to analyze the determinants of financial performance of publicly listed firms in India - both financial performance with respect to capital market-based measures and with respect to accounting measures. We also examine how the independent variables affect the other drivers of market valuation, apart from accounting profitability, i.e. risk and growth of firms. We also decompose the accounting profitability dimension and look into determinants of net profit margins and asset turnover – to obtain insights on what drives the overall profitability performance. It may be possible that a firm characteristic (independent variable) does not have a significant effect on profitability but is instead related to its components having opposing effects that nullify each other (Serrano, 1998). A profitability component analysis will catch these effects.

Some important issues on which the research provides insight, therefore, are:

a. What are the chief determinants of a firm's market valuation, and its financial performance?

b. Are the factors determining the corporate shareholder value different from the factors determining a firm's accounting-based rates of return?

c. Does size of the firm, its financing pattern, its ownership pattern, strategic decisions/choices like its marketing expenditure, and its operating characteristics like working capital management affect its valuation?

The next section explains the methodology followed and briefly introduces the sample used for the study.

III. Research Methodology

Data Sources

The financial statement and capital market data for our research are obtained primarily from publicly available databases maintained by Centre for Monitoring the Indian Economy (CMIE). CMIE's software database package is known as '*PROWESS*'. It contains information drawn from annual reports, other regulatory reports (from stock market filings), and press releases from several thousands of companies in India, as well as daily stock prices for firms. Bombay Stock Exchange (BSE) Official Directory and Capitaline database were used to crosscheck and also fill minor gaps in the data set.

Time Span of Study

To avoid factors such as temporal stability and business cycles influencing our study, we used a longer time frame of study of 8-year period. The study was carried out for the recent period of 1992-2000. The significance of this period for the Indian firms needs hardly to be emphasized, as Indian economy had to go through a phase of increasing competition, deregulation, and restructuring. This 8-year period of study was divided into 2 sub-periods of 4 years each. Period 1 would be from financial year 1992-93 to financial year 1995-96, a period of post-liberalization growth. Period 2 was from 1996-97 to 1999-2000, a period of industrial recession during the post-liberalization[5] phase. The rationale for selection of these time periods is given below:

- The first period of the study would look into the reaction of the firms to a period of growth during the first phase of liberalization program. This was a period when the economy had opened up, exporting industries were given extra benefits, and industrial growth rates were high.
- The second period of study would look at the firms' performance and their characteristics during the post-liberalization period when the industry growth rates slowed down. This was also a period when a lot of policy changes took effect and many institutions such as, Securities and Exchange Board of India (SEBI) and National Stock Exchange (NSE) streamlined themselves.

A longer time span of study spanning two equal periods of 4 years would generally make the performance analysis more rigorous to take the impact of business cycles on various industries.

Sample

Firms in the sample were selected on the following criteria:

1. They should be listed on either BSE or NSE with the required data and a listing history of at least 8 years (1992-2000).
2. They should have had an average market capitalization of more than Rs. 1 crore during the period of study.
3. They should not have had negative (or abysmally low[6]) values for total assets or average net worth during the period of study.

This means the sample contains relatively larger and profitable firms[7]. We excluded firms with very low or negative net worth because such firms are usually

[5] The mean annual growth rate of total assets of the sample firms fell from above 40% during period 1 to around 10% during period 2. The mean net profit margin of the sample firms fell from 7.19% in period 1 to 3.60% in period 2.

[6] A value, which is less than Rs. 1 crore, was considered abysmally low.

[7] Further, firms that had not commissioned their production by financial year by 1993 were excluded for the sake of comparability & consistency.

nearing bankruptcy or are already under the ambit of the bankruptcy procedures (Sick Industries and Companies Act, 1984 in India). There are therefore limitations on their operations especially regarding asset purchases and disposal, or such firms are under the supervision of an operating agency (usually a bank or a financial institution) that oversees and implements a revival scheme (BIFR schemes in India) – with the result that operations of such firms are very different from normal firms and hence we do not include them. The total number of firms we came across in the CMIE-PROWESS database satisfying the above criterion was 566 out of a total number of 4515 firms.[8] The above sample constituted around 58% (by market capitalization) of Indian corporate sector in 1999. The same sample of 566 firms was used for both the periods of the study i.e., 1992-96 and 1996-2000. Appendix A provides the industry-distribution and descriptive statistics of the sample firms.[9]

Variable Notation and Measures

Measures of Performance

We calculated all firm performance measures and other financial figures based on the formulae given below and used simple averages for the each of the four-year sub-periods of the study, unless mentioned specifically.

As discussed in the framework, the study evaluated performance on the following five dimensions as shown below:

- Growth
- Risk
- Value Creation
- Profitability
- Profitability Components

The measures used for these five dimensions are:

1. **Measuring Shareholder Value:** Tobin's Q ratio, the ratio of market value of assets to replacement cost of those assets, is the most appropriate measure of value creation. Theoretically, Tobin's Q is a much more appealing measure than accounting returns (Wernerfelt & Montgomery, 1988). For our research purpose, we used a surrogate measure of Tobin's Q Ratio (TOBIN) defined as {market value of equity + book value of preferred stock + book value of debt}/{book value of assets}, where the market value of equity is calculated using the average[10] market price of the scrip over the year. Data limitations prevented us from using a better approximation to Tobin's Q. We will also use another surrogate measure of Tobin's Q ratio, Market-to-Book Value ratio (PBV). The usage of PBV has also been supported in literature as a measure of value creation (Beaver & Ryan, 1993; Fama & French, 1992, 1995). Both TOBIN and PBV were calculated as averages over each sub-period of 4-years.

2. **Measuring Growth:** A review of empirical literature (Dess & Robinson, 1984) shows that the most used measures for growth have been compounded annual growth rate of sales and total assets. Hence, we use compounded annual growth rate of total assets (CAGRTA) and total sales (CAGRTS) as our growth measures.

3. **Measuring Profitability:** We will use the four most used accounting measures in the literature i.e., Cash Flow Ratio (CFM), Return On Assets (ROA), Return On Capital Employed (ROCE), and Return On Net Worth (RONW). The measures will be averaged over a period of 4 years to iron out any temporary swings in returns. The profitability measures are defined in such a way that they use both pre-tax profitability and post-tax profitability of the firms. CFM was calculated by adding depreciation to net profits of the group and using it as numerator over total assets of the group. ROA is defined as {net income + interest × (1-tax rate)}/{total assets}. The tax rate was taken as 40% and 35% for periods 1 and 2 respectively (based on the average tax rates on corporate sector during those periods). ROCE is defined as {net income + interest + tax}/{net worth + long-term liabilities}. RONW is defined as {net income}/{net worth}. In the past, many other researchers (Berger & Ofek, 1995; and Khanna & Palepu, 2000) used similar measures.

4. **Measuring Risk:** Risk has been widely measured in the literature as a coefficient of variance of earnings. Our study will have coefficient of variance in cash flow measure (VCFM), coefficient of variance of return on assets (VROA), and coefficient of variance of return on capital employed (VROCE) as the measures of risk. The four financial years taken for each period of study will make it feasible to calculate VCFM, VROA and VRONW. A glance on the correlation matrix in appendix B shows that for both sub-periods of the study, profitability and value creation measures were negatively and significantly related to VCFM, VROA and VROCE. This indicates that better performing firms had low VCFM, VROA and VROCE and poorly performing firms had high VCFM, VROA and VROCE (i.e., high fluctuations in earnings). To a large extent this justifies that VCFM, VROA and VROCE are indeed good measures of a firm's risk.

[8] The number of firms deleted due to non fulfillment of criteria's 1, 2, & 3 as given above were 3891, 16, & 42 respectively.
[9] 58% were affiliated to private Indian business groups, 28% of the firms in the sample were private Indian (not affiliated to business groups), 10% were foreign controlled companies and 4% were State-owned enterprises.
[10] The average share price throughout the year is calculated as the mean of the low and high price of the share over the year (Lev, 1974).

5. **Measuring Profitability Components:** The two constituents of profitability are return on sales and sales turnover ratio. Gross profit margin (GPM) and net profit margin (NPM) will be used to measure return on sales. While, GPM was calculated as profit before depreciation, interest and tax over total sales ratio, NPM was calculated as profit after tax to total sales ratio. Sales-turnover ratio was calculated as sales-to-assets ratio (STA) - all measures being simple averages over the sub-periods of study.

