

# Economic Impact of ‘Regulation on Corporate Governance’: Evidence from India

Asish K Bhattacharyya\*<sup>1</sup> and Sadhalaxmi Vivek Rao<sup>2</sup>

Indian Institute of Management Calcutta, West Bengal, India

## Abstract

India, with its 20 million shareholders, is one of the largest emerging markets in terms of the market capitalization. In order to protect the large investor base, the Securities and Exchange Board of India (SEBI) has enforced a regulation effective from April 2001, requiring mandatory disclosure of information and a change in the corporate governance mechanisms of the listed companies. This study empirically examines the economic impact of the Regulation on the stock market variables. The experimental group exhibits significant reduction in their beta consistent to the notion that increased information and better corporate governance mechanism reduces the risk of these companies.

*JEL Classification:* M41; G34; G38

---

The authors acknowledge the suggestions and comments given by Prof. V. N. Reddy, Prof. Saibal Chattopadhyay and Prof. Anindya Sen, Indian Institute of Management Calcutta, India and Prof. Ajitava RayChauduri, Jadhavpur University, Kolkata.

<sup>1</sup> Professor of Finance and Control in the Indian Institute of Management Calcutta, India

\* Corresponding author. Tel.: +91 9830060499; Fax: +91 33 24678307.

E-mail address: [akb@iimcal.ac.in](mailto:akb@iimcal.ac.in), [akbhattacharyya@yahoo.com](mailto:akbhattacharyya@yahoo.com)

<sup>2</sup> Doctoral Student in the Finance and Control Group of the Indian Institute of Management Calcutta, India

*Keywords:* Corporate Governance, Financial Disclosure Regulation, Voluntary Disclosure, Risk, Cost of Capital

## **1. Introduction**

Berle and Means (1932) in their seminal book pointed out that in the modern corporation there is separation of ownership from control. The divergence of interest between owners and the managers caused due to this separation leads to the agency costs. According to Jensen and Meckling (1976), the agency costs are the sum of bonding costs, monitoring costs and residual loss. The literature on corporate governance provides analyses of various mechanisms to reduce those costs. The information asymmetry between the owners and managers due to the separation of ownership from control is a vital source of the agency costs. Healy and Palepu (2000) in a review of empirical disclosure literature concisely put forth the solutions to reduce this information asymmetry. They argue that optimal contracts between the managers and shareholders, financial disclosure regulation and information intermediaries are a few of the possible solutions to reduce the information asymmetry.

Transparency in corporate financial reporting enhances discipline in management, facilitates appropriate valuation of the company, and reduces the opportunity for a few to benefit by using sensitive information not available to the capital market. Appropriate valuation of companies in the capital market exposes under-performing companies to the risk of takeover. The fear of losing control acts as a stimulus to perform at the optimum level from owners' perspective. The quality of corporate financial reports is an essential determinant of the quality of corporate governance. Moreover, transparency in corporate

financial report is essential to enforce accountability of executive management to the board of directors and accountability of the board of directors to shareholders. Therefore, regulators protect the right of the capital market to receive timely and complete information necessary to evaluate the performance and financial position of the company and to forecast its ability to generate adequate cash flows in future (Bhattacharyya (2003)). Thus, one of the objectives of any disclosure regulation is to increase the transparency and accountability by providing timely and 'true and fair' information to the stakeholders.

To write and to enforce a comprehensive contract covering all the contingencies that might occur in the future is either impossible or very costly. Therefore, the option of optimal contract between managers and shareholders to reduce the information asymmetry is by and large infructuous. The information intermediaries as proposed by Healy and Palepu (2000) also have a limited role in Indian financial markets. In developed countries, for example, in the United States, many cases of fraud and misrepresentation are being reported against the companies, the intermediaries and the auditors; and the number of such cases against which/whom the SEC took action (civil injunctive actions and other proceedings) during the financial year ended 2003 is 679 and the corresponding figures for financial year ended 2002 is 599. Even in the developed financial markets the informational intermediaries are not able to unearth all the malfunctioning/ fraud/ misstatement of the companies. Therefore, it is inappropriate to expect them to play a significant monitoring role in emerging markets like India. Given this situation, the best option available to the Securities Exchange Board of India (SEBI) to reduce the information asymmetry is to regulate the financial disclosures being made by the companies. Based on the recommendations of the Kumaramangalam Birla

Committee, SEBI formulated and implemented the regulation (Code) on corporate governance. This regulation is applicable to companies listed in Indian stock exchange in a phased manner, the details of which are given in section 3 of this paper. The Code sought to bring about changes in the governance structures and transparency in corporate reporting. The objective of the 'SEBI regulation on corporate governance' is to protect non-controlling shareholders from expropriation of wealth by managers and appropriate valuation of companies in the capital market. The Code focuses on the board structure, the process of board meetings and disclosure of relevant information to the capital market.

Given the limited voluntary disclosure prior to the regulation and the absence of the information intermediation, it is expected that the increase in accountability of the managers and the board to shareholders; and the transparency in corporate reporting will enhance the capital market efficiency and hence will increase the investors' confidence. The main objective of this empirical study is to analyze the impact of the 'SEBI regulation on corporate governance' on the stock markets and comment upon the effectiveness or otherwise of the said regulation. We evaluate the effectiveness of the regulation by examining the changes in the risks and returns of the stocks. We measure risk in terms of beta and standard deviation. For the purpose of this study, the beta, standard deviation and returns in the pre-regulation time period (1<sup>st</sup> June 1998 to 31<sup>st</sup> May 1999) is compared with the same in the post-regulation time period (1<sup>st</sup> June 2001 to 31<sup>st</sup> May 2002).

Section 2 provides a brief review of the literature, both theoretical and empirical, on the financial disclosure regulation. The objective of this study is to examine the regulatory effects, and so we restrict the literature survey to the financial disclosure

regulation. Section 3 examines the disclosure policies in India, both prior to and after the SEBI regulation. There has not been much emphasis on the corporate governance mechanisms in India, prior to this regulation. The Department of Company Affairs (DCA) approved a Code of corporate governance in the year 1997 which however, was not mandatory. This section aids us in understanding the dismal state of an ordinary investor, prior to the regulation, due to the lack of relevant information required for her decision-making. The change initiated by SEBI in the corporate governance structure and the financial disclosure practices is elaborated in the same section.

The hypothesis and the models used in the study are discussed in Section 4. In the same section, we give a schematic representation of the expected impact of the ‘SEBI regulation on corporate governance’. We argue that the regulation will have an impact on the risk, returns, volume of trading and the bid-ask spread. However, due to the unavailability of the data, the bid-ask spread could not be used for the purpose of this study. From Table.10 and Table.11 we find that the daily average number of transactions for a sample of 100 companies has steadily increased from the year 1999 and the total number of trades on the National Stock Exchange has also more than doubled during the same period. And it is difficult to isolate the effects of the regulation on the volume traded; we do not consider the impact of regulation on the volume traded in this study. Hence, the study is restricted to finding the impact of regulation on the risk and returns of the companies.

Section 5 discusses the methodology adopted to examine the hypotheses and presents results. Section 6 presents the conclusions and directions for future research.

## 2. Literature review

Most research papers on disclosure of accounting information use data from the United States capital markets and information provided by the United States companies. The research by Benston (1973) on the economic impact of the Securities Exchange Commission Act, 1934 has fostered inter-disciplinary research in the field of regulation, accounting and finance. The research in this area has been extended to find the impact of the segment reporting on the stock market variables. Apart from these two well researched regulations, considerable work has been done on other regulations concerning the banks (Hagerman (1975)) and the oil industry (Lev (1979)). There is, however, limited research in this area in the context of emerging markets including India; this study will be the first of its kind in the Indian stock markets.

Regulations provide certain *benefits* and also entail certain *cost*. Regulations involve three types of costs:

- (i) Cost to companies of meeting regulatory requirements
- (ii) Cost of maintaining and implementing the regulation
- (iii) Cost of improper/incorrect regulation

Regulation is justified only if the benefits to the society exceed the sum of those costs. More particularly the costs to the companies include the information collection costs, processing costs and dissemination costs (Merton (1987)). Higher disclosure may also result in proprietary costs to the companies and investors. The benefits to companies include reduction in risk, increase in the liquidity of stock due to the decrease in the information asymmetry and easy access to capital markets; this in turn increases the valuation of the companies. Investors have the benefit of liquidity. These benefits of

liquidity of the markets will lead to enhanced efficiency in the stock markets over a longer period.

The economic impact of any regulation can be assessed by studying the reaction of the stock market variables during the post-regulation time period. Apart from the economic impact, a regulation also has a social impact. Subsequent to a disclosure regulation, the investors have a greater set of liquid securities to choose from and to make appropriate portfolio decisions. This in turn increases the expected utility of the investors, thereby increasing the social welfare of the investors. Hakkansson (1980) argues that it is difficult to find welfare effect from the changes in security prices. Increase in security prices does not mean increase in welfare and vice-versa. It is, therefore, difficult to quantify expected utility and analyze the social impact of a regulation, and hence we restrict our analysis to the economic consequences of the Regulation.

### **2.1. Theory: Impact of disclosure regulation on the stock market**

Lev (1988) argues in favour of increased disclosure of financial information of firms. Inequity in capital markets, defined here as inequity of opportunity or the existence of systematic and significant information asymmetries across investors, which leads to adverse private and social consequences: high transaction costs, thin markets, lower liquidity of securities, and in general, decreased gains from trade. Such adverse consequences of inequity can be mitigated by a public policy mandating the disclosure of financial information in order to reduce information asymmetries (Lev , 1988). Gonedes and Dupoch (1974) assert that any change in accounting techniques used for external reporting shall have an impact on the capital market equilibrium in either of the following

three ways; (1) the change leads to the provision of accounting numbers that convey information pertinent to valuing a firm; (2) the change per se has a substantive economic impact independent of the accounting numbers affected by the change in reporting techniques; or (3) the change per se signals other events that have economic importance.

Increase in information flow to stock markets will have an impact on number of stock market variables. Commitment of the firm to increased levels of disclosure should reduce the information risk and consequently the information asymmetry component of cost of capital (Leuz and Verrecchia , 2000). In literature, bid-ask spread is used as the proxy for information asymmetry. More timely and relevant disclosure should reduce this spread. The other effects of reduction in the information asymmetry are increase in the trading volume of the shares. Trading occurs when there is no consensus among the investors (Beaver, 1968) and when there is flow of new information to the market participants. In Diamond and Verrecchia (1991) model, increase in liquidity is a concave function of the level of precision in information. This implies that trading increases in a proportion more than the reduction in the information asymmetry. Information will have an impact on the portfolio decisions of the investors, who will trade based on this information and this in turn will affect the equilibrium prices of the stocks (Brailsford, 1996). Tauchen and Pitts (1983) model establishes volume and price changes as being joint (random) function of the information flow.

Investors, after analyzing the reported information, alter their expectations regarding future firm performance; this behaviour should be reflected in the unusual security prices and return changes (Horwitz and Kolondy, 1977). The reduction in the information asymmetry will reduce the cost of capital in the long run and hence increase the valuation of the companies. This effect can be captured by analyzing the changes in



the returns earned by the stocks after there has been increase in the disclosure levels. It has also been argued that new information disclosure will lead to reduction in the speculative positions and hence reduction in the risk (Diamond, 1985). Beta might also be affected if the data disclosed in the financial statements provide information about the risk class of a company and the relationship of its economic value to changes in the economy (Benston, 1973). Beta and Standard deviation of the stock returns have been used by researchers as a surrogate for risk.