Measures for Independent Variables

1. Age: Year of incorporation of the firm was taken as year when it began operations. We deducted that from the year 2000 to get its age.
2. Business group affiliation: A dummy variable was used for a firm being a business group affiliate. So, 1 was given to group affiliates and 0 otherwise. For the purpose of identifying business group affiliation, we adopted the CMIE database's classification of firms into business groups and non-business groups.
3. Domestic Institutional Investors Stake (DIIS): The entire stake held by government owned financial institutions including LIC, ICICI, IDBI, GIC and UTI are added together to get the domestic institutional investors stake in the firm from the CMIE database.
4. Leverage (DERATIO): We took long-term debt to net worth of the firm as a measure of its leverage.
5. Industry Fixed Effects: 2-digit ISIC-based[11] industry dummies are included in the model to take care of industry fixed effects. A dummy variable INDYZ is used, which equals 1 for a 2-digit ISIC industry YZ wherein the firm had its maximum sales and 0 otherwise. For example, if Eicher Motors sales were in the Transportation Equipment Industry (2-digit ISIC industry code 37) then its industry dummy variable will be 1 for IND37 and 0 for all other 2-digit ISIC industries. The coefficient on this dummy registers a possible difference in the intercept between industries.
6. Minority Investors Stake (PUBLIC): The stake held by public shareholders (also know as floating stock) in a firm from the CMIE database was used as an indicator for minority shareholders stake.
7. International Diversification: {Total Exports + Total Imports}/{Total Sales} has been taken as the measure for international diversification of a firm.

[11] International Standard Industrial Classification (ISIC) is a US-based classification system for all businesses in the economy. It is used extensively in the literature to classify firms based on their primary industry of operation.

8. Working Capital Ratio (WCM): One of the best measures for solvency position of an organization is its working capital ratio (WCM) measured as {Current Assets - Current Liabilities}/{total sales}.
9. Marketing Expenditure (MARKTNG): {Marketing + Advertising}/{total sales} ratio was used a measure of a firm's marketing expenditure.
10. Net Exports (NETEXP): {Total Exports - Total Imports}/Total Sales of the firm was taken as the measure for its Net Exports.
11. Size: The study will use multiple measures of size - natural logarithm of total assets (LNTA), total market capitalization (LNMC), and total sales of the firm (LNTS) - LNMC being a market-based measure and, the other two, LNTA and LNTS, accounting-based measures of size. Independent variables from 6 to 11 were all averages over 4-years sub-period.

Econometric Analysis

Correlation matrix was calculated for the two periods between all variables (see, appendix B). We tested the hypotheses by using linear multiple regression technique that models firm performance as a function of its size, leverage, and marketing expenditure among others as shown below. Each period consists of four years each (1992-96, and 1996-2000). The regressions were computed for both periods using all the dependent variables (namely - TOBIN, PBV, ROA, ROCE, CFM, RONW, GPM, NPM, STA, CAGRTA, CAGRTS, VCFM, VROA, & VROCE) and the available independent variables (except ownership, where we limit ourselves to analysis of the second sub-period only).

For period 2, the regressions were also performed using all the dependent variables and all the independent variables including the two ownership[12] variables (PUBLIC and DIIS), whose data was available for only period 2. For period 2, we also performed the above regressions using lag period independent variables (such as, change in size from period 1 to period 2) separately.

Performance = *f (size, age, leverage, working capital ratio, international diversification, public ownership, domestic institutional ownership, marketing expenditure, net exports, industry fixed effects, business group effects)*

SPSS version 10.0.1 software package was used for all the above purposes. Table A.1 in appendix A provides the industry-wise distribution of the sample firms and Table A.2 presents the mean and standard deviation for the complete sample of firms.

[12] For each company, the ownership data reported in CMIE-PROWESS database relates to one point of time (latest available); i.e. a time-series is not reported. The reporting dates also vary from company to company, so that the ownership data for the entire sample of firms do not relate to the same date. In that sense it is not '*very clean*'.

Table 3.1: Notations and measures used for all variables in the study

Variable Name	Notation	Description
Dependent Variables		
1. Value Creation	TOBIN*	*{market value of equity + book value of preferred stock + book value of debt} / {book value of assets}*
	PBV*	*{market value of equity} / {book value of equity}*
2. Profitability	CFM*	*{net income + depreciation)} / {total assets}*
	ROA*	*{net income + interest × (1-tax rate)} / {total assets}*
	ROCE*	*{net income+interest+ tax} / {net worth + long-term liabilities}*
	RONW*	*{net income} / {net worth}*
3. Profitability Components	*GPM**	*{net income + tax + interest + depreciation} / {total sales}*
	NPM*	*{net income} / {total sales}*
	STA*	*{total sales} / {total assets}*
4. Growth	CAGRTA	*Compounded annual growth in total assets*
	CAGRTS	*Compounded annual growth in total sales*
5. Risk	VCFM	*Coefficient of variance in cash flow measure*
	VROA	*Coefficient of variance in return on total assets*
	VROCE	*Coefficient of variance in return on capital employed*
Independent Variables		
1. Size	LNTA*	*Natural logarithm of total assets*
	LNMC*	*Natural logarithm of total market capitalization*
	LNTS*	*Natural logarithm of total sales*
2. Industry Effects	INDYZ	*Firms largest sales from the industry with 2-digit ISIC code YZ*
3. Marketing Exp.	MARKTNG*	*{marketing + advertising } / {total sales}*
4. WC Ratio	WCM*	*{current assets - current liabilities} / {total sales}*
5. Age	AGE	*2000 - {Year of Incorporation}*
6. Net Exports	NETEXP*	*{total exports - total imports} / {total sales}*
7. Leverage	DERATIO*	*{long-term debt} / {net worth}*
8. International Diversification	INTDIV*	*{total exports + total imports} / {total sales}*
9. Business Group Affiliate	BGROUP	*1 for affiliates of Indian business groups and 0 for others*
10. Minority Stake	PUBLIC	*Public investors stake in the firm*
11. Domestic Institutions Stake	DIIS	*Domestic institutional investors stake in the firm (equity stake held by government owned institutions such as UTI, LIC, GIC, ICICI, IDBI, and IFCI)*

Note: (1) Except DIIS, AGE, PUBLIC, and BGROUP for all other measures we used 4-year data. (2) Notations marked with * at the end were calculated based on the 4-year average figures. (3) Growth variables were calculated using the firm's first and last financial years actual figures (say, for period 1, annualized growth between the financial years 1992-93 and 1995-96). (4) Risk variables were calculated based on yearly profitability ratios for the firm. (5) The notation CH was applied for lag period independent variables (for example, CHLNTA means change in LNTA from period 1 and 2). (6) 'Last company reported' figures (not later than financial year 1996) were used from the CMIE database for measuring DIIS and PUBLIC.

IV. Empirical Results and Discussion

In this section, we present the results of regression analysis.[13] We begin by discussing the results of regression analysis with market-based performance measures as the dependent variable and then move on to regressions with accounting profitability and its components, growth and risk as dependent variables, in that order. In each case, we report results for both the sub-periods of the study, 1992-96 and 1996-2000. In the second set of regressions, we include the ownership variables – domestic institutional ownership, and public ownership, but the analysis remains limited to only period 2, for limitations of data availability. Lastly we present the regression results of performance limited for period 2 using significant lag period independent variables (i.e., change in a specific independent variable such as size between period 1 and 2). In the end we have a discussion of the differences in the regression results using market-based performance measure and accounting-based performance measures as dependent variables.

Shareholder Value Dimension

Table 4.1 reports the results of regressions with market-based performance measure, i.e. Modified Tobin's Q ratio, as the dependent variable for both the sub-periods. Leverage ratio comes out to have a significant negative effect on shareholder value in both the sub-periods, which is in line with the hypothesized relationship. Marketing expenditure and International diversification come out as positive determinants of shareholder value confirming our hypothesis – the result holding for both the sub-periods. Size has a positive effect, though the significance of the positive relationship declines in the second sub-period. Working capital ratio and business group affiliation does not have any significant effect in determining shareholder value.

Age of the firm had a significant positive effect on shareholder value in the first sub-period. This however does not hold any longer in the second sub-period probably indicating that older firms with established relationships have performed better than younger ones in period 2, which has been, in general, a more difficult period for business in India. This may also be a reflection of successful restructuring exercises carried out by the older firms in response to the changed business environment over the 1990s.

[13] We are presenting here the regressions in brief, for select dependent variables to make the presentations simple and lucid. For shareholder value dimension, we are presenting here the results with TOBIN as the dependent variable and not for PBV. For accounting profitability dimension, we are presenting the results for CFM, ROA and ROCE as the dependent variable and not for RONW. The other results are not being shown because they do not provide any additional significant information. The complete detailed regression results for all dependent variables (using all the three size measures viz., LNTA, LNMC and LNTS) can be obtained from the authors.

Table 4.1: Linear multiple regression coefficients with dependent variable as Tobin's Q (TOBIN).

Dependent Variable → / Independent Variable ↓	TOBIN1 1992-96	TOBIN2 1996-2000
1. Business Group Affiliate	-0.155	-0.206
2. Age	0.007*	0.004
3. Working Capital Ratio	0.114	0.054
4. Leverage	-0.121**	-0.154**
5. Marketing Expenditure	0.057**	0.052**
6. Net Exports	0.004	
7. International Diversification	0.008**	0.006**
8. Size (LNTA)	0.141**	0.087*
9. Industry Fixed Effects	Included	Included
(Constant)	1.177**	1.114**
Adjusted R Square	0.094	0.060

Note: (a) A single (*) asterisk and two (**) asterisks beside the coefficient denotes significant at the 95% and 99% level of confidence respectively; (b) For period 2, we did not use Net Exports as an independent variable to avoid any multicollinearity problems due to its high correlation with International Diversification (see, appendix B). However, simultaneous use of both the variables did not change the above results; (c) Sixteen industry dummies were used to reflect the effect of industry and are not shown.