Consequently any regulation requiring more and timely information disclosure might have an impact on the risk, returns, volume and the spread of the stocks.

## **2.2. Empirical evidence: Impact of disclosure regulation on the stock market**

Broadly the research in this area has been concentrated on 2 important regulations i.e, the SEC Act, 1934 and the Segment Disclosures, 1970. Of late the researchers are investigating the effects of other regulations too. This section reviews the empirical studies on these regulations.

### **2.2.1. SEC Act, 1934**

Stigler and Benston are the first researchers to study the impact of a disclosure regulation on the stock market variables. Stigler (1964) studies the impact of the SEC Act, 1934, on the volatility of the returns of new issues of securities. For the purpose of his study he uses the data for years 1923-1928 as pre- SEC regulation period and 1949-1955 as post-SEC regulation period. His results prove that during the post-SEC regulation period, the volatility of the returns of new issues has been reduced,

consequently leading to a reduction in the returns itself. Jarrell (1981) with improved statistical techniques finds the same result as Stigler (1964). Friend and Herman (1964) believe that lower volatility during the post-SEC has attracted more risk-averse investors and has encouraged higher levels of investment in the United States capital markets.

Conversely, Benston (1973) did not find any impact of the SEC Act, 1934 neither on the abnormal returns of the security nor on the variability of the security returns of the experimental group of companies during the post-regulation period. In this case the experimental group consists of companies for which the SEC Act is applicable for the first time since 1934. His basic premise is that regulation in order to be effective should reduce the relative riskiness of the companies measured by its equity beta. Due to lack of evidence in support of his hypothesis, he argues that the SEC Act 1934 is not beneficial to the investors either in terms of improving the returns to them or reducing their variability. Friend and Westerfield (1975) counter the results obtained by Benston (1973) by demonstrating that the result is due to wrong classification of the firms.

### ***2.2.2. Segment Disclosures, 1970***

Segment reporting has been made mandatory by the Securities Exchange Commission for the companies listed on the stock exchanges in United States from the year 1970. Much research has been done to find the impact of this regulation on the capital markets.

Collins (1975) constructed two portfolios, one with greater segmented information and the other with limited segmented information. He finds that the portfolio with companies disclosing greater segment information earned abnormal returns greater than the group with less segmental information. Dhaliwal (1977) finds that the

experimental group, consisting of companies reporting the segment data for the first time, experienced a lower standard deviation of its returns after the regulation has become effective. However, Horwitz and Kolodny (1977) find that there is neither any reduction in risk nor any significant impact on the abnormal returns subsequent to the segment reporting regulation. However, Collins and Simonds (1978) argue that the shortcomings in their sample selection and the hypothesis-testing procedures may have led to this result. With more robust techniques and appropriate time period Collins and Simonds (1978) conclude that the beta of multi-segment treatment group, consisting of firms having more than one segment and disclosing such segment information after the regulation was effective, has in fact been lower during the post-regulation period. They find no difference in the beta from pre- regulation to post-regulation of other two control groups. Foster and Vickery (1978) find that the abnormal returns during post-regulation period is more than the non-reporting period; proving the effectiveness of the regulation.

Swaminathan (1991) argues that the regulation in order to be effective should increase the price variability since reduction of information asymmetry will attract more investors to the capital market and this in turn will increase the price variability. Similarly he argues that due to segmental data the differences in the forecasts by various analysts should reduce. He finds affirmative results. However, for the purpose of our study we argue that reduction in information asymmetry will reduce the volatility. Greenstien and Sami (1994) look at the impact of the regulation on bid-ask spread, a surrogate for information asymmetry. They find that the bid-ask spread of the experimental group has experienced a lower abrupt shift during the post-regulation time period.

### ***2.2.3. Other Regulations***

Hagerman (1975) uses a stable symmetric distribution method to find if the government regulation on banks in the United States, requiring state banks to disclose additional information has accomplished its goal. He proves that the annual report does contain information on which the investors act upon. Lev (1979) finds the impact of the exposure draft by FASB in July 1977 requiring the oil and natural gas companies to shift from full cost (carry forward the expenses on exploration of oil and gas reserves as a capital item and write it off over a period of time) to successful efforts (expensing all the costs in current year irrespective of the amount of reserves identified). He finds that the full cost firms required to shift to successful effort method of accounting experienced a significant reduction in their abnormal returns. The number of firms, belonging to Full cost group that experienced a reduction in abnormal returns is greater than the number of companies belonging to successful efforts. Jain (1983) with improved statistical techniques confirms the results obtained by Lev (1979). Hagerman and Healy (2000) find that the regulation in 1994, requiring the OTC companies to disclose according to the SEC Act, 1934, is not effective in reducing bid-ask spread. However, Bushee and Leuz, (2003) find that the OTCBB regulation imposing additional disclosure requirements for OTC companies in 1999 is effective in increasing the liquidity of the experimental firms. Leuz and Verrecchia (2000) in their research on German firms adopting international accounting standards find that the bid-ask spread has reduced and the liquidity has increased for the firms adopting the international accounting standards. In their research they prove that reporting based on International accounting standards has better information content.

Majority of the research studies mentioned above have been conducted on the United States capital markets and hence our study enables us to understand the impact of

disclosure regulation on the financial markets of India, one of the biggest emerging markets. Table.1. below gives us a summary of the empirical research done till date in the area of financial disclosure regulation. Before formulating our hypothesis we need to understand the disclosure practices in India prior to the SEBI regulation has become effective.

### **3. Financial Disclosure and Corporate Governance in India**

Prior to the 1990's the financial disclosure in India was minuscule. The companies during this period were owned by large successful business groups. Their important source of funds was from their own group companies and from Development Financial Institutions. Very few companies raised their funds from the stock market and there was no motivation to make even the minimal required financial disclosures to the general investors. Till the early 1990's the Controller of Capital Issues (CCI) was held responsible for the efficient functioning of stock markets. However, with adoption of economic restructuring the CCI was taken over by the Securities and Exchange Board of India, SEBI which was formed in 1992 to protect investors' interest.

Consequent to its formation the SEBI has put in place many regulations to regulate different categories of players, like the Merchant Bankers, Brokers, and Institutional Investors, in capital markets. It has also passed regulations dealing with the takeover code, investor grievances etc. In spite of the efforts taken by the SEBI there was not much improvement on the accounting disclosure practices until the late 1990's. Till then the disclosure requirement was regulated by the Companies Act, 1956; the

Accounting Standards formulated by the ICAI<sup>3</sup> and the listing agreement. The listing agreement is applicable only to the listed companies and the other non-listed companies are not required to disclose these information. The amount of disclosure to be made by registered companies in India is thus, very limited. However, the globalization, the East-Asian crisis and the stock market crashes have forced the regulator to rethink the corporate governance issues including the financial disclosures being made by the Indian companies. SEBI constituted a committee under the Chairmanship of Shri Kumaramangalam Birla, to suggest improvements in the corporate governance mechanisms and other related aspects. The regulation on corporate governance is implemented by way of amendment to the listing agreement. This SEBI regulation has changed the entire nature of governance and the disclosure being made by the Indian listed companies.

### **3.1. Disclosure Prior to the ‘SEBI regulation on corporate governance’**

The Companies Act, 1956 requires registered companies in India to disclose certain minimum information in prescribed format to investors and regulators. Apart from this, the listing agreement with the Stock exchanges requires the listed companies to provide certain relevant and timely information to the investors. The financial statements of all the registered companies should also comply with the accounting standards laid down by the Institute of Chartered Accountants of India (ICAI), the apex body regulating the accounting standards in India, from time to time. The disclosure requirement under each of the above three is enumerated below.

---

<sup>3</sup> The Institute of Chartered Accountants of India

### ***3.1.1. Companies Act, 1956***

Section 210 of the Companies Act requires every company to prepare its balance sheet and profit & loss account in accordance with Part I and Part II of the Schedule VI of the Act. This section also specifies that 'notes' to the broad items of the balance sheet and profit & loss account should be provided as part of the annual reports. This section is however not applicable to the companies which have a specific format for reporting its balance sheet and profit & loss account. Banks, insurance companies and electricity companies are examples of companies which are exempted from this Section.

Section 212 requires holding companies to present a copy of the balance sheet, profit & loss account, board's report, auditor's report of the subsidiary company as part of its annual report.

Section 216 requires companies to include auditors report including any special or supplementary report as part of the annual report.

According to Section 217, the annual report should contain board report as annexure which shall contain the information about the state of company affairs, dividend declared, amount the company intends to transfer to the reserves etc.

### ***3.1.2. Listing Agreement***

Listed companies should provide the Cash flow statement, prepared according to Accounting Standard 3 issued by ICAI, as part of their annual reports. It should also provide, the distribution of shareholding of the companies, un-audited results of the company as a whole and segment-wise on a quarterly basis to the stock exchanges and advertise the same in the local newspapers. Atleast 7 days in advance of the

board of directors meeting, the companies should communicate to the stock exchange any recommendation, to be made by the board, of dividend or rights issue or convertible debentures etc.

### ***3.1.3. Accounting Standards***

Till date the ICAI has issued 29 Accounting Standards. Every public company should prepare its accounts in conformity with the Accounting Standards. Broadly these Accounting Standards provide guidelines, most of which is mandatory to the listed companies, for measurement and disclosure of various profit and loss, and balance sheet items. Of late, the emphasis has been on fair value disclosures through the Accounting Standard 28 which deals with impairment of assets. Overall the Indian Accounting Standards are being benchmarked against the International Accounting Standards and the US GAAP. During the last few years, many Indian companies have accessed foreign capital markets and therefore disclosure practices of those companies match international standards.

### ***3.1.4. Voluntary disclosure***

The voluntary disclosure literature is limited in India. Singhvi (1967) finds that the quality of information provided by the Indian companies is far lower than that of US companies. Marston (1986) finds similar result, when he compares disclosure by Indian companies with that by UK companies. For the financial year ending 1995, Infosys technology is the only company to voluntarily disclose financial statements prepared under US GAAP. The main reason for such voluntary disclosure by the Company is the increase in its revenues from the United States and its objective to raise funds, in the near



future, from the US stock markets (Narayanaswamy (2001)). The results obtained by Krishnamurti (2003) show that the companies belonging to emerging markets have lower disclosure levels and lower accounting standards when compared to the developed countries, due to which they have to comply with more stringent norms of the SEC while listing for their ADR's. Patel et al (2002) compose a transparency and disclosure score for the companies belonging to the emerging markets. During 1998, the disclosure levels for Indian companies, in terms of the disclosure score, were low as compared to companies belonging to other emerging markets. However, the disclosure score for the Indian companies across all industries has considerably increased for the financial year ended 2000.

The requirement for voluntary disclosure is high in those countries where there is high dependence on the capital markets to raise the funds. However in India, the dependence of the companies on capital markets for funds is limited. Family business groups control majority of the companies and the role played by the financial intermediaries is particularly limited in India. Khanna and Palepu (2000) find that diversified Indian business groups add value to the group companies by replicating the role played by intermediaries. The finding of Khanna and Palepu (2000) can be exemplified by looking at the figures 3 - 7, where the proportions of the internal sources as part of the total sources, and the proportion of retained earnings as part of total sources are given. We find that for the financial year ending 2004 the proportion of internal sources as part of total sources is 59.4%, 38.8% and 61.8 % for the companies belonging to the Indian business group, other private non-business group and the foreign private companies, respectively. The corresponding figures for the financial year ending 1991 is 33.4%, 37.9% and 38.3% respectively. The percentages are based on all the companies

whose data is available in the Economic Intelligence Service, Centre for Monitoring Indian Economy Pvt. Ltd. The figures indicate that there has been increasing dependence of the private sector companies, especially the business group companies, on the internal resources for their fund requirements. Given this situation we can expect that the need of the companies to voluntarily disclose information over and above that is required by law is low.