Profitability Dimension

Table 4.2 reports the results for regressions with accounting profitability as the dependent variables – ROA, ROCE, and CFM being used as the three measures of profitability. Leverage again comes out as having a significant negative effect on accounting profitability measures. The effect is particularly noticeable for period 2 for all three measures of profitability. In period 1, leverage did not have significant effect in case of ROA & ROCE, and a negative effect of lower significance (95% confidence level) for CFM. Marketing expenditure has a positive effect on all the measures of profitability – but the result is significant only at 95% level of confidence. The result, again, is stronger in case of the second sub-period. Net exports have a highly significant positive effect on all the measures of accounting profitability indicating that the State policy of promoting export-oriented industries had indeed benefited export-oriented firms.

The size variable shows interesting behavior; while size has a significantly negative relation with all measures of profitability in the first sub-period, in the second sub-period the relationship changes sign and size becomes either a positive determinant of most profitability measures (or becomes insignificant in its effect). Perhaps, it is an indication that economies moving towards globalization have more opportunities for increasing profits for larger organizations in comparison to the smaller ones (Kilantaridis & Levanti, 2000). In India, policy changes during the last

decade have, in general, favored the larger sized firms. For example, on one hand, the list of items restricted for small-scale industries has been drastically reduced, on the other hand, permission to access overseas capital markets was restricted to organizations having a minimum size specified by the Reserve Bank of India (Khanna & Palepu, 2000).

Table 4.2: Linear multiple regression coefficients with dependent variables as Cash Flow Measure (CFM), Return on Assets (ROA) and Return on Capital Employed (ROCE).

Dependent Variable → / Independent Variable ↓	ROA1	ROA2	ROCE1	ROCE2	CFM1	CFM2
	1992-96	1996-2000	1992-96	1996-2000	1992-96	1996-2000
1. Business Group Affiliate	0.306	-0.484	-1.092	-0.496	0.218	-0.629
2. Age	-0.013	-0.011	0.072*	0.039	-0.023*	-0.021
3. Working Capital Ratio	0.884	2.424**	-2.912	0.138	-0.018	2.034*
4. Leverage	0.010	-1.218**	-0.293	-2.766**	-0.277*	-2.038**
5. Marketing Expenditure	0.061	0.124*	0.264*	0.297*	0.089	0.165*
6. Net Exports	0.034**	0.038**	0.051*		0.035**	0.039**
7. International Diversification	0.011	0.013	-0.005	0.031	0.015	0.015
8. Size (LNTA)	-0.456**	0.379**	-1.558**	-0.166	-0.395**	0.431*
9. Industry Fixed Effects	Included	Included	Included	Included	Included	Included
(Constant)	11.846**	5.792**	30.564**	18.641**	12.181**	6.825**
Adjusted R Square	0.082	0.169	0.111	0.115	0.091	0.220

Note: (a) A single (*) asterisk and two (**) asterisks beside the coefficient denotes significant at the 95% and 99% level of confidence respectively; (b) For ROCE2, we did not use Net Exports as an independent variable to avoid any multicollinearity problems due to its high correlation with International Diversification (see, appendix B). However, simultaneous use of both the variables did not change the above results; (c) Sixteen industry dummies were used to reflect the effect of industry and are not shown.

Profitability Magnitudes

Table 4.3 reports the results of regression with components of profitability, i.e. gross profit margins and sales turnover, as dependent variables. The exercise throws up some interesting results. Age, as an explanatory variable, has a highly significant negative relation with gross profit margins and a highly significant positive relation with sales turnover ratio, the result being similar and stable across the two sub-periods. Older firms due to their depreciated asset size, therefore appear to be having higher turnover ratios in comparison with the new ones. Another reasoning for the result could be that newer firms are enjoying higher profit margins in comparison to older ones, which is perhaps an outcome of employing a different strategy by these young firms. Since, the relation holds even after accounting and controlling for industry fixed effects, the result can hardly be attributed to different industry specialization of old and newer firms.

Size has a positive relation with profit margin but a negative relation with sales turnover. The opposing relation of size with the two components of profitability could be due to the fact that larger size leads to larger segmental market power and scale economies but lower production efficiencies and vice versa. As size has a negative relation with overall profitability, particularly in period 1, we can infer that the negative relation of size with sales turnover dominates over the positive influence on profit margins during period 1. Working capital ratio, again shows interesting relationship – significantly positive relation with margins and negative relation with sales turnover; the overall effect of working capital management on profitability dimension being muted as a result.

Marketing expenditure has a positive relation with sales turnover ratio but does not effect profit margins. Therefore, the positive effect of marketing expenditure on overall accounting profitability probably works through the positive effect on sales turnover. Firms with higher marketing spends, possibly, rely more on increasing volumes by either capturing market shares or driving the growth of the overall market size, rather than realize higher margins to drive better overall firm profitability. Firms with higher marketing expense might also have succeeded in maintaining their sales volume in the face of a general industrial slowdown.

Table 4.3: Linear multiple regression coefficients with dependent variables as Gross Profit Margin (GPM) and Sales Turnover Ratio (STA).

Dependent Variable → / Independent Variable ↓	GPM1	GPM2	STA1	STA2
	1992-96	1996-2000	1992-96	1996-2000
1. Business Group Affiliate	1.358	0.031	-0.086	-0.067
2. Age	-0.084**	-0.054**	0.005**	0.004**
3. Working Capital Ratio	11.331**	15.625**	-0.428**	-0.396**
4. Leverage	0.310	0.721	-0.011	-0.088**
5. Marketing Expenditure	-0.214	-0.133	0.041**	0.033**
6. Net Exports	0.027	0.108**	0.0002	-0.004**
7. International Diversification	0.060**	0.027	-0.003**	0.0002
8. Size (LNTA)	0.837**	1.889**	-0.070**	-0.069**
9. Industry Fixed Effects	Included	Included	Included	Included
(Constant)	14.978**	6.443	1.428**	1.373**
Adjusted R Square	0.658	0.612	0.280	0.298

Note: (a) A single (*) asterisk and two (**) asterisks beside the coefficient denotes significant at the 95% and 99% level of confidence respectively; (b) Sixteen industry dummies were used to reflect the effect of industry and are not shown.

Growth Dimension

Table 4.4 shows the results for regression with growth as the dependent variable. Age has a significant negative relation with growth, which is stable across the two sub-periods possibly indicating that older firms which are usually owned by business groups, utilize their cash flows in creating new group firms rather than expand through the older established firms (see, Khanna & Palepu, 1998; 2000), so much so that a firm level analysis does not capture the growth effect.

Size has a strong positive relation that is stable across the two sub-periods - i.e. larger firms growing faster. The relation of net exports changes sign from negative in first sub-period to positive in the next sub-period indicating that export-oriented firms have had good growth levels in period 2, a period of relative industrial recession. Leverage has a negative effect only in the second sub-period, that too only at a lower significance level. The other variables do not show significant relationship with growth as the dependent variable.

Table 4.4: Multiple regression coefficients with dependent variable as Growth in Assets (CAGRTA).

Dependent Variable → / Independent Variable ↓	CAGRTA1	CAGRTA2
	1992-96	1996-2000
1. Business Group Affiliate	-1.755	-1.112
2. Age	-0.588**	-0.165**
3. Working Capital Ratio	9.260	0.683
4. Leverage	-0.856	-1.541*
5. Marketing Expenditure	-1.203	0.057
6. Net Exports	-0.327*	0.113**
7. International Diversification	0.188	
8. Size (LNTA)	6.389**	1.993**
9. Industry Fixed Effects	Included	Included
(Constant)	21.947	10.775**
Adjusted R Square	0.078	0.076

Note: (a) A single (*) asterisk and two (**) asterisks beside the coefficient denotes significant at the 95% and 99% level of confidence respectively; (b) For CAGRTA2, we did not use International Diversification as an independent variable to avoid any multicollinearity problems due to its high correlation with Net Exports (see, appendix B). However, simultaneous use of both the variables did not change the above results; (c) Sixteen industry dummies were used to reflect the effect of industry and are not shown.

Risk Dimension

Table 4.5 displays the result of regressions with risk measures as the dependent variable. Size has a significant negative relation with risk measures, which is in line with the hypothesized relation of larger firms having lower risk. Larger sized firms are probably able to overcome recessions in their businesses utilizing their clout in financial markets and their market power in product markets.