Healy and Palepu (2001) argue that there are 6 hypotheses for voluntary disclosure being made by any company i.e., capital market hypothesis, market for corporate control hypothesis, managerial compensation hypothesis, litigation cost hypothesis, management talent signaling hypothesis and proprietary cost hypothesis. However, most hypotheses favoring voluntary disclosures do not hold good in the Indian context. Till recently the capital market was neither wide nor deep, the corporate control market was almost absent, implementation of regulations was weak, and proprietary cost is not high due to lack of competition in the product market. Therefore, we can argue that the voluntary disclosures by companies have been limited till the late 1990's. The SEBI regulation on the corporate governance ensured investors would atleast get certain vital information about the future prospects of the company and the environment in which it is operating. The question of whether the disclosure should be left to the companies or whether the government should regulate it is a separate research question, which is not being considered in our study.

### **3.2. Changes in the disclosure regime and corporate governance practices in the recent past**

From the previous sections, it is clear that the mandatory disclosures to be made by a public limited company under the various statutes are minimal as compared to disclosures required in the advanced countries. It was only in 1999 that SEBI formed a committee under the Chairmanship of Shri. Kumaramangalam Birla, to strengthen investor protection and increase the information availability to the investors. The Kumaramangalam Birla Committee came up with a proposal of mandatory disclosure of 'Corporate Governance Report' and Management Discussion and Analysis (MDA) in the annual reports of listed companies. Apart from this, the Committee made several mandatory recommendations in order to enhance the governance mechanisms of the Indian companies. The objectives of the Regulation are:

- Shareholder value maximization by reduction in information asymmetry. Increase in the availability of information about the expected future performance of the company which will in turn help the investors to make appropriate investment decisions based on their risk taking capabilities.
- To ensure an appropriate board and leadership structure so that the managerial risk faced by the shareholders is reduced.
- To enhance the credibility of information being provided by the board and the management by ensuring that the public limited companies have an appropriate board structure and leadership structure.

The main objective of SEBI regulation is shareholder value maximization by putting corporate governance structures in place and through the reduction of information asymmetry between the managers and the investors of the company. Jensen (2000) also

argues in favour of shareholder wealth maximization as the main objective function of any company.

The applicability of recommendations to the companies is as follows:

- By all entities seeking listing for the first time, at the time of listing.
- Within financial year 2000-2001, but not later than March 31, 2001 by all entities, which are included either in Group 'A' of the BSE or in S&P CNX Nifty index as on January 1, 2000.
- Within financial year 2001-2002, but not later than March 31, 2002 by all the entities which are presently listed, with paid up share capital of Rs. 10 crore and above, or net worth of Rs 25 crore or more any time in the history of the company.
- Within financial year 2002-2003, but not later than March 31, 2003 by all the entities which are presently listed, with paid up share capital of Rs 3 crore and above.

The committee came up with certain recommendations on corporate governance and other matters to strengthen the monitoring of managers and reduce the information asymmetry between the managers and shareholders. It made certain mandatory and non-mandatory recommendations for the companies registered in India in line with the Cadbury report. The recommendations of the Committee are given as below.

The mandatory recommendations of the committee are

- The board of the directors shall consist of atleast 50% of non-executive directors. And if the chairman is an executive director then atleast half of

the board of directors shall be independent and in other case atleast one-third of the total directors shall be independent.

- The audit committee should have atleast three non-executive directors out of which majority should be independent. The chairman of the committee should be an independent director. It should have atleast one director with finance and accounting background.
- The board of directors shall determine the remuneration of the non-executive directors.
- The corporate governance report in the annual report shall comprise of information regarding the components of remuneration paid to its directors.
- The directors shall not be members of more than 10 committees or chairman of more than 5 committees across all companies.
- In case of appointment/reappointment of directors, shareholders should be provided a resume, information regarding functional expertise and number of directorships held in other companies.
- Quarterly results should be placed on the companies' web site.
- A Shareholders grievance redressal committee should be formed under the chairmanship of a non-executive director.
- Every Annual report of a listed company shall consist of compliance report on Corporate Governance.
- The companies should provide Management, Discussion and Analysis as part of their annual report.

The non-mandatory recommendations are:

- Non-executive chairman can maintain a chairman's office at the company's expense.
- The remuneration committee should have atleast three directors all of whom shall be non-executive. The chairman should be an independent director.
- Half-yearly financial results should be sent to each shareholder.

The Committee emphasized on the independence of the board so as to ensure effective monitoring of the management by the board of directors. A right mix of executive and non-executive directors will enable the board to take the appropriate strategic decisions at right times. The requirement to have an audit committee with non-executive directors strengthens the monitoring role of the board by ensuring that there is no manipulation of the accounts and misuse of the funds by the management. This report also emphasizes the related party transactions, so that there is transparency in the transactions between the company and the related parties. A related party in this case is defined as a promoter, his relative, the management, and any other person / institution who / which may have potential conflict with the interests of the company at large.

The disclosure required to be made in the Corporate Governance Report and the Management Discussion & Analysis report will reduce the information asymmetry between the managers and that of current and potential investors. The recommendations of the Committee were applicable by way of amendment to the listing agreement. The contents to be disclosed in the 'Corporate Governance Report' as per Clause 49 of the listing agreement are as follows

- Information about the board of directors and the management: This includes the qualifications, composition of the board of directors etc.
- Remuneration to the directors of the company: Total remuneration, the performance-linked remuneration and stock options to the directors of the company should be clearly stated.
- Shareholding pattern: This sub-clause gives information about the percentage of shares held by promoters, foreign shareholders, Government Financial institutions and the general public.
- Committees formed by the Company: Information about the composition of committees like the Audit committee, Remuneration committee should be provided in this sub-clause.

Some of the most critical financial/operational information lies within the scope of Management, Discussion and Analysis (Vaidyanath (2003)). The MDA should contain discussion on the following matters within the limits set by the company's competitive position:

- Industry structure and developments
- Opportunities and Threats
- Segment-wise or product-wise performance
- Outlook
- Risks and concerns
- Internal control systems and their adequacy
- Discussion on financial performance with respect to operational performance

- Material developments in Human Resources / Industrial Relations front, including number of people employed.

The MDA provides the information about the competition within the industry, the changes in the government policies and industry climate and its impact on performance. It also gives information about segment wise risk and returns, risks which are unique to the positioning of a company and the steps taken by the company to mitigate such risks.

The East-Asian crisis and the increasing globalization have forced the regulator to put appropriate regulations in the capital market to attract foreign capital. This regulation is aimed at putting appropriate governance structures in place, which will take care of the informational needs of the shareholders. The Kumaramangalam Birla Committee expects that the good governance and timely disclosure of information to the shareholders will maximize their wealth. It remains to be seen if the regulation has indeed maximized the shareholders wealth. Though the report has been discussed in full length before it has been implemented, this discussion might have impacted all the stocks in the same way. Our main purpose is to find how the *additional information* being disclosed consequent upon the regulation being effective, has influenced the stock market variables of such companies’.

#### **4. Hypothesis development and model building**

We can expect that if the ‘SEBI regulation on corporate governance’ is followed not just in letter but also in spirit then the valuation of such companies should increase. Thus we expect that the regulation will have an impact on the beta, returns, bid-ask spread and the volume of shares traded of the companies that have complied with the



regulation. Figure 1 gives us a fair view on what could be the impact of the regulation on the stock market variables. Due to the lack of availability of the bid-ask spread data for the relevant time period, we could not study the impact of regulation on the spread of such companies. As mentioned earlier, we shall not be studying the impact of the regulation on the volume.

Hongren (1957) and Choi (1973) argue that increased disclosure will reduce the cost of equity. New information disclosure will lead to reduction in the speculative positions and hence reduction in the risk (Diamond, 1985). Similarly Botoson (1997), Botoson and Plumlee (2002) argue that increased disclosure is associated with lower cost of equity. We conjecture that good governance will increase timely and appropriate information dissemination, which in turn will reduce the information risk to the shareholders. The reduction in the information risk will lead to a reduced spread which in turn will increase the net gains to investors thereby reducing their cost of capital and thus increasing the valuation of such companies. The increased information and congenial governance systems will enable investors to correctly assess the different states of nature and thus correctly value the shares.

On the basis of the above argument we can expect that the regulation requiring additional disclosure and good governance system will reduce the risk of investment in companies to which the regulation is applicable. For the purpose of our study, risk is measured by beta and standard deviation of the stock returns. Beta measures the systematic risk of stocks. On the assumption that the investors hold a diversified portfolio, the beta is the important determinant of the cost of equity. We expect that the increased disclosure and better corporate governance will reduce the relative risk of the experimental group of companies. On the other hand, standard deviation of stock returns

represents the volatility. If appropriate and timely information is disclosed to the capital market, then the investors will take informed decisions and there will be reduction in uninformed and rumor-based trading. The informed decisions on the part of investors due the increased availability of relevant information will reduce the volatility of the stock returns. Thus we a priori, conjecture that there will be a reduction in beta and volatility of stock returns for the companies complying with the regulation.

In our study we test for the following hypotheses

***Hypothesis 1: The regulation will not have any impact on the risk of stocks of the experimental group<sup>4</sup> of companies.***

***Alternate to Hypothesis 1: The regulation will reduce the risk of stocks of the experimental group of companies.***

The standard finance theories state the relationship between risk and return; lower the risk, lower is the return. Reduction in information asymmetry will lead to lower cost of capital and hence increase the valuation of the company. We surmise that the reduced risk in terms of beta and standard deviation will reduce the returns after the regulation has become effective. Our next hypothesis is

***Hypothesis 2: The regulation will not have any impact on the returns on stocks of the experimental group of companies.***

***Alternate to Hypothesis 2: The regulation will reduce the returns on stocks of the experimental group of companies.***

## **4.1. Model**

### **4.1.1. Beta**

---

<sup>4</sup> The companies disclosing the information as required by the SEBI regulation on Corporate Governance.

Beta is the first variable we study to find the impact of the SEBI regulation. Beta measures the systematic risk of a security with respect to the market portfolio. It is the ratio of the covariance of a stock with the market movement to that of the market variance.

$$\beta_E = \sigma_{im} / \sigma_m^2 \quad (1)$$

Where

$\beta_E$  is the equity beta of a stock,

$\sigma_{im}$  is the covariance of the stock i with the market portfolio,

$\sigma_m^2$  is the variance of the market portfolio.

We study the change in beta from the pre-regulation time period to the post-regulation time period for equity shares (common stocks) of the sample companies. Beta is tested using the market model. For each of the companies we calculate the beta separately for pre-regulation time period and the post-regulation time period using the following market model.

$$R_{it} = \alpha_i + \beta_i Rm_t + e_i \quad (2)$$

Where

$$R_{it} = (P_t + D_t - P_{t-1}) / P_t ;$$

$R_{it}$  is the return of a security i over for time period t;

$P_t$  is the price of the security at time t;

$P_{t-1}$  is the price of the security at time t-1;

D is the cash dividend of the security i;

$\alpha_i$  is the intercept;

$\beta_i$  is the beta coefficient for the security i;

$R_m$  is the return of BSE 200<sup>5</sup> over the time period t;

$e_i$  is the error term independent and identically distributed across time period t and follows a normal distribution with mean zero and constant variance.

We assume that weekly returns are normally distributed. ‘Normal probability plot’ presented as graphs (Fig.8 to Fig.13) support the assumption. We also find that for a sub-sample of the experimental group, the error terms for the regression equations have constant variance. Although the literature supports modified versions of Capital Asset Pricing Model (CAPM) like the Arbitrage Pricing Model (Ross, 1976), the Consumption based CAPM (Breedon, 1979), dynamic CAPM (Bollerserv et al, 1988), Conditional Two Factor Model (Jagannathan and Wang, 1996); our sample satisfies the assumptions of homoskedasticity, normality and lack of autocorrelation and as such the market model is robust enough to test for the changes in the beta consequent upon the regulation.

#### **4.1.2 Volatility of stock returns**

The next proxy for risk being tested in our study is the volatility of stock returns. We test for the reduction in the volatility of the companies complying with the SEBI regulation. For each company we calculate the weekly returns according to the equation 3, separately for the pre-regulation time period and the post-regulation time period.

$$R_{it} = (P_t + D_t - P_{t-1}) / P_t ; \quad (3)$$

---

<sup>5</sup> Index comprising of 200 most liquid stocks traded on Bombay Stock Exchange.

where,

$R_{it}$  is the return of a security  $i$  over for time period  $t$ ;

$P_t$  is the price of the security at time  $t$ ;

$P_{t-1}$  is the price of the security at time  $t-1$ ;

$D$  is the cash dividend of the security  $i$ .

The hypothesis we test in this case is  $H_o : \frac{\sigma_1}{\sigma_2} = 1$  (4)

Where  $\sigma_1$  is the standard deviation of weekly returns on investment in equity shares of companies during the pre-regulation time period and  $\sigma_2$  is the standard deviation of weekly returns on investment in equity shares of the same group of companies during the post-regulation time period. To test for equality of the standard deviation under  $H_o$  in equation.4 is equivalent to testing for  $\rho_{uv} = 0$  (see appendix 1 for proof). Where  $\rho_{uv}$  is correlation coefficient between the returns for pre-regulation time period and post-regulation time period. The applicable test to check for  $\rho_{uv} = 0$  is

$$t = \frac{r_{uv} \sqrt{n-2}}{\sqrt{1-r_{uv}^2}} \square t_{0.05, n-2} \quad (5)$$

Where  $r_{uv}$  is the sample correlation coefficient of returns for pre-regulation time period and post-regulation time period.

#### **4.1.3 Returns**

The last variable we study to find the impact of the regulation is the stock returns. We examine whether there has been a reduction in the returns, consequently leading to a

reduction in the cost of capital of the companies complying with the SEBI regulation. Instead of the expected returns we look at the actual returns for the purpose of our study. We compute the weekly stock returns on equity shares for each company according to equation 3, separately for pre-regulation time period and the post-regulation time period. Paired-t test is used to find for significant reduction in the returns of the companies. The detailed methodology and results of our study is given in section 5.

## **5. Methodology and Results**

We use the event study method for the purpose of our research. Event studies provide an ideal tool for examining the information content of disclosures (MacKinlay, 1997). Apart from detecting the impact of disclosure, the method is widely used to find the impact of certain firm-specific events on the stock prices. The event study dealing with firm specific events like earnings announcements, stock splits, mergers and acquisition require a smaller event window. In these cases the exact date of announcement is known. However, for the studies dealing with regulatory impact, the event window will be longer and the exact event date is not known. Binder (1983, 1985b) examines 20 major regulatory changes that took place from 1887 to 1978, and reports that on an average the regulatory process takes 18.5 months to be implementable. Beta, volatility and returns represent the long-term impact of the regulation on the companies involved and hence a pre-event window and the post-event window should be long enough to gauge the impact of the regulation. For regulatory studies with monthly data, atleast 60 monthly observations are required on each side of the event window. On the other hand for weekly or daily data, data for a year is customary (Lamdin, 2001).

The timeline of the Kumaramangalam Birla Committee formation and the implementation are given below. The time line helps us to identify the pre-regulation time period and post-regulation time period for our study. The pre-regulation time period for the purpose of our study is taken from 1<sup>st</sup> June 1998 to 31<sup>st</sup> May 1999. And the post-regulation time period is from 1<sup>st</sup> June 2001 to 31<sup>st</sup> May 2002. We restrict our analysis in the post-regulation time period to 31<sup>st</sup> May 2002, since after this time period the regulation became applicable to many companies that were not required to comply with the regulation for the financial year ended 2001.

The quasi-experimental study is used in our research. The quasi-experimental study helps us to identify the impact of the regulation on the experimental group of companies and hence will enable us to segregate the impact of other macro economic variables on the companies. Generally the quasi-experimental study deals with two groups; one the experimental group and the other the control group. Experimental group of companies are those companies for which the regulation is applicable for the financial year ended 2001 and the control group of companies are those companies for which the regulation is not applicable for the financial year ended 2001. In this case, if the additional information being disclosed due to the regulation has an impact on the stock market variables, then only the experimental group will show statistically significant results and not the control group. In case of change of any macro economic variables or any political factors; this will have an impact on all the companies irrespective of those belonging to the control sample or the experimental sample. Hence, by using the control sample we can segregate the effect of the regulation and other macro economic variables.

Prowess, the financial database maintained by the Centre for Monitoring the Indian Economy (CMIE), contains the financial information of 4,572 listed companies.

Apart from the Prowess financial database, we also use the database from Sansco Services, which contains the annual reports of approximately 7000 companies for the financial years 1999 to 2001. For the purpose of our study the 4,572 companies, whose information is available in Prowess, are classified into three groups as mentioned below. The BSE Group A companies and Nifty companies, which were required to comply with the SEBI regulation for the financial year ended 2001, are classified as the experimental group. According to the regulation the companies forming part of BSE Group A and the Nifty as on 1<sup>st</sup> January 2000, consists of 134 companies and these companies are the initial sample of the experimental group. There are companies, which were not required by the SEBI but still have complied with the regulation voluntarily for the financial year ended in 2001. Those companies are classified as quasi-experimental group. There are 408 companies in the quasi-experimental group. The remaining companies are our control sample, which consists of 4030 companies. After eliminating the companies whose market capitalization for financial year ended 2001 is not available in Prowess, those with a different financial year ending other than 31<sup>st</sup> March, and whose market capitalization as on March 2001 is less than Rs. 1 crore (Rs. 10 million); the final sample size across the groups are 102, 331 and 3095 for experimental, quasi-experimental and control groups respectively.

Before proceeding further we need to look at the distribution of each of these groups. By examining the frequency distribution of these groups in Table.3 we find that all the three groups have different means and standard deviations and hence belong to different distributions. Table.4 comprises of the descriptive statistics of these groups. Experimental group comprises of companies with high market capitalization, with a mean of Rs. 4,062.01 cr and standard deviation of Rs. 9,800.51 cr. These 102 companies



account for 70.55 % of market capitalization of the final sample size while they barely account for 2.97 % of the total number of the companies. On examining the quasi-experimental group, we find that 331 companies account for 12.21 % of the total market capitalization and 9.43 % of the total number of firms. The mean and standard deviation of the market capitalization of this group is Rs. 217.54 cr and Rs. 1140.67 cr respectively. The control group comprises of 3095 companies, which account for 17.27 % and 87.6 % of the total market capitalization and the total number of firms respectively. The mean and standard deviation of this group is Rs. 32.94 cr and 196.83 cr respectively. The mean, median and standard deviation, percentage of companies, percentage of market capitalization; all are different across these three groups. Therefore, the comparison of the impact of the regulation across the groups is not possible. So our study is restricted to the comparison of the stock market variables from pre-regulation time period to post-regulation time period, separately for each these groups.

Analysis of a random sample of these companies may not give meaningful results because such sample will not reflect upon the difference of impact of the regulation, if any, on the different sizes of the companies. We conjecture that the impact of regulation on these companies may vary depending upon the size of the companies. Hence each of the groups is further divided into 3 Sets. Set I consists of large companies with market capitalization of more than Rs.1500 crore; Set II consists of medium sized companies with market capitalization between Rs.1500 crore and Rs.100 crore; and Set III consists of companies with market capitalization of less than Rs.100 crore but more than Rs. 1 crore. This division of the three groups into three different sets will enable us to study the impact of the regulation on all the companies, and also to find if the size of a company in terms of market capitalization does matter in our analysis. The descriptive

statistics of these groups, set-wise is given in Table.5. Since the size of quasi-experimental group set I, control group set I and the experimental group set III are small, we ignore these groups for our further analysis. The companies belonging to set I and set II across all the groups have been traded for more than 100 days during the financial year ended 2002.

To compute the beta of individual securities we used the weekly closing prices of the securities and the market index (BSE 200). Dividend is adjusted to calculate the weekly returns only if the ex-dividend date falls in that particular week. The return of the securities is adjusted for the stock splits, consolidation and bonus issues, if any, during the relevant time period.

For each company we regress the weekly returns on the weekly BSE 200 returns, separately for pre-regulation time period and post-regulation time period. Each regression equation is tested for the significance of the F-statistic in order to confirm that the relationship between the market return and the individual company return is statistically significant and is also checked for autocorrelation using the Durbin-Watson statistic. Only companies with statistically significant regression relationship and with absence of autocorrelation are included for our further analysis. Further, the aforementioned conditions should be satisfied for both the time periods. Each security will have two estimates of beta coefficient; one for the pre-regulation time period and the other for the post-regulation time period. The beta coefficients for both pre-regulation time period and post-regulation time period along with the actual change for all the companies is given in annexure 2 at the end of the paper. Statistical results for testing the equality of beta for the two time periods group-wise and set-wise are reported in Table.6.

We need to analyze the proportion of the companies for which the beta has increased / decreased to understand the direction of change of the beta for different groups across different sets. Table.7. reports the direction of change in beta for companies across different groups and different sets.

As expected the experimental group belonging to both set I and set II experienced a change in beta (a reduction in beta). The t-statistic is significant at 5% level. 72.97% and 71.43% of the experimental group of companies belonging to set I and set II, respectively have experienced a reduction in beta We can say that the regulation has reduced the beta of the companies belonging to the experimental groups. However, for the quasi-experimental group and control group belonging to set II we find that the t-statistic is not significantly different from zero. Though the quasi-experimental group has complied with the regulation voluntarily, we find that there is no change in beta. It might be that the market does not consider the disclosure by these companies to be credible as the Corporate Governance Report of such companies is not subject to audit. On the other hand as there is no additional information being given by the control group belonging to set II, the t-statistic for this group is not statistically significant proving that lack of disclosure has no impact on beta.

The third set was obtained by taking 2 stratified samples of 30 companies each, separately for both quasi-experimental group and the control group. Stratified sampling is done so that companies of all sizes in that group are included in our analysis. The results for the quasi-experimental group and control group belonging to the third set shows that there are only two companies in each of the group for which the regression equation is statistically significant and there is no autocorrelation. These companies have a market capitalization of less than Rs. 100 cr, and are less liquid. The illiquidity of these

companies might have resulted in the lack of significant regression equations and hence further analysis of the companies belonging to this set is not feasible.