Net exports have a significant negative effect on risk, particularly in the first period – when diversification of businesses into the international market seems to have had a stabilizing effect on their profits and/or sales. Leverage has a significant positive relation with risk, which is what intuition predicts – but the relation is not stable across the two risk measures or across the two sub-periods.

Table 4.5: Linear multiple regression coefficients with dependent variables as Coefficient of Variance in ROA (VROA) and Coefficient of Variance in CFM (VCFM).

Dependent Variable → Independent Variable ↓	VROA1	VROA2	VCFM1	VCFM2
	1992-96	1996-2000	1992-96	1996-2000
1. Business Group Affiliate	0.108	-0.377	0.025	1.160*
2. Age	0.0005	0.010	-0.003	-0.007
3. Working Capital Ratio	-0.176	0.851	-0.052	-2.244**
4. Leverage	0.048	1.139**	0.111**	0.382
5. Marketing Expenditure	-0.019	-0.063	-0.019	-0.029
6. Net Exports	-0.009*		-0.007*	-0.008
7. International Diversification	0.005	-0.005	0.003	
8. Size (LNTA)	-0.136**	-0.420*	-0.079*	-0.375*
9. Industry Fixed Effects	Included	Included	Included	Included
(Constant)	0.768*	3.193*	0.743	2.644
Adjusted R Square	0.072	0.030	0.079	0.036

Note: (a) A single (*) asterisk and two (**) asterisks beside the coefficient denotes significant at the 95% and 99% level of confidence respectively; (b) For period 2, we avoided using either Net Exports or International Diversification as an independent variable in the regressions to avoid any multicollinearity problems (see, appendix B). However, simultaneous use of both the variables did not change the above results; (c) Sixteen industry dummies were used to reflect the effect of industry and are not shown.

Effect of Ownership Variables

In the second set of regression analyses, we include the different ownership[14] variables as independent predictors along with the other variables whose effects we have already discussed. The regressions are carried out with all the different measures of performance (i.e. market-based performance, accounting profitability and its components, risk and growth dimensions of financial performance) as independent variables – the analysis, however, is limited to the second sub-period only, due to constraints of data availability. Table 4.6 shows the results.

Domestic institutional holding (variable DIIS) and public shareholding (variable PUBLIC) have a significant negative effect on market-based measures of performance as well as on the accounting measures. The negative effect of 'DIIS' and 'PUBLIC' on accounting profitability appears to work out through a negative effect on profit margins (net or gross profit margins), rather than through an effect on turnover ratios. Firms with higher public ownership also appear to have experienced lower growth. The results are again broadly in line with the hypotheses developed earlier. The other broad results about the effect of other independent variables remain unchanged even after inclusion of the ownership variables indicating the robustness of the relation of other firm characteristics with performance.

[14] As most of the ownership data are for the year 2000, hence, causation from the determinant (ownership pattern) to performance is being drawn under the reasonable assumption of relatively stable ownership structure for a period of 4-years in India (see, Chibber & Majumdar, 1999).

Table 4.6: Table of linear multiple regression coefficients for period 2 dependent variables using ownership variables (DIIS and PUBLIC) also.

Dependent Variable → Independent Variable ↓	TOBIN2	ROA2	CFM2	GPM2	NPM2	STA2	CAGRTA2	VROA2	VCFM2
	1996-2000	1996-2000	1996-2000	1996-2000	1996-2000	1996-2000	1996-2000	1996-2000	1996-2000
1. Business Group Affiliate	-0.237*	-0.515	-0.653	-0.291	0.692	-0.049	-1.025	-0.322	1.171*
2. Age	0.004	-0.012	-0.023	-0.048*	-0.015	0.003**	-0.169**	0.011	-0.007
3. Working Capital Ratio	0.045	2.466**	2.091**	15.394**	12.539**	-0.380**	0.852	0.851	-2.243**
4. Leverage	-0.159**	-1.224**	-2.044**	0.675	-2.284**	-0.086**	-1.541*	1.132**	0.385
5. Marketing Expenditure	0.049**	0.110	0.148*	-0.139	0.067	0.033**	0.033	-0.053	-0.027
6. Net Exports		0.041**	0.042**	0.107**	0.073**	-0.004**	0.112**	-0.010	-0.008
7. International Diversification	0.004*	0.007	0.009	0.023	0.019	-0.0003			
8. Size (LNTA)	0.148**	0.516**	0.576**	2.277**	1.143**	-0.086**	2.145**	-0.490*	-0.407*
9. DIIS	-0.016**	-0.044**	-0.048**	-0.077**	-0.028	0.002	-0.079	0.015	0.010
10. PUBLIC	-0.012**	-0.050**	-0.057**	-0.007	-0.053*	-0.002	-0.122*	0.013	0.010
11. Industry Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included
(Constant)	1.449**	7.448**	8.760**	6.004*	1.439	1.492**	14.713**	2.776	2.382
Adjusted R Square	0.093	0.193	0.240	0.616	0.326	0.303	0.084	0.029	0.033

Note: (a) A single (*) asterisk and two (**) asterisks beside the coefficient denotes significant at the 95% and 99% level of confidence respectively; (b) For regressions having dependent variable as TOBIN2, CAGRTA2, VCFM2, and VROA2, we avoided using either Net Exports or International Diversification as an independent variable in the regressions to avoid any multicollinearity problems (see, appendix B). However, simultaneous use of both the variables did not change the above results; (c) Sixteen industry dummies were used to reflect the effect of industry and are not shown.

Looking More into Causal Relations

- **Effect of Change in Size**

  The next set of regressions were performed again for period 2 to look into the effect of change in size of the firm from period 1 to 2 using CHLNTA (change of logarithm of total assets) as an independent variable. Table 4.7 below displays the results. As hypothesized, we found that CHLNTA had a significant positive relation with both market-based performance measures (TOBIN) and accounting-based return measures (ROA, CFM, GPM). The results also show that change in size had a significant negative relation with risk (VROA). This suggests that an increase in the size of a firm from period 1 to 2, apart from increasing its profit margins and profitability, would have also probably reduced its risk in period 2. All these factors led to an increase in the firm's shareholder value.

Table 4.7: Table of linear multiple regression coefficients for period 2 dependent variables (TOBIN, ROA, CFM, GPM, and VROA) using Change in Size (CHLNTA) also as an independent variable.

Dependent Variable → / Independent Variable ↓	TOBIN2	ROA2	CFM2	GPM2	VROA2
	1996-2000	1996-2000	1996-2000	1996-2000	1996-2000
1. Business Group Affiliate	-0.198	-0.391	-0.537	0.150	-0.382
2. Age	0.005	0.006	-0.004	-0.032	0.003
3. Working Capital Ratio	0.028	2.179**	1.792*	15.310**	0.958
4. Leverage	-0.167**	-1.351**	-2.170**	0.550	1.185**
5. Marketing Expenditure	0.049**	0.099*	0.139*	-0.165	-0.047
6. Net Exports		0.032**	0.033*	0.100**	-0.006
7. International Diversification	0.005*	0.008	0.010	0.021	
8. Size (LNTA)	0.051	0.026	0.083	1.437**	-0.290
9. Change in Size (CHLNTA)	0.488**	4.585**	4.535**	5.883**	-1.927*
10. Industry Fixed Effects	Included	Included	Included	Included	Included
(Constant)	1.008**	4.811**	5.855**	5.186*	3.631**
Adjusted R Square	0.084	0.253	0.276	0.628	0.039

Note: (a) A single (*) asterisk and two (**) asterisks beside the coefficient denotes significant at the 95% and 99% level of confidence respectively; (b) For regressions having dependent variable as TOBIN2 and VROA2, we avoided using either Net Exports or International Diversification as an independent variable in the regressions to avoid any multicollinearity problems due to high correlation between them (see, appendix B). However, simultaneous use of both the variables did not change the above results; (c) Sixteen industry dummies were used to reflect the effect of industry and are not shown.

- **Effect of Change in International Diversification**

  We performed the regressions again using change in International Diversification (CHINTDIV) between period 1 and 2 as an independent variable for period 2. Table 4.8 displays the results and it shows that

CHINTDIV had a positive relation with accounting profitability and sales turnover. In other words, an increase in a firm's international scope would have led to an increase in its sales turnover (i.e., asset utilization), which led to a higher accounting profitability. The results, perhaps reaffirm the existing view in literature (see, Caves, 1982; Hoskisson & Hitt, 1990), that an increase in exposure to international markets leads to increased advantages including market opportunities helping firms face adverse circumstances in a geographic (say, domestic) region.

Table 4.8: Table of multiple regression coefficients for period 2 dependent variables (ROA, ROCE, and STA) using Change in International Diversification (CHINTDIV) also as an independent variable.