The results obtained for the beta prove that the regulation has had an influence on the perception of the investors and hence it has been captured by the changes in the beta of the companies belonging to experimental groups. We obtain similar results when we use daily stock returns instead of the weekly returns to calculate beta.

The results on volatility and returns are reported in Table.8 and Table.9 respectively. For meaningful comparison we consider only companies which were included in the analysis of change in beta. From Table.8 we find that the volatility for the experimental group belonging to set I experienced a significant reduction during the post-regulation time period. Similarly, for the quasi-experimental group and control group belonging set II there has been significant reduction in the volatility subsequent to the regulation being effective. We find that the volatility of all the groups including the control group has significantly reduced during the post-regulation time period. Therefore, we cannot conclude about the impact of the regulation on the volatility of the stock returns. It appears that volatility across all the companies are reduced during the post-regulation period due to factors other than the Regulation. It is difficult to isolate the impact of regulation from other economic variables that could have reduced the volatility in the stock markets. It is unwise to draw any definitive conclusions from the results (relating to returns) obtained from our study.

The results for returns are given in table.9. below. We find that for the experimental group belonging to set I there has been a statistically significant reduction in the returns during the post-regulation time period, supporting our hypothesis 2. However for the groups belonging to set II, except for experimental group set II, we do

not find any significant changes in the returns during the post-regulation time period. We find that the experimental group of companies belonging to set II there has been an increase in the returns contrary to our hypothesis. This result may be due to the firm specific idiosyncratic information being disclosed during the relevant time period.

## **6. Conclusion**

The SEBI regulation on corporate governance gives an unique opportunity to study the economic impact of the regulation in India, one of the biggest emerging markets. Our results show that there has been significant reduction in the beta of the experimental group of companies. Although, the results on volatility and actual returns do not lead to any conclusion, the beta captures the market risk and is important in analysing the impact of the regulation. Reduction in beta indicates that the market risk of these securities has reduced thereby reducing the expected returns and consequently the expected cost of capital of such companies. Largely, from beta results, we can conclude that the Regulation has been effective in providing more and timely information to the investors, who in turn could use the information to determine the appropriate risks of the stocks; thereby maximizing the shareholders wealth. Results regarding return and variance do not undermine the evidence, provided by results relating to beta, that the Regulation reduces the systematic risk of securities and consequently the cost of capital to firms. Cost of capital is a function of expected return. Actual returns may deviate from expected returns. In an environment where companies have no impetus to disclose information voluntarily, regulations requiring enhanced disclosure protect the investors' interest in general. There are certain limitations of our study; the results across the sets

might vary depending upon the criteria one considers to segregate the sets into different groups. An extension of our study can be done by looking at the impact of this regulation on the stock market efficiency, and also understanding the implications of this regulation on the voluntary disclosures being made by the companies.

## Appendix 1

The returns for the pre-regulation period and post-regulation period follow a bivariate normal distribution as given in Equation (a) below.

$$(R_i, R_i^*) \sim N_2(\mu_1, \mu_2, \sigma_1, \sigma_2, \rho) \quad (\text{Eq. a})$$

Where  $R_i$  is the weekly returns for the pre-regulation time period,

$R_i^*$  is the weekly returns for the post-regulation time period.

Let,

$$\left. \begin{aligned} u &= R_i + R_i^* \\ v &= R_i - R_i^* \end{aligned} \right\} i = 1, 2, 3, \dots, n$$

Where  $n$  is the number of companies belonging to that group.

$$\begin{aligned} \text{Cov}(u, v) &= \text{Cov}(R_i + R_i^*, R_i - R_i^*) \\ &= \text{Var}(R_i) - \text{Var}(R_i^*) \\ &= \sigma_1^2 - \sigma_2^2 = 0, \text{ as under } H_0 \\ \Rightarrow \rho_{uv} &= 0. \end{aligned}$$

Therefore, the testing of  $\rho_{uv} = 0$  is equivalent to testing for equality of the standard deviation of the returns.

## Appendix 2

**Table. a. Experimental Group - Set 1**

<b>Companies</b>	<b>Pre-regulation</b>		<b>Post-Regulation</b>		<b>Difference in beta</b>
	<b>R-square</b>	<b>Beta</b>	<b>R-square</b>	<b>Beta</b>	
Associated Cement Cos. Ltd.	0.598	1.484	0.466	1.21	0.274
Bajaj Auto Ltd.	0.458	0.958	0.182	0.533	0.425
Bharat Heavy Electricals Ltd.	0.679	1.654	0.439	1.148	0.506
Bharat Petroleum Corpn. Ltd.	0.19	0.873	0.33	1.241	-0.368
Britannia Industries Ltd.	0.287	0.744	0.222	0.368	0.376
Cipla Ltd.	0.25	0.824	0.103	0.404	0.42
Colgate-Palmolive (India) Ltd.	0.483	0.929	0.173	0.248	0.681
Cummins India Ltd.	0.217	0.71	0.11	0.497	0.213
Dabur India Ltd.	0.26	0.841	0.089	0.325	0.516
Dr. Reddy'S Laboratories Ltd.	0.429	1.347	0.081	0.405	0.942
Grasim Industries Ltd.	0.429	1.573	0.408	0.775	0.798
Gujarat Ambuja Cements Ltd.	0.498	1.018	0.34	0.726	0.292
H D F C Bank Ltd.	0.484	1.217	0.153	0.399	0.818
Hero Honda Motors Ltd.	0.222	0.988	0.101	0.454	0.534
Himachal Futuristic Communications Ltd.	0.462	2.169	0.415	2.716	-0.547
Hindalco Industries Ltd.	0.1	0.48	0.141	0.491	-0.011
Hindustan Lever Ltd.	0.385	0.679	0.271	0.619	0.06
Hindustan Petroleum Corpn. Ltd.	0.141	0.791	0.276	1.24	-0.449
Housing Development Finance Corpn. Ltd.	0.53	0.894	0.057	0.215	0.679
I C I C I Ltd. [Merged]	0.485	1.422	0.151	0.692	0.73
I T C Ltd.	0.633	1.074	0.119	0.401	0.673
Industrial Development Bank Of India	0.508	1.189	0.12	0.593	0.596
Infosys Technologies Ltd.	0.125	0.876	0.449	1.527	-0.651
Larsen & Toubro Ltd.	0.834	1.758	0.393	1.154	0.604
Mahanagar Telephone Nigam Ltd.	0.631	1.268	0.298	0.972	0.296
Mahindra & Mahindra Ltd.	0.327	1.002	0.309	1.323	-0.321
Novartis India Ltd.	0.186	0.673	0.124	0.533	0.14
Pentamedia Graphics Ltd.	0.51	2.07	0.295	2.248	-0.178
Reliance Energy Ltd.	0.412	1.038	0.223	0.503	0.535
Reliance Industries Ltd.	0.621	1.306	0.551	1.299	0.007
Satyam Computer Services Ltd.	0.542	1.946	0.646	2.193	-0.247
State Bank Of India	0.731	1.859	0.401	1.138	0.721
Sun Pharmaceutical Inds. Ltd.	0.241	1.019	0.089	0.367	0.652
Tata Iron & Steel Co. Ltd.	0.483	1.309	0.286	0.871	0.438
Tata Motors Ltd.	0.592	1.794	0.169	0.682	1.112
Wipro Ltd.	0.235	1.096	0.606	2.014	-0.918
Zee Telefilms Ltd.	0.284	1.311	0.24	1.47	-0.159
N	37				
t-statistic for the difference in beta	3.463				
Significance	0.01*				



**Table. b. Experimental Group - Set II**

Companies	Pre-regulation		Post-Regulation		Difference in beta
	R - Square	Beta	R - Square	Beta	
Abott	0.387	0.838	0.127	0.366	0.472
Amara Raja Batteries Ltd.	0.27	1.085	0.198	0.758	0.327
Apollo Tyres Ltd.	0.426	1.43	0.148	0.891	0.539
Arvind Mills Ltd.	0.261	0.972	0.205	1.016	-0.044
Ashok Leyland Ltd.	0.178	1.054	0.141	0.728	0.326
B P L Ltd.	0.244	1.504	0.266	1.121	0.383
Bank Of Baroda	0.64	1.76	0.258	0.743	1.017
Bank Of India	0.549	1.265	0.107	0.589	0.676
BASF ltd	0.212	0.766	0.194	0.605	0.161
Bharat Forge Ltd.	0.288	1.044	0.25	1.289	-0.245
Bombay Dyeing & Mfg. Co. Ltd.	0.169	0.667	0.1	0.402	0.265
Carrier Aircon Ltd.	0.554	1.284	0.069	0.236	1.048
Century Enka Ltd.	0.164	0.781	0.068	0.56	0.221
Chennai Petroleum Corpn. Ltd.	0.194	0.732	0.249	0.86	-0.128
Corporation Bank	0.596	1.905	0.17	0.785	1.12
Crisil Ltd.	0.277	0.749	0.14	0.981	-0.232
Crompton Greaves Ltd.	0.31	1.374	0.073	0.752	0.622
Escorts Ltd.	0.432	0.922	0.172	0.73	0.192
Essel Propack Ltd.	0.253	0.879	0.158	0.746	0.133
Exide Industries Ltd.	0.255	0.938	0.129	0.49	0.448
Finolex Cables Ltd.	0.331	1.15	0.295	0.644	0.506
Great Eastern Shipping Co. Ltd.	0.292	0.942	0.231	0.658	0.284
Gujarat Narmada Valley Fertilizers Co. Ltd.	0.189	0.657	0.198	0.635	0.022
I C I India Ltd.	0.346	1.03	0.317	0.799	0.231
India Cements Ltd.	0.257	0.978	0.314	1.014	-0.036
Indian Hotels Co. Ltd.	0.282	0.677	0.376	1.008	-0.331
Indian Petrochemicals Corpn. Ltd.	0.271	1.118	0.466	1.403	-0.285
Indo Gulf Corpn. Ltd. [Merged]	0.159	0.766	0.286	1.044	-0.278
Ingersoll-Rand (India) Ltd.	0.291	0.8	0.196	0.898	-0.098
Kesoram Industries Ltd.	0.381	1.506	0.296	0.658	0.848
Kochi Refineries Ltd.	0.2	0.807	0.15	0.783	0.024
L I C Housing Finance Ltd.	0.427	1.277	0.246	0.707	0.57
M R F Ltd.	0.333	1.17	0.105	0.612	0.558
Madras Cements Ltd.	0.416	0.947	0.275	0.43	0.517
Micro Inks Ltd.	0.077	0.728	0.206	0.613	0.115
Nicholas Piramal India Ltd.	0.356	0.746	0.366	0.571	0.175
Oriental Bank Of Commerce	0.546	1.352	0.284	0.581	0.771
Punjab Tractors Ltd.	0.166	0.605	0.207	0.529	0.076
Ray Ban Sun Optics India Ltd.	0.291	1.468	0.098	1.038	0.43
Raymond Ltd.	0.253	1.352	0.086	0.422	0.93
Reliance Capital Ltd.	0.527	1.094	0.608	1.481	-0.387
T V S Motor Co. Ltd.	0.227	0.558	0.1	0.76	-0.202
Tata Chemicals Ltd.	0.417	1.194	0.19	0.603	0.591
Tata Elxsi Ltd.	0.237	0.651	0.248	0.717	-0.066
Tata Power Co. Ltd.	0.288	1.682	0.472	1.923	-0.241
Tata Tea Ltd.	0.51	1.2	0.414	0.891	0.309
Thermax Ltd.	0.385	1.297	0.359	1.348	-0.051