Dependent Variable → / Independent Variable ↓	ROA2	ROCE2	STA2
	1996-2000	1996-2000	1996-2000
1. Business Group Affiliate	-0.558	-0.746	-0.076
2. Age	-0.013	0.033	0.004**
3. Working Capital Ratio	2.530**	0.399	-0.384**
4. Leverage	-1.175**	-2.638**	-0.084**
5. Marketing Expenditure	0.127*	0.293*	0.033**
6. Net Exports	0.040**	0.020	-0.004**
7. International Diversification	0.005	0.007	-0.001
8. Size (LNTA)	0.402**	-0.073	-0.067**
9. Change in INTDIV (CHINTDIV)	0.034*	0.085**	0.004*
10. Industry Fixed Effects	Included	Included	Included
(Constant)	5.965**	19.030**	1.393
Adjusted R Square	0.176	0.123	0.305

Note: (a) A single (*) asterisk and two (**) asterisks beside the coefficient denotes significant at the 95% and 99% level of confidence respectively; (b) Sixteen industry dummies were used to reflect the effect of industry and are not shown.

Discussion

- **Differences between results using market-based and accounting measures of performance.**

  In the discussion in section II, we had indicated that there exists a possibility of a divorce in the relationship between accounting and capital market-based measures of financial performance of firms, partly due to existence of speculative asset bubbles in the equity market (Shiller, 1989). We have analyzed the relation of the set of predictor variables on market-based performance measure and three sets of factors that can influence the market valuation of a firm - accounting measures of profitability, measures of risk and measures of growth of the sample firms. That leaves out the fourth factor - '*speculative asset bubbles*' or '*capital market conditions*', which can as well affect firm valuation. In

this section, therefore, we point to instances where significant effect of certain predictor variables on the market-based performance measures cannot be explained by its effects on either accounting profitability, risk or growth - leading us to argue that stock-market fancy, in all probability, drove those results.

The effect of marketing expenditure on market-based and accounting profitability measures is clearly divergent. While marketing spends of a firm has a highly significant positive relation to market-based performance measures, its effect on accounting profitability though positive is much more muted (i.e., the results hold at a lower level of significance). Marketing spends also did not have any significant effect on growth and risk of the sample of firms. So, the divergence between effect of marketing spends on market-based performance and accounting-based performance measures could be attributed to 'capital market-fancies'. Firms that spend more on marketing and advertising to build intangible assets (brands) also create more awareness about the firm and its products among capital market participants. This probably further creates a positive impact on potential stock market investors decision-making process.

If we consider the effect of size on market-based and accounting-based measures of financial performance in period 1, we also find a divergence. While size has a highly significant positive effect on market-based performance measures in both the sub-periods, its effect on accounting profitability was negative during period 1 and positive during period 2. So, though the effect of size on growth is significantly positive and that on risk is significantly negative during period 1, indicating larger sized firms had more growth potential and lower risk, which positively affected their market valuation, but it had a negative relation with accounting profitability. So, the overall positive impact of size on accounting-based measures was not uniform; while larger sized firms' profitability was lower, their risk (i.e. variance in earnings) and their growth was higher. The relation of size, moreover, was highly significant and positive for market-based measures such as Tobin's Q ratio. The positive size effect on market valuation of large firms can also indicate that 'capital market conditions/ fancies' were more favorable for large sized firms; our limited analysis, however, cannot make a positive conclusion about what exactly drove this divergence between the 'size effect' on market-based and accounting measures of profitability.

It is argued that larger size of organization can reduce its cost of capital (see, Mathur & Kenyon, 1998) or it can obtain other benefits in product and factor markets that we discussed in section II. However, that should have had a positive effect on its accounting profitability performance as well - which is, however, not the case in period 1. The better performance of larger firms was the result of higher growth potential. Larger Indian firms, perhaps, had greater opportunities for growing faster by accessing overseas or domestic capital markets or getting better access to financial resources from financial institutions

(Kakani, 2001a), so that it was more a 'quantity effect' rather than a 'price effect' in the capital/ financial markets that were favorable to larger firms.

V. Conclusions

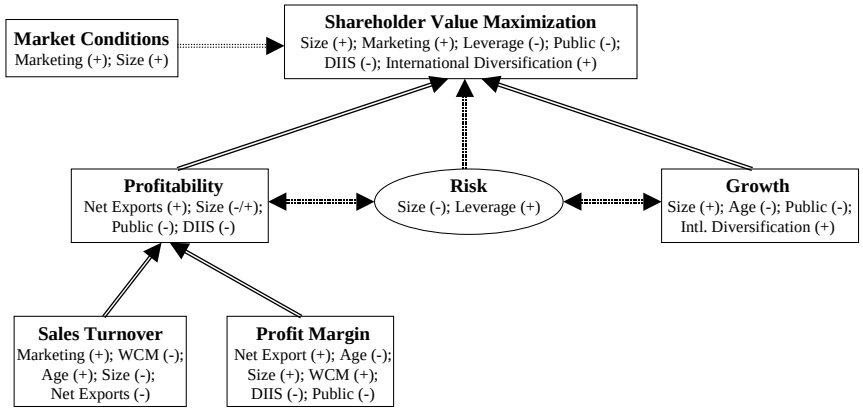
The primary objective of our study was to look into the nexus between Indian firm characteristics and their financial performance. In the Anglo-Saxon traditions, a firm's primary goal is to maximize its shareholder value, which is determined by the firms' profitability, its growth, its risk, and capital market conditions. To look into the actual factors which drive the relationship of a firm's shareholder value and its characteristics, we evaluated performance over several dimensions apart from shareholder value, namely - profitability, profitability components (margin and sales turnover), growth and risk of the firm.

We performed an analysis of 566 Indian firms constituting over 55% of the total market capitalization of Indian companies over a time span of eight years, 1992-2000. This eight year time span was divided into two equal periods: (a) Period 1: 1992-96 (post-liberalization period of Indian economy, and a period of growth); and (c) Period 2: 1996-2000 (post-liberalization period of the economy, and a period of recession). We used a firm's size, leverage, marketing expenditure, ownership, age, solvency position, international diversification, and net exports as independent variables, and industry fixed effects and business group affiliation as control variables.

Figure 2 below provides a pictorial representation of the significant results of this study with the direction (positive or negative relation) of the particular independent variable given in parentheses. It also reveals how accounting-based performance dimensions and capital market condition impact its market value by influencing the various firm characteristics.

We found that size, marketing expenditure and international diversification of a firm had a positive relation with its shareholder value. A size increase probably increases a firm's financial clout and its market power - while an increase in the marketing spend by a firm probably increases its market share apart from increasing the size of the product market itself, helping the firm increase its sales. Both increased size and marketing expenditure also probably work positively in the investor's mindset leading to more analysts and investors tracking the firm. The effect of 'capital market conditions' can be important because there was a certain amount of divergence in the effect of size and marketing spends as independent variables on accounting and market-based performance measures. The results show that international diversification (and exports) offers several advantages to firms. They allow firms to take advantage of new market possibilities and provide broader base of markets in order to obtain returns from innovation. Therefore, movement into international markets may allow firms to achieve a long-term strategic competitiveness and hence higher shareholder value.

Figure 2 : Firm Characteristics Relation with Performance



We also found that the ownership pattern of a firm represented by equity stakes held by Public Shareholders (PUBLIC) and Domestic Institutional Investors (DIIS), and its capital structure in the form of the firm's leverage, had a negative relation with its performance. The negative relation of shareholder value with leverage could be expected on the fact that increases in debt leads to an increase in the firm's financial and bankruptcy risk. Lack of monitoring by the small retail PUBLIC investors and improper governance by DIIS presumably has led to bad performance of firms having higher equity stakes held by either of them.

Implications to Stakeholders

It can be argued that managers and/or regulators (even investors) won't have control over several dimensions of firm characteristics, while they will have partial or complete control over some. Firm managers, decision-makers, financial institutions, retail investors and policy makers can use various instruments to influence firm characteristics that are within their control to obtain a favorable outcome, i.e., a better financial performance of the firm. Before rounding off the discussion, we briefly reiterate the implications and utility of the insights obtained in the study for corporate strategists, policy makers, regulators, fund managers, equity investors and other stakeholders of a firm:

- **Domestic Financial Institutions:** The negative effect of DIIS stake on firm performance strengthens the long held notion that financial institutions in India have been unable to perform a proper governance role, although with a simultaneous debt and equity exposure, they had the potential to emerge as significant monitors of large firms. The problem lies in the domain of political economy and the institutional-legal mechanisms in India, particularly those governing bankruptcies and treatment of firms during financial distress (see, Chakravarty, 1985). The State owned institutions could probably do well to avoid political interference due to the costs involved and they may also pressurize policy makers to provide a proper institutional framework for dealing with firms in distress or otherwise, where they have significant stakes in the form of equity or debt exposures.

- **Firm Managers/Strategists:** Managers should think beyond cost reduction exercises to increase the firms' value in the new operating environment. For example, depending on their line of business, managers, can consider an increase in the firms' marketing expenditure to create intangible assets, which can provide greater returns. Managers could also increase the international exposure of their firms' to capture the large gains involved.

- **Policy-Makers & Regulators:** Regulators ought to think of mechanisms by which widely held firms (i.e., firms with high PUBLIC stake) with low promoters stake can have better corporate governance structures. To the extent that owners controlling a firm with low equity stakes do rake in positive private benefits (see, Nicodano, 1998), the problematic of corporate governance in India is very different from developed economies. Rather than conflict between owners and managers of firms, it is the conflict between the interests of minority shareholders and promoters (say, business groups) that is more relevant for India and that needs to be addressed.

- **Retail Investors:** Retail investors would do well to avoid investing in firms with high DIIS and/or PUBLIC shareholding, since, monitoring by these stakeholders turns out to be inadequate, as we discuss in our study. Small equity investors may also think of concentrating their equity investments in relatively large sized low-leveraged firms that have high international diversification and marketing spend.

Limitations of the Study and Further Scope

One of the limitations of the study was its sample having a bias towards better performing and large firms. Since, we deleted all firms that had (a) a size lower than Rs. 1 crore during the period of study; and (b) negative net-worth during one of the periods of study. Research scope limitations and data constraints forced us in using a limited number of firm characteristics. Product diversification and organizational structure of a firm were, for instance, not considered. A larger study using other firm characteristics that effect firm performance might lead to more information and insight.

Although large sample statistical research of the type of this study is a powerful means of identifying the general relationships between pairs of variables, it is a comparatively weak method to gain insight into complex interactions between firm variables. To gain this insight, detailed examination of the experiences of a sample of the individual firms is needed in the form of

extensive case studies. This might even lead to a scope for building theoretical models to explain the above research results.

A firm-level study limited to different industry sectors could reveal more information, as it would achieve better control for industry effects. A similar study utilizing non-parametric based techniques such as Neural Networks might reveal more by doing away with the assumptions made in the parametric techniques. Such information would complement the findings of this study.

The analysis in this study was carried out at the firm level - which is the usual practice, particularly with respect to the developed economies such as United States. In the introduction to the report we had indicated that there are arguments that 'business groups', rather than the firm is a better unit of analysis in the case of India. Firstly, more than two-third firms in India have an affiliation to a business group (even by market capitalization) and important decisions, particularly financial, are always taken at the group level rather than at the level of the firm. In this study, 'business group' affiliation was included as a control variable but it did not turn out to be significant. But, Kakani (2001a), in particular, found significantly better explanatory power for the regressions than those obtained here, using a very similar research design - but making the analysis at the level of the 'business group' rather than the 'firm'. The choice of the 'unit of analysis' still remains a point of contention that remains to be resolved.

This was largely, an exploratory study that has, however, provided interesting insights on the likely causal relations. Further research, both quantitative and qualitative in nature, should take place to investigate these initial results on firm performance. This research would add to the growing body of knowledge on firm performance.

References

1. Aaker, David. A.; Developing Business Strategies; John Wiley & Sons; 1984.
2. Allen, F. and D. Gale; A welfare comparison of intermediaries and financial markets in Germany and United States; European Economic Review; Vol. 39; 1995; pp. 179-209.
3. Banz, R.; The relationship between return and the market value for common stocks; Journal of Financial Economics; Vol. 9(1); 1981; pp. 1-19.
4. Barton, Sidney L., and P. J. Gordon; Corporate strategy and capital structure; Strategic Management Journal; Vol. 9(6); November-December 1988; pp. 623-632.
5. Batra, Geeta; Job Reallocation, the Export Market, and Firm Performance: Microeconomic Evidence; World Bank Policy and Research; Business Environment Unit; Ref. 683-26; Vol. 10(1); Jan-Mar 1999.
6. Beaver, William H., and S. G. Ryan; Accounting fundamentals of the book-to-market ratio; Financial Analysts Journal; Vol. 49(6); November-December 1993; pp. 50-56.

7. Berger, P., and E. Ofek; Diversification's effect on firm value; Journal of Financial Economics; Vol. 37; January 1995; pp. 39-65.
8. Branch, Ben and Bradley Gale; Linking corporate stock price performance to strategy formulation; Journal of Business Strategy; Boston; Vol. 4(1); Summer 1983.
9. Brief, Richard P. and R. A. Lawson; The role of the accounting rate of return in financial statement analysis; Accounting Review; Vol. 67(2); April 1992; pp. 411-426.
10. Caves, R. E.; Multinational Enterprise and Economic Analysis; Cambridge University Press; Cambridge: England; 1982.
11. Chaganti R. and F. Damanpour; Institutional ownership, capital structure, and firm performance; Strategic Management Journal; Vol. 12; 1991; pp. 479-491.
12. Chakravarty, Sukhamoy, Report of the committee to review the working of the money market; Committee chaired by Sukhamoy Chkravarthy, Reserve Bank of India, Mumbai; 1985.
13. Chibber, Pradeep K., and Sumit K. Majumdar; Foreign ownership and profitability: Property rights, control, and the performance of firms in Indian industry; The Journal of Law and Economics; Vol. 42(1); Apr 1999.
14. Dess, Gregory G. and Robinson, Richard B., Jr.; Measuring organizational performance in the absence of objective measures: the case of the privately-held firm and conglomerate business unit; Strategic Management Journal; Vol. 5(3); 1984; pp. 265-273.
15. Dutta, Sudit; Family Business in India; Response Books Sage Publications: New Delhi; 1997.
16. Encarnation, D.; Dislodging Multinationals: India's Comparative Perspective; Cornell University Press: Ithaca New York; 1989.
17. Fama, E., and K. French.; The cross-section of expected stock returns; Journal of Finance, Vol. 47; 1992; pp. 427-465.
18. Fama, Eugene F., and K. R. French; Size and book-to-market factors in earnings and returns; Journal of Finance; Vol. 50(1); March 1995; pp. 131-155.
19. Fama, E.F., and M. Jensen; Separation of ownership and control; Journal of Law and Economics; Vol. 26; June 1983; pp. 74-98.
20. Fruhan, William E. Jr.; Financial Strategy: Studies in the Creation, Transfer and Destruction of Shareholder Value; R. D. Irwin: Homewood IL.; 1979.
21. Gup, Benton; Principles of Financial Management; John Wiley & Sons: New York; 1983.
22. Hill, Charles W. L.; Diversified growth and competition: The experience of twelve large UK firms; Applied Economics; Vol. 17; October 1985; pp. 827-847.

23. Hoskisson, Robert E. and Michael A. Hitt; Antecedents and performance outcomes of diversification: A review and critique of theoretical perspectives; Journal of Management; Vol. 16; 1990; pp. 461-509.

24. Jensen M., and W. Meckling; Theory of the firm: managerial behavior, agency costs, and ownership structure; Journal of Financial Economics; Vol. 3(4); 1976; pp. 305-360.

25. Johnson, James M., David R. Campbell, and James L. Wittenbach, Identifying and resolving problems in corporate liquidity; Financial Executive; May 1982; pp. 41-46.

26. Kakani, Ram Kumar, and V. N. Reddy; Econometric analysis of the capital structure determinants; Decision; Vol. 23; Jan-Dec 1996; pp. 73-98.

27. Kakani, Ram Kumar; 2001a; Financial performance and diversification strategy of Indian business groups; Indian Institute of Management Calcutta; Unpublished Doctoral Dissertation; March 2001.

28. Kakani, Ram Kumar; 2001b; Have diversified groups failed in generating value in India too; Paper presented at the 4th Strategic Management Forum; Indian Institute of Management Ahmedabad; May 24-26, 2001.

29. Kang, David L. and Aage B. Sørensen; Ownership organization and firm performance; Annual Review of Sociology; Vol.25; 1999; pp. 121-144.

30. Keister, Lisa A.; Engineering growth: business group structure and firm performance in China's transition economy; American Journal of Sociology; Vol. 104(2); Sep. 1998; pp. 404-440.

31. Khanna, Sushil; Financial reforms and industrial sector in India; Economic and Political Weekly, November 6, 1999, pp.3231-3241.

32. Khanna, Tarun and Krishna Palepu; Emerging market business groups, foreign investors, & corporate governance; NBER Volume on Concentrated Ownership; University of Chicago Press; 1998.

33. Khanna, Tarun and Krishna Palepu; Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups; Journal of Finance; April 2000.

34. Kilantaridis, Christos and Areti Levanti; Internationalization and the size of the firm; University of Lutton: UK; @www.sbaer.uca.edu/DOCS/2000asbe/00asbeo76.htm; 2000.

35. Lev, Baruch; Financial Statement Analysis: A New Approach; New Jersey: Prentice-Hall; 1974.

36. Lumpkin, G. T. and Gregory G. Dess; Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment, firm age, and industry life cycle; Journal of Business Venturing; Forthcoming; 1999.

37. Martin, John D., William J. Petty, and David F. Scott Jr.; Basic Financial Management; Prentice Hall Inc., New Jersey; 1991; pp. 873-907.