Titan Industries Ltd.	0.307	1.108	0.207	0.965	0.143
Videocon International Ltd.	0.346	1.813	0.334	1.124	0.689
N	49				
t-statistic for the difference in beta	4.802				
Significance	0.00*				

**Table. c. Quasi-Experimental Group – Set II**

Companies	Pre-regulation		Post-Regulation		Difference in beta
	R-Square	Beta	R-Square	Beta	
Ambuja Cement Eastern Ltd.	0.109	0.677	0.126	0.663	0.014
C E S C Ltd.	0.161	0.694	0.13	1.008	-0.314
C M C Ltd.	0.24	1.835	0.185	1.355	0.48
Clariant (India) Ltd.	0.324	1.092	0.192	0.612	0.48
Colour-Chem Ltd.	0.111	0.569	0.192	1.178	-0.609
Cybertech Systems & Software Ltd.	0.244	1.305	0.076	1.896	-0.591
Electrosteel Castings Ltd.	0.315	0.955	0.165	0.883	0.072
E-Serve International Ltd.	0.134	1.312	0.349	1.614	-0.302
Federal Bank Ltd.	0.412	1.063	0.164	1.159	-0.096
Hinduja T M T Ltd.	0.139	0.723	0.309	2.021	-1.298
Hotel Leelaventure Ltd.	0.426	0.981	0.162	0.604	0.377
I B P Co. Ltd.	0.199	0.829	0.267	1.434	-0.605
I F C I Ltd.	0.181	0.538	0.153	1.379	-0.841
I T I Ltd.	0.162	1.217	0.162	1.918	-0.701
Indusind Bank Ltd.	0.205	0.968	0.182	0.663	0.305
Insilco Ltd.	0.089	1.051	0.195	0.914	0.137
Ipca Laboratories Ltd.	0.598	1.938	0.188	0.937	1.001
J B Chemicals	0.194	1.04	0.131	0.683	0.357
K S B Pumps Ltd.	0.112	0.389	0.153	0.822	-0.433
Kotak Mahindra Bank Ltd.	0.219	0.831	0.084	0.925	-0.094
lakshmi	0.126	0.809	0.088	0.593	0.216
Mirc Electronics Ltd.	0.159	0.987	0.135	1.382	-0.395
Moser Baer India Ltd.	0.182	1.491	0.376	0.962	0.529
Mphasis B F L Ltd.	0.335	1.311	0.093	1.318	-0.007
Orchid Chemicals & Pharmaceuticals Ltd.	0.356	1.229	0.35	0.935	0.294
Oriental Hotels Ltd.	0.224	0.5	0.094	0.486	0.014
Parke-Davis (India) Ltd. [Merged]	0.345	1.172	0.173	0.565	0.607
Prism Cement Ltd.	0.14	0.792	0.215	0.948	-0.156
R S Software (India) Ltd.	0.331	1.657	0.3	2.11	-0.453
Rolta India Ltd.	0.455	2.106	0.324	1.878	0.228
Samtel Color Ltd.	0.134	0.944	0.123	1	-0.056
Unichem Laboratories Ltd.	0.285	1.28	0.098	0.481	0.799
Uniphos Enterprises Ltd.	0.422	1.444	0.163	0.959	0.485
United Western Bank Ltd.	0.139	0.673	0.084	0.557	0.116
Zandu pharma	0.131	0.617	0.081	0.282	0.335
N	35				
t-statistic for the difference in beta	-0.036				
Significance	0.972				

**Table. d. Control Group – Set II**

Companies	Pre-regulation		Post-Regulation		Difference in beta
	R-Square	Beta	R-Square	Beta	
Archies Ltd.	0.28	0.992	0.116	1.37	-0.378
Atcom Technologies Ltd.	0.104	0.788	0.216	1.593	-0.805
Aurobindo Pharma Ltd.	0.133	0.992	0.316	0.96	0.032
Avaya Globalconnect Ltd.	0.106	0.881	0.27	1.401	-0.52
B O C India Ltd.	0.315	1.14	0.161	1.122	0.018
B S E L Infrastructure Realty Ltd.	0.272	1.75	0.083	1.097	0.653
Balrampur Chini Mills Ltd.	0.199	0.784	0.1	0.469	0.315
Bank Of Punjab Ltd.	0.233	0.571	0.127	0.411	0.16
Bank Of Rajasthan Ltd.	0.12	0.691	0.088	0.591	0.1
Bharat Electronics Ltd.	0.291	1.511	0.216	1.191	0.32
Binani Industries Ltd.	0.254	0.86	0.233	0.698	0.162
Birla Ericsson Optical Ltd.	0.199	0.991	0.348	1.109	-0.118
Blue Dart Express Ltd.	0.103	0.887	0.088	0.684	0.203
Ceat Ltd.	0.451	1.147	0.159	0.899	0.248
Century Textiles & Inds. Ltd.	0.296	1.538	0.46	1.347	0.191
Container Corpn. Of India Ltd.	0.085	0.472	0.257	0.891	-0.419
Crest Communication Ltd.	0.212	1.517	0.413	1.781	-0.264
Dena Bank	0.222	0.659	0.117	0.876	-0.217
F D C Ltd.	0.199	0.856	0.08	0.536	0.32
Godfrey Phillips India Ltd.	0.115	0.793	0.093	0.454	0.339
Godrej Industries Ltd.	0.285	1.456	0.134	0.521	0.935
Goodlass Nerolac Paints Ltd.	0.308	0.737	0.174	0.75	-0.013
Gujarat Gas Co. Ltd.	0.433	1.468	0.161	0.468	1
Gujarat Industries Power Co. Ltd.	0.12	0.591	0.381	1.441	-0.85
Gujarat Mineral Devp. Corpn. Ltd.	0.309	1.332	0.243	1.183	0.149
Gujarat State Fertilizers & Chemicals Ltd.	0.125	0.607	0.159	1.107	-0.5
Himatsingka Seide Ltd.	0.332	1.145	0.206	0.654	0.491
Hindustan Zinc Ltd.	0.117	0.998	0.222	0.964	0.034
I T C Hotels Ltd.	0.211	0.857	0.195	0.673	0.184
Infomedia India Ltd.	0.177	0.683	0.104	0.784	-0.101
Infotech Enterprises Ltd.	0.162	1.49	0.183	1.396	0.094
Jammu & Kashmir Bank Ltd.	0.23	0.877	0.128	0.757	0.12
Jindal Photo Ltd.	0.24	0.95	0.308	1.047	-0.097
Jindal Strips Ltd.	0.262	0.775	0.198	0.797	-0.022
Monsanto India Ltd.	0.274	1.207	0.144	0.71	0.497
Orient Information Technology Ltd.	0.399	1.995	0.201	1.797	0.198
Parekh Platinum Ltd.	0.116	0.827	0.11	1.163	-0.336
Punjab Communications Ltd.	0.142	0.952	0.268	1.413	-0.461
Rama Newsprint & Papers Ltd.	0.148	1.082	0.117	0.729	0.353
Saw Pipes Ltd.	0.187	0.83	0.209	1.876	-1.046
Shaw Wallace & Co. Ltd.	0.138	0.871	0.204	1.272	-0.401
Shipping Corpn. Of India Ltd.	0.078	0.612	0.24	1.31	-0.698
State Bank Of Bikaner & Jaipur	0.26	0.675	0.137	0.382	0.293
Tamil Nadu Newsprint & Papers Ltd.	0.192	1.361	0.146	0.849	0.512
Tamilnadu Petroproducts Ltd.	0.173	0.661	0.229	0.528	0.133
Timken India Ltd.	0.304	1.188	0.125	0.689	0.499

TRYGIN	0.268	1.37	0.18	1.915	-0.545
U T I Bank Ltd.	0.301	0.67	0.314	0.977	-0.307
Usha Martin Ltd.	0.271	0.917	0.207	0.944	-0.027
Vashisti Detergents Ltd.	0.22	0.639	0.171	0.911	-0.272
Wyeth Ltd.	0.123	0.598	0.2	0.699	-0.101
N	50				
t-statistic for the difference in beta	0.018				
Significance	0.986				

**Table. e. Quasi-Experimental Group – Set III**

Companies	Pre-regulation		Post-Regulation		Difference in beta
	R-Square	Beta	R-Square	Beta	
Nucleus Software Exports Ltd.	0.363	2.136	0.241	1.676	0.46
South Indian Bank Ltd.	0.201	0.86	0.106	0.937	-0.077

**Table. f. Control Group – Set III**

Companies	Pre-regulation		Post-Regulation		Difference in beta
	R-Square	Beta	R-Square	Beta	
Alkyl Amines Chemicals Ltd.	0.223	1.215	0.1	1.204	0.011
Jubilant Organosys Ltd.	0.1	0.401	0.202	0.806	-0.405

## **Reference:**

Beaver, W. H., 1968, Information Content of the Annual Earnings Announcement. Empirical Research in Accounting: Selected Studies, Journal of Accounting Research Supplement 6, 67-92.

Benston, G., 1973, Required Disclosure and Stock Market: An Evaluation of the Securities Exchange Act of 1934, The American Economic Review 63, 132-155.

Benston, G., M. Bromwich, R. Litan, and A. Wagebhofer, 2003, Following the Money: The Enron Failure and the State of Corporate Disclosure (AEI Brookings Joint Center for Regulatory Studies, Washington, D.C).

Berle, A. and G.C. Means, 1932, The Modern Corporation and Private Property. (Macmillan, New York).

Bhattacharyya, A., 2003, Corporate Reporting for Corporate Governance: An introduction. Special issue on Corporate Reporting for Corporate Governance, Decision 30 , 1-32.

Binder, J., 1983, Measuring effects of regulation with stock price data: a New Methodology, Ph.D Dissertation, University of Chicago.

Binder, J., 1985b, Measuring effects of regulation with stock price data: a New Methodology, *Rand Journal of Economics* 16, 167 - 183.

Bollerserv, T., R. Engle, and J. Wooldridge, 1988, The Capital Asset Pricing Model with Time Varying Covariances, *Journal of Political Economy* 96, 116-31.

Botosan, C., 1997, Disclosure level and the Cost of Equity Capital. *The Accounting Review* 72, 323-349.

Botosan, C. and M. Plumlee, 2002, A Re-Examination of Disclosure Level and Expected Cost of Capital, *Journal of Accounting Research* 40, 21-40.

Brailsford, T., 1996, The Empirical Relationship Between Trading Volume, Returns And Volatility, *Accounting and Finance* 36, 89-110.

Breeden, D., 1979, An Intertemporal Asset Pricing Model with Stochastic Consumption and Investment Opportunities, *Journal of Financial Economics* 7, 265-296.

Choi, F. D. S., 1973, Financial Disclosure and Entry to European Capital Market, *Journal of Accounting Research* 11, 159-175.

Collins, D., 1975, SEC Product-Lines Reporting and Market Efficiency, *Journal of Financial Economics* 2, 125-64.

Collins, D., and R. Simonds, 1979, SEC Line of Business Disclosure and Market Adjustments, *Journal of Accounting Research* 17, 352-382.

Dhaliwal, D., 1977, Disclosure Regulations and Cost of Capital, *Southern Economic Journal* 45 , 785-794.