38. Mathur, Shiv S. and Alfred Kenyon; Creating Value: Shaping Tomorrow's Business; Butterworth Heinemann: Oxford; 1998.

39. McGahan, Anita M., and M. E. Porter; How much does industry matter, really?; Strategic Management Journal; Vol. 18 (summer special issue); 1997; pp. 15-30.

40. Myers, Stewart; Financial theory and financial strategy; Interfaces; January-February 1984; pp. 126-137.

41. Nicodano, Giovanna; Corporate groups, dual-class shares and the value of voting rights; Journal of Banking & Finance; Vol. 22; 1998; pp. 1117-1137.

42. Pal, Parthapratim; Stock market development and its impact on the financing pattern of the Indian corporate sector; NSE Research Initiative; National Stock Exchange: Mumbai; Working Paper # 004; Apr 2001.

43. Pant, P Narayan and Vasant G. Rajadhyaksha; Partnership with an Asian family business - what every multinational corporation should know; Long Range Planning; Vol. 29(6); Dec 1996; pp. 812-820.

44. Peasnell, Kenneth V.; Using accounting data to measure the economic performance of firms; Journal of Accounting and Public Policy; Vol. 15; 1996; pp. 291-303.

45. Porter, M. A.; Competitive Strategy: Techniques for Analyzing Industries and Competitors; New York: Free Press; 1980.

46. Porter, Michael E.; From competitive advantage to corporate strategy; Harvard Business Review; May-June 1987; pp. 43-59.

47. Puliani, Ravi and Mahesh Puliani; Bharat's Income Tax Act; Bharat Law House: New Delhi; 2000.

48. Rees, William; International Diversification and Firm Value; European Financial Management Association; 1998.

49. Ross, Stephen A., R. W. Westerfield, and B. D. Jordan; Essentials of Corporate Finance, 2/e; Irwin/McGraw-Hill; 1999.

50. Rumelt, Richard P.; How much does industry matter? Strategic Management Journal; Vol. 12; 1991; pp. 167-185.

51. Saha, Biswatosh; Foreign investment, financial markets and industry in the 1990s; Indian Institute of Management Calcutta; Unpublished Doctoral Dissertation; May 2001.

52. Schmalensee, Richard; Do markets differ much?; The American Economic Review; Vol. 75(3); June 1985; pp. 341-351.

53. Serrano, C.; From financial information to strategic groups - a self-organizing neural network approach; Journal of Forecasting; September 1998; Vol. 17; pp. 415-428.

54. Shiller, Robert J.; Market Volatility; The MIT Press: Cambridge; 1989.

55. Singh, A. and Whittington, G.; Growth, Profitability and Valuation: A Study of United Kingdom Quoted Companies; Cambridge University Press; 1968.

56. Slocum, Dr. John W., Jr.; Address, An analysis of structured cumulative argument in research concerning diversification and firm performance; Strategic Management Society; Barcelona: Spain; Oct. 1997.

57. Sørensen, Jesper B. and Toby E. Stuart; Aging, obsolescence, and organizational innovation; GSB Chicago; Fall Issue; 1999; http://gsbwww.uchicago.edu/news/gsbchicago/fall99/stuart.html

58. Sridev R.; Corporate governance in the 21st century: The role of institutional investors; Chapter 10, in New Dimensions in Global Business; ed. Bhattacharyya B. and Gupta A.; Excel Books; 1998.

59. Varaiya, Nikhil, Roger A. Kerin, and David Weeks; The relationship between growth, profitability, and firm value; Strategic Management Journal; Vol. 8; 1987; pp. 487-497.

60. Wernerfelt, Briger and Cynthia A. Montgomery; Tobin's q and the importance of focus in firm performance; The American Economic Review; Vol. 78(1); March 1988; pp. 246-250.

APPENDIX

APPENDIX A: DESCRIPTIVE STATISTICS

Table A.1: Industry-wise Distribution of the Sample Data: The following table shows the number of firms classified based on the dominant 2-digit Industry in which they were operating:

2-Digit ISIC Code	Name of the Industry	No. of Firms
16	Construction	10
20	Food and Allied Products	23
22	Textile Mill Products	42
23	Apparel and Other Textiles	12
26	Paper and Allied Products	14
28	Chemical and Allied Products	113
30	Rubber and Misc. Plastic Product	25
32	Stone, Clay and Glass Products	36
33	Primary Metal Industries	26
34	Fabricated Metal Products	34
35	Industrial Machine & Equipment	37
36	Electronic & Electrical Equipment	55
37	Transportation Equipment	40
50	Wholesale Trade	13
61	Financial Services	19
Rest	Rest of Industries	67
	Total	566

Note: 'Rest of Industries' category constituted mostly of firm's dominant in areas such as Computer Software, Hotel, Jewellry, Services, and Utilities. It was taken as the base category in the industry dummy regressions.

Table A.2: Mean and Standard Deviation of the Independent and Dependent Variables

Name of the Variable	Mean		Standard Deviation	
	1992-96	1996-2000	1992-96	1996-2000
Dependent Variables				
CAGRTA (Growth in TA)	44.71	10.47	65.61	17.04
CAGRTS (Growth in TS)	40.91	9.63	52.22	19.11
CFM (Cash Flow Ratio)	9.26	6.67	4.73	6.09
GPM (Gross Profit Margin)	19.59	16.92	14.81	14.92
NPM (Net Profit Margin)	7.19	3.60	7.18	9.61
PBV (PBV Ratio)		1.29		2.54
ROA (Return on Assets)	9.77	6.74	3.98	5.08
ROCE (Return on Capital Employed)	23.53	16.68	10.27	11.00
RONW (Return on Net Worth)	16.18	6.54	14.15	19.11
STA (Sales Turnover Ratio)	1.10	1.02	0.62	0.59
TOBIN (Tobin's Q)	2.27	1.49	1.52	1.28
VCFM (Variance of CFM)	0.52	1.46	1.19	5.58
VROA (Variance of ROA)	0.47	1.76	1.52	6.35
VROCE (Variance of ROCE)	0.36	1.20	0.51	5.03
Independent Variables				
AGE (Age in years)		33.09		20.61
DERATIO (Debt-to-Equity Ratio)	1.10	0.92	1.72	1.02
DIIS (Ownership of DII)		13.05		16.04
INTDIV (International Diversity)	23.28	25.19	26.77	28.22
LNMC (Logarithm of Market Cap)	4.45	3.77	1.80	1.98
LNTA (Logarithm of Total Assets)	4.62	5.16	1.51	1.58
LNTS (Logarithm of Total Sales)	4.54	5.03	1.44	1.49
MARKTNG (Marketing-to-Sales)	2.25	2.52	3.07	3.30
NETEXP (Net Exports)	-2.95	-0.34	18.36	19.71
PUBLIC (Minority Owners Stake)		27.25		14.89
WCM (Working Capital Ratio)	0.23	0.22	0.29	0.35

Note: DIIS, INTDIV, NETEXP, and PUBLIC are given in percentage.

APPENDIX B: CORRELATION MATRIX

Table B.1: Pearson Correlation Matrix for Period 1 (1992-96)

	AGE	CAGRTA1	CAGRTS1	VROA1	TOBIN1	ROA1	ROCE1	CFM1	GPM1	STA1	WCM1	DERATIO1	MARKTNG1	NETEXP1	INTDIV1	LNTA1
AGE	1.00	-0.17**	-0.27**	-0.05	0.12**	-0.11**	0.10**	-0.11**	-0.14**	0.16**	-0.07	-0.11**	0.07	0.06	-0.16**	0.27**
CAGRTA1	-0.17**	1.00	0.55**	-0.04	0.19**	0.12**	-0.02	0.13**	0.14**	-0.11**	0.11**	0.02	-0.08	-0.08	0.10**	0.05
CAGRTS1	-0.27**	0.55**	1.00	0.03	0.08*	0.07	-0.07	0.06	0.15**	-0.15**	0.14**	0.07	-0.13**	-0.06	0.12**	0.00
VROA1	-0.05	-0.04	0.03	1.00	0.00	-0.25**	-0.19**	-0.24**	-0.09*	-0.03	-0.04	0.05	-0.02	-0.10*	0.03	-0.10*
VROCE1	-0.07	0.04	0.07	0.76**	-0.02	-0.26**	-0.22**	-0.23**	-0.09*	-0.06	-0.05	0.07	-0.04	-0.12**	0.07	-0.13**
VCFM1	-0.11**	-0.05	0.03	0.62**	-0.06	-0.26**	-0.19**	-0.27**	-0.11**	-0.03	-0.04	0.15**	-0.04	-0.10**	0.04	-0.11**
TOBIN1	0.12**	0.19**	0.09**	0.00	1.00	0.35**	0.30**	0.39**	0.06	0.10*	0.00	-0.15**	0.15**	0.07	0.13**	0.14**
ROA1	-0.11**	0.12**	0.06	-0.25**	0.35**	1.00	0.58**	0.90**	0.31**	0.13**	0.07	0.00	0.07	0.18**	0.11**	-0.15**
ROCE1	0.09*	-0.03	-0.07	-0.19**	0.30**	0.58**	1.00	0.46**	-0.04	0.43**	-0.08	-0.09*	0.12**	0.10*	-0.05	-0.23**
RONW1	-0.01	0.18**	0.04	-0.31**	0.20**	0.60**	0.47**	0.55**	0.18**	0.10**	0.04	-0.30**	0.07	0.13**	0.03	-0.01
CFM1	-0.11**	0.13**	0.06	-0.24**	0.39**	0.90**	0.46**	1.00	0.30**	0.10*	0.01	-0.09*	0.09*	0.17**	0.13**	-0.12**
GPM1	-0.14**	0.14**	0.15**	-0.09*	0.06	0.31**	-0.04	0.30**	1.00	-0.54**	0.64**	0.16**	-0.15**	0.07	0.08	0.17**
NPM1	-0.10*	0.25**	0.12**	-0.25**	0.22**	0.60**	0.13**	0.62**	0.73**	-0.37**	0.38**	-0.04	-0.07	0.14**	0.19**	0.15**
STA1	0.16**	-0.11**	-0.16**	-0.03	0.10*	0.13**	-0.43**	0.10*	-0.54**	1.00	-0.34**	-0.11**	0.27**	0.02	-0.18**	-0.22**
WCM1	-0.07	0.11**	0.15**	-0.04	0.00	0.07	-0.08	0.01	0.64**	-0.34**	1.00	0.08*	-0.13**	0.03	-0.01	0.13**
DERATIO1	-0.11**	0.02	0.07	0.05	-0.15**	0.00	-0.10**	-0.09*	0.16**	-0.11**	0.08*	1.00	-0.08*	-0.12**	-0.01	0.07
MARKTNG1	0.07	-0.08	-0.13**	-0.02	0.15**	0.07	0.12**	0.09*	-0.15**	0.27**	-0.13**	-0.08*	1.00	0.11**	-0.02	-0.01
NETEXP1	0.06	-0.08	-0.06	-0.10*	0.07	0.18**	0.10**	0.17**	0.07	0.02	0.03	-0.12**	0.11**	1.00	0.24**	-0.07
INTDIV1	-0.16**	0.10*	0.12**	0.0	0.13**	0.11**	-0.05	0.13**	0.08	-0.18**	-0.01	-0.01	-0.02	0.24**	1.00	0.06
LNTA1	0.27**	0.05	0.00	-0.10*	0.14**	-0.15**	-0.23**	-0.12**	0.17**	-0.22**	0.13**	0.07	-0.01	-0.07	0.06	1.00
LNTS1	0.34**	-0.04	-0.07	-0.12**	0.17**	-0.11**	-0.07	-0.09*	-0.10*	0.11**	-0.05	0.01	0.08*	-0.06	0.00	0.92**
LNMC1	0.28**	0.08*	0.03	-0.08*	0.46**	0.04	-0.07	0.10*	0.16**	-0.13**	0.09*	-0.04	0.06	-0.02	0.11**	0.90**

Note: * indicates significance upto 95% confidence level; ** indicates significance upto 99% confidence level.

Table B.2: Pearson Correlation Matrix for Period 2 (1996-2000)

	AGE	DIIS	PUBLIC	CGRTA2	CAGRTS2	VROA2	TOBIN2	ROA2	CFM2	GPM2	STA2	WCM2	DERATIO2	MARKTNG2	NETEXP2	INTDIV2	LNTA2
AGE	1.00	0.24**	-0.17**	-0.16**	-0.15**	0.00	0.06	-0.03	-0.05	-0.07	0.11**	-0.04	-0.06	0.08	-0.02	-0.14**	0.22**
DIIS	0.24**	1.00	-0.30**	-0.01	0.01	0.00	-0.06	-0.06	-0.06	-0.03	0.00	-0.08	0.03	0.02	-0.12**	-0.07	0.47**
PUBLIC	-0.17**	-0.30**	1.00	-0.07	-0.13**	0.04	-0.13**	-0.12**	-0.13**	0.02	-0.08*	0.07	0.01	-0.06	0.08*	-0.03	-0.19**
CAGRTA2	-0.16**	-0.01	-0.07	1.00	0.61**	-0.12**	0.12**	0.40**	0.36**	0.15**	0.05	0.03	-0.07	0.01	0.11**	0.14**	0.12**
CAGRTS2	-0.14**	0.02	-0.12**	0.61**	1.00	-0.10*	0.12**	0.29**	0.27**	0.09*	0.08	-0.06	-0.03	0.01	-0.06	0.13**	0.11**
VROA2	0.00	0.00	0.04	-0.12**	-0.10*	1.00	-0.05	-0.30**	-0.26**	-0.14**	-0.02	-0.03	0.14**	-0.04	-0.04	-0.03	-0.08
VCFM2	-0.04	-0.02	0.04	-0.14**	-0.13**	0.15**	-0.06	-0.28**	-0.24**	-0.03	-0.09*	-0.02	0.12**	-0.04	-0.03	-0.04	-0.06
TOBIN2	0.06	-0.06	-0.13**	0.12**	0.13**	-0.05	1.00	0.33**	0.37**	0.05	0.15**	0.02	-0.14**	0.14**	0.00	0.12**	0.08*
PBV2	0.08*	-0.04	-0.16**	0.12**	0.14**	-0.04	0.96**	0.30**	0.34**	0.04	0.16**	0.00	-0.10*	0.14**	-0.04	0.08*	0.09*
ROA2	-0.03	-0.06	-0.12**	0.40**	0.30**	-0.30**	0.33**	1.00	0.92**	0.39**	0.20**	0.15**	-0.27**	0.10*	0.15**	0.14**	0.06
ROCE2	0.06	-0.07	-0.10*	0.29**	0.22**	-0.26**	0.31**	0.75**	0.66**	0.16**	0.37**	0.05	-0.29**	0.10**	0.05	0.05	-0.06
RONW2	-0.05	-0.04	-0.07	0.30**	0.24**	-0.39**	0.23**	0.60**	0.57**	0.20**	0.14**	0.10*	-0.28**	0.09*	0.06	0.08	0.06
CFM2	-0.05	-0.06	-0.13**	0.35**	0.27**	-0.26**	0.36**	0.92**	1.00	0.36**	0.18**	0.11**	-0.36**	0.11**	0.14**	0.14**	0.03
NPM2	0.00	0.02	-0.07	0.36**	0.23**	-0.21**	0.20**	0.75**	0.71**	0.59**	-0.07	0.42**	-0.28	0.03	0.16**	0.16**	0.15**
GPM2	-0.08*	-0.03	0.02	0.15**	0.09*	-0.14**	0.05	0.39**	0.37**	1.00	-0.47**	0.61**	0.16**	-0.12**	0.13**	0.07	0.26**
STA2	0.11**	0.00	-0.08*	0.05	0.08	-0.02	0.14**	0.20**	0.18**	-0.47**	1.00	-0.29**	-0.23**	0.23**	-0.10*	-0.11**	-0.24**
WCM2	-0.04	-0.08	0.07	0.03	-0.06	-0.03	0.02	0.15**	0.12**	0.61**	-0.29**	1.00	-0.03	-0.11**	0.01	-0.04	0.05
DERATIO2	-0.06	0.03	0.01	-0.07	-0.03	0.14**	-0.14**	-0.27**	-0.36**	0.16**	-0.23**	-0.03	1.00	-0.10*	-0.05	-0.02	0.18**
MARKTNG2	0.08	0.02	-0.06	0.01	0.01	-0.04	0.14**	0.10*	0.12**	-0.12**	0.23**	-0.11**	-0.10*	1.00	0.04	-0.06	-0.02
NETEXP2	-0.02	-0.12**	0.08*	0.11**	-0.06	-0.04	0.00	0.15**	0.14**	0.13**	-0.10*	0.01	-0.05	0.04	1.00	0.41**	-0.08
INTDIV2	-0.14**	-0.07	-0.03	0.14**	0.13**	-0.03	0.12**	0.14**	0.14**	0.07	-0.11**	-0.04	-0.02	-0.06	0.41**	1.00	0.08*
LNTA2	0.22**	0.47**	-0.19**	0.12**	0.12**	-0.08	0.08*	0.06	0.03	0.26**	-0.24**	0.05	0.18**	-0.02	-0.08	0.08*	1.00
LNTS2	0.28**	0.49**	-0.23**	0.13**	0.15**	-0.08*	0.14**	0.14**	0.11**	0.02	0.09*	-0.10*	0.08*	0.06	-0.11**	0.05	0.92**
LNMC2	0.21**	0.37**	-0.27**	0.21**	0.20**	-0.09*	0.42**	0.35**	0.38**	0.27**	-0.08	0.10*	-0.06	0.08*	-0.08	0.12**	0.82**

Note: * indicates significance upto 95% confidence level; ** indicates significance upto 99% confidence level.