Diamond, D. and R. Verrecchia, 1991, Disclosure, Liquidity and Cost of Capital, *Journal of Finance* 66, 1325 -60.

Foster, III., W. Taylor, and D. Vickery, 1978, The Incremental Information Content of 10-K, *The Accounting Review* 53, 921-934.

Friend, I., and E. Herman, 1964, The SEC Through a Glass Darkly, *Journal of Business* 37, 382-401.

Friend, I., and R. Westerfield, 1975, Required disclosure and stock market: a comment, *American Accounting Review* 65, 467-472.

Gonedes, N. and N. Dupoch, 1974, Capital Market Equilibrium, Information Production, and Selecting Accounting Techniques: Theoretical Framework and Review of Empirical Work, *Journal of Accounting Research Supplement* 12 , 48-129.

Grossman, S., and O. Hart, 1980, Disclosure Laws and Takeover Bids, *Journal of Finance* 35, 323-334.

Greenstein, M., and H. Sami, 1994, Impact of SEC's segment disclosure, *The Accounting Review* 69, 179-199.

Gupta, L.C., 1997, Report on the Committee of Derivatives, Securities and Exchange Board of India, Mumbai.

Hagerman, R., 1975, A test of Government Regulation on Accounting Principles. *The Accounting Review* 50, 699-709.

Hagerman, R.; and P. Healy, 1998, The Impact of SEC-Required Disclosure and Insider-Trading Regulations on the Bid/Ask Spreads in the Over-the-Counter Market, *Journal of Accounting and Public Policy* 11, 233 - 243.

Hakansson, N., G. Kunkel, and J. Ohlson, 1982, Sufficient and Necessary Conditions for Information to have Social Value in Pure Exchange, *Journal of Finance* 37, 1169 - 1181.

Healy, P. and K. Palepu, 2000, Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Disclosure Literature, *Journal of Accounting and Economics* 31, 405 - 440.

Hornigren, C. T., 1957, Disclosure: 1957, *The Accounting Review* 32, 598-604.



Horwitz, B., and R. Kolodny, 1977, LOB reporting and security prices: Analysis of SEC Disclosure Rule, *Bell journal of Economics* 8, 234 - 249.

Jagannathan, R. and Z. Wang, 1996, The Conditional CAPM and the Cross-section of Expected Returns, *Journal of Finance* 51, 3 - 53.

Jain, P. C., 1983, Impact of Accounting Regulation on the Stock Market: The Case of Oil and Gas Companies – Some additional results, *The Accounting Review* 58, 633 – 38.

Jarrell, G., 1981, The Economic Effect of Federal Regulation of the Market for New Security Issues, *Journal of Law and Economics* 24, 613-675.

Jensen, M. and W. Meckling, 1976, Theory of the firm: Managerial Behavior, Agency costs, and Capital Structure, *Journal of Financial Economics* 3, 305-360.

Jensen, M., 2000, Value Maximisation, Stakeholder Theory, and Corporate Objective Function, Harvard Business School, Working Paper No. 01-01.

Khanna, T., and K. Palepu, 2000, Is Group Affiliation profitable for in emerging markets? An analysis of Diversified Business Groups, *Journal of Finance* 55, 867 – 891.

Krishnamurti, C., 2003, Voluntary Disclosure and Market Quality: Evidence From Emerging Market ADR's, Working paper, Division of Banking and Finance, Nanyang Business School.

Lamdin, D., 2001, Implementing and interpreting event studies for regulatory changes, *Journal of Economics and Business* 53, 171-183

Lev, B., 1979, Impact of Accounting Regulation on the Stock Market: The Case of Oil and Gas Companies, *The Accounting Review* 54, 485-504.

Lev, B., 1988, Toward A Theory of Equitable and Efficient Accounting Policy, *The Accounting Review* 63, 1-22

Leuz, C. and R. Verrecchia, 2000, Economic Consequences of Increased Disclosure, *Journal Of Accounting Research* 38, 91-124.

MacKinlay, C., 1997, Event Studies in Economics and Finance, *Journal of Economic Literature* 35, 13-39.

Marston, C., 1986. *Financial Reporting in India*. (Croom Helm, London).

Merton, R C., 1987, A Simple Model of Capital Market Equilibrium with Incomplete Information, *The Journal of Finance* 42, 483 -510.

Modigliani, F., and M. H. Miller, 1958, The Cost of Capital, Corporation Finance and the Theory of Investment, *American Economic Review* 48, 261-297.

Narayanaswamy, R., 2001. Voluntary US GAAP Disclosure in India: The Case Of Infosys Technologies Limited. *Journal of International Financial Management and Accounting* 7, 137 - 166

Patel, S., A. Balic, and L. Bwarila, 2002, Measuring Transparency and Disclosure at Firm-Level in Emerging Markets. *Emerging Markets Review* 3, 325–37.

Ross, S., 1976, The Arbitrage Theory of Capital Asset Pricing, *Journal of Economic Theory* 13, 341-360.

Report of the Committee Appointed by the SEBI on Corporate Governance under the Chairmanship of Shri Kumaramangalam Birla, 2000.

Securities Exchange Commission, United States, Annual Report, 2003, pp 17.

Singhvi, S., 1967, Corporate Disclosure through Annual Reports in the USA and India, Doctoral Dissertation, Graduate School of Business, Columbia.

Swaminathan, S., 1991, The impact of SEC mandated segment on price variability and divergence of beliefs, *The Accounting Research* 66, 23-41.

Stigler, G., 1964, Public Regulation of the Securities Markets, *Journal of Business* 37, 117-142.

Tauchen, G., and P. Mark, 1983, The Price Variability – Volume Relationship on Speculative Markets, *Econometrica* 51, 485 – 505.

Vaidyanath, K, 2003. Management Discussion and Analysis Report – A Potent Tool for Corporate Financial Reporting. Special issue on Corporate Reporting for Corporate Governance, *Decision* 30, 61-68.

Verrecchia, R., 1983. Discretionary disclosure. *Journal of Accounting and Economics* 5, 365-380.

## Tables Forming Part of Manuscript

**Table.1. Summary of empirical research in financial disclosure regulation**

<b>Researcher</b>	<b>Regulation</b>	<b>Result</b>
Stigler (1964)	SEC Act 1934	New issues post-SEC has lower volatility and also lower returns.
Benston (1973)	SEC Act 1934	No reduction in standard deviation and beta.
Friend and Herman (1964)	SEC Act 1934	Lower volatility during the post-SEC period has attracted more risk-averse investors, leading to higher levels of investments in U.S Capital Markets.
Friend and Westerfield (1975)	SEC Act 1934	Proved that wrong classification by Benston (1973) led to the wrong result.
Jarell (1981)	SEC Act 1934	Confirms the result of Stigler (1964) with better techniques.
Collins (1975)	Segment Reporting 1970	Portfolio comprising of companies with more segmented information earned higher abnormal returns than the portfolio with less segmented information.
Dhaliwal (1977)	Segment Reporting 1970	The companies disclosing segment reporting information have lower standard deviation.
Horwitz and Kolodny (1977)	Segment Reporting 1970	Segment reporting does not reduce the beta of such companies.
Collins and Simons (1978)	Segment Reporting 1970	Prove that Horwitz and Kolodny's results are wrong due to wrong sample selection.
Foster and Vickery (1978)	Segment Reporting 1970	Companies with more segmental information have earned higher abnormal returns after the regulation has become effective.
Swaminathan (1991)	Segment Reporting 1970	Consequent upon the regulation, the price variability has increased; and there is reduction in the forecast error by the analysts.
Greenstein and Sami (1994)	Segment Reporting 1970	Segment disclosures reduced the bid-ask spread.
Hagerman (1975)	Federal Reserve Board Directive, 1963	Financial Statements of State Banks contains information upon which the investors have acted and this has been reflected in stock price movements
Lev (1979)	Oil and natural gas Regulation, 1977	Reduction in abnormal returns by companies required to shift form full cost group to successful efforts group.
Jain (1983)	Oil and natural gas Regulation,	Confirms the results obtained by Lev (1979).

	1977	
Hagerman and Healy (2000)	OTC companies required to disclose as per the SEC Act, 1934	No reduction in the bid-ask spread for OTC firms after regulation has come into effect. Regulation was not effective.
Bushee and Luez (2003)	OTC companies required to disclose as per the SEC Act, 1933	Liquidity has increased for experimental group.
Leuz and Verrecchia (2000)	International Accounting Standards	Increase in liquidity and reduction in the bid-ask spread after the German firms adopted International Accounting Standards.

**Table.2. Sample size of the groups**

	<b>Experimental Group</b>	<b>Quasi-Exp Group</b>	<b>Control Group</b>
Companies for which disclosure is required	134	Nil	Nil
Initial sample size	134	408	4030
No information on market capitalization for FY 01	2	18	318
Different financial year ending	27	57	159
Companies with market capitalization less than 1 cr	3	2	458
Final sample	<b>102</b>	<b>331</b>	<b>3095</b>

**Table.3 Frequency Distribution Based on Market Capitalization**

<i>Amount in Cr</i>	<i>Experimental Group</i>	<i>Quasi-Exp Group</i>	<i>Control Group</i>
Above 50000	1	0	0
25000-50000	3	0	0
10000-25000	6	1	0
5000-10000	6	1	1
1000-5000	34	7	10
500-1000	17	9	18
100-500	32	91	134
50-100	3	45	130
10 – 50	0	107	628
1 to 10	0	70	2174
Less than 1	3	2	458
	<b>105</b>	<b>333</b>	<b>3553</b>

**Table.4 Descriptive Statistics of companies belonging to final sample**

<i>Amount in Cr</i>	<i>Experimental Group</i>	<i>Quasi-Exp Group</i>	<i>Control Group</i>
Total market capitalization	418386.65	72439.17	102219.35
% of market capitalization	70.55	12.21	17.24
No. of companies	102	331	3095
% Of total companies	2.97	9.43	87.60
Average market capitalization	4062.01	217.54	32.94
Standard deviation market capitalization	9800.51	1140.67	196.83
Median market capitalization	920.88	36.48	4.59

**Table.5. Division of groups into sets based on the Market Capitalization**

	<b>Experimental Group</b>	<b>Quasi-Exp Group</b>	<b>Control Group</b>
<b><i>Set I – Market Capitalization of more than Rs.1,500 cr</i></b>			
Total market capitalization	386694.22	36025.80	28431.08
No. of companies	42	5	9
Average market capitalization	9207.01	7205.16	3159.01
% Of market capitalization of that group	92.43	49.73	27.81
% Market capitalization of all companies	65.20	6.07	4.79
<b><i>Set II – Market Capitalization between 100 crore to 1500 crore</i></b>			
Total market capitalization	31414.90	29865.87	42836.62
No. of companies	57	103	154
Average Market capitalization	551.14	289.96	278.16
% Of market capitalization of that group	7.51	41.23	41.91
% Market capitalization of all companies	5.30	5.04	7.22
<b><i>Set III – Market capitalization of less than 100 crore</i></b>			
Total market capitalization	276.60	4726.48	41862.32
No. of companies	3	223	2942
Average market capitalization	92.20	22.83	13.90
% Of market capitalization of that group	0.07	6.52	40.95
% Market capitalization of all companies	0.05	0.80	7.06

**Table.6.Results of t-test for testing equality of beta for the two time periods**

	Pre-Regulation beta ( $b_0$ )	Post-Regulation beta( $b_0'$ )	Change in beta ( $b_0- b_0'$ )	N	t-statistic for the change in beta ( $b_0- b_0'$ )	Sig. of t-Statistic
<b>Set I</b>						
Experimental Group						
Mean	1.194	0.919	0.275	37	3.463	0.01*
Standard Deviation	0.424	0.615	0.484			
<b>Set II</b>						
Experimental Group						
Mean	1.074	0.806	0.268	49	4.802	0.000*
Standard Deviation	0.336	0.315	0.390			
Quasi-Experimental Group						
Mean	1.058	1.061	-0.003	35	-0.036	0.972
Standard Deviation	0.412	0.485	0.498			
Control Group						
Mean	0.985	0.984	0.001	50	0.018	0.986
Standard Deviation	0.342	0.398	0.428			
* Represents significance at 5% level The number of cases statistically significant for each of Quasi-Experimental Group and Control Group in Set III is 2 and hence cannot be tested for change in beta.						

**Table.7. Direction of change in beta**

	N	Reduction in Beta (%)	Increase in Beta(%)
<b>Set I</b>			
Experimental Group	37	72.97	27.03
<b>Set II</b>			
Experimental Group	45	71.43	28.57
Quasi- Experimental Group	48	54.29	45.71
Control Group	58	54.90	45.10



**Table.8. Result of t-test on Volatility of the stock returns**

	Sample Correlation Coefficient	N	Calculated t-statistic	t-value at 0.05, n-2 level
<b>Set 1</b>				
Experimental Group	0.392	37	2.741*	1.690
<b>Set 2</b>				
Experimental Group	0.293	49	1.214	1.677
Quasi- Experimental Group	0.278	35	1.731*	1.690
Control Group	0.370	51	3.00*	1.676
* Represents significance at 5% level The number of cases statistically significant for each of Quasi-Experimental Group and Control Group in Set III is 2 and hence cannot be tested for change in Volatility.				

**Table.9. Result of Paired t-test on Average weekly returns across different sets / groups**

	Pre-Regulation Return (R <sub>0</sub> )	Post-Regulation Return (R <sub>0</sub> ')	Change in return (R <sub>0</sub> - R <sub>0</sub> ')	N	t-statistic for change in Return (R <sub>0</sub> - R <sub>0</sub> ')	t-value at 0.05, n-2 level
<b>Set I</b>						
Experimental Group						
Mean	0.446	0.046	0.401	37	2.143*	1.690
Standard Deviation	0.951	0.621	1.137			
<b>Set II</b>						
Experimental Group						
Mean	-0.034	0.462	-0.497	49	-2.547	1.677
Standard Deviation	1.003	0.841	1.365			
Quasi-Experimental Group						
Mean	0.473	0.968	-0.495	35	-1.175	1.690
Standard Deviation	1.491	1.095	1.707			
Control Group						
Mean	0.301	0.508	-0.236	51	-1.003	1.676
Standard Deviation	1.380	0.928	1.677			
* Represents significance at 5% level The number of cases statistically significant for each of Quasi-Experimental Group and Control Group in Set III is 2 and hence cannot be tested for change in returns.						

**Table.10. The average number of transactions of 100 sample companies which have been traded on a particular day for a particular month**

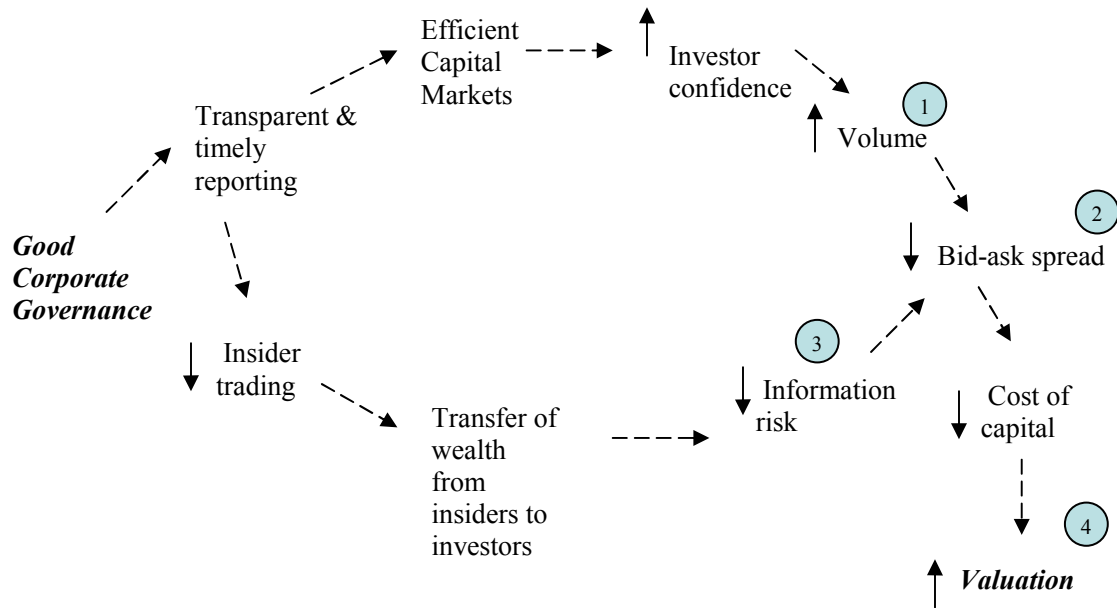
<i>Year</i>	<i>Jan</i>	<i>Feb</i>	<i>March</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>August</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>
<b>1997</b>	12.21	10.31	7.11	13.76	12.78	6.24	15.36	14.65	9.23	8.53	14.71	17.33
<b>1998</b>	11.97	22.60	45.17	45.97	72.34	68.33	37.77	40.94	75.35	100.56	77.07	133.37
<b>1999</b>	96.37	71.34	75.91	66.22	69.80	155.09	148.39	161.51	185.95	177.61	189.29	135.51
<b>2000</b>	153.49	232.55	248.37	134.57	178.25	266.70	212.93	271.95	350.95	351.96	276.94	265.80
<b>2001</b>	350.29	376.25	224.23	518.55	257.67	263.86	107.29	178.20	135.50	110.87	274.07	433.25
<b>2002</b>	359.30	286.62	239.41	447.90	344.88	314.79	549.98	335.96	244.47	317.15	463.65	314.18

**Table.11. Number of trades in millions on the National Stock Exchange**

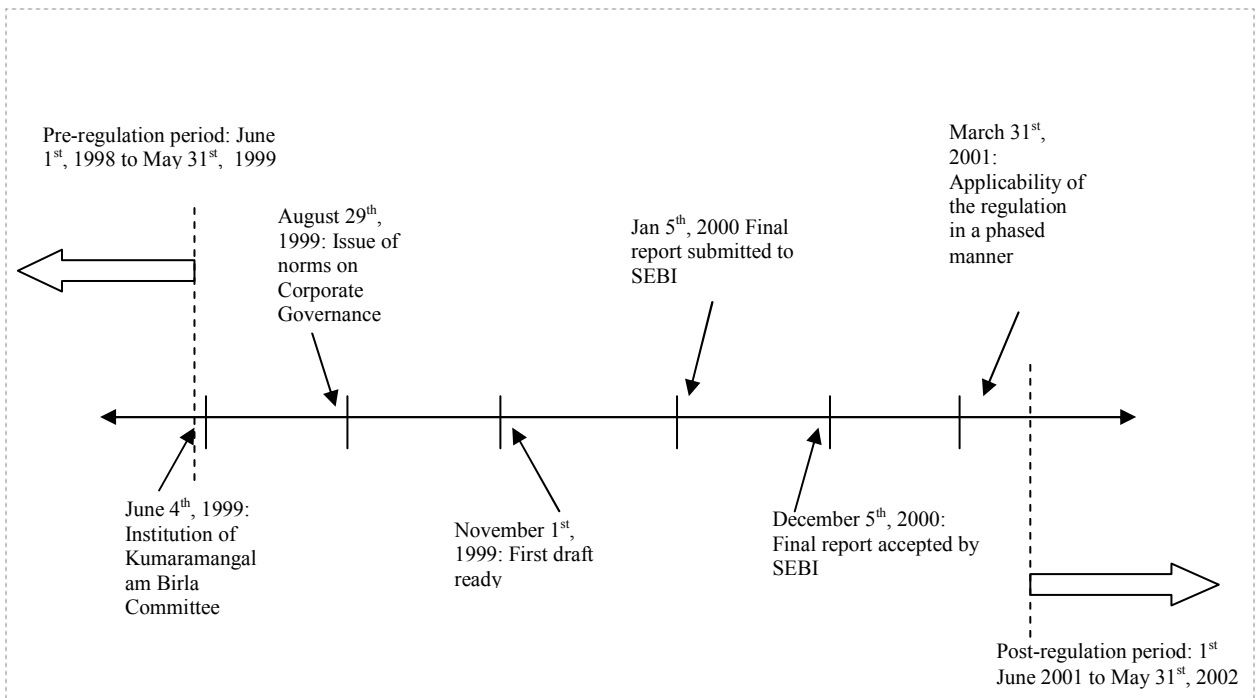
Financial Year	No. Of Trades
1995-96	7
1996-97	26
1997-98	38
1998-99	55
1999-00	98
2000-01	168
2001-02	175
2002-03	240
2003-04	379

## Figures Forming Part of Manuscript

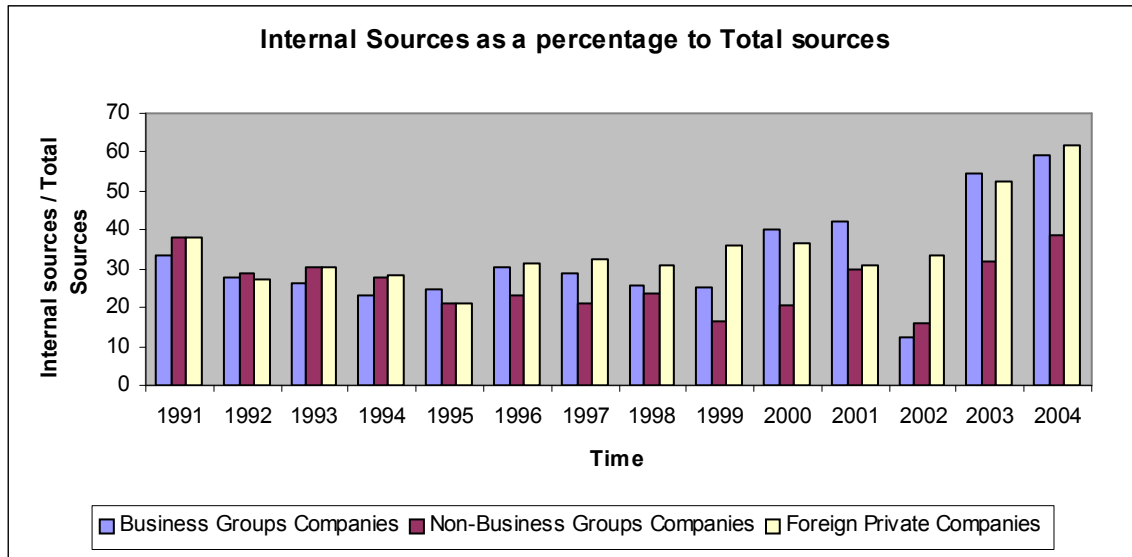
Fig.1. The Expected Impact of the ‘SEBI regulation on Corporate Governance’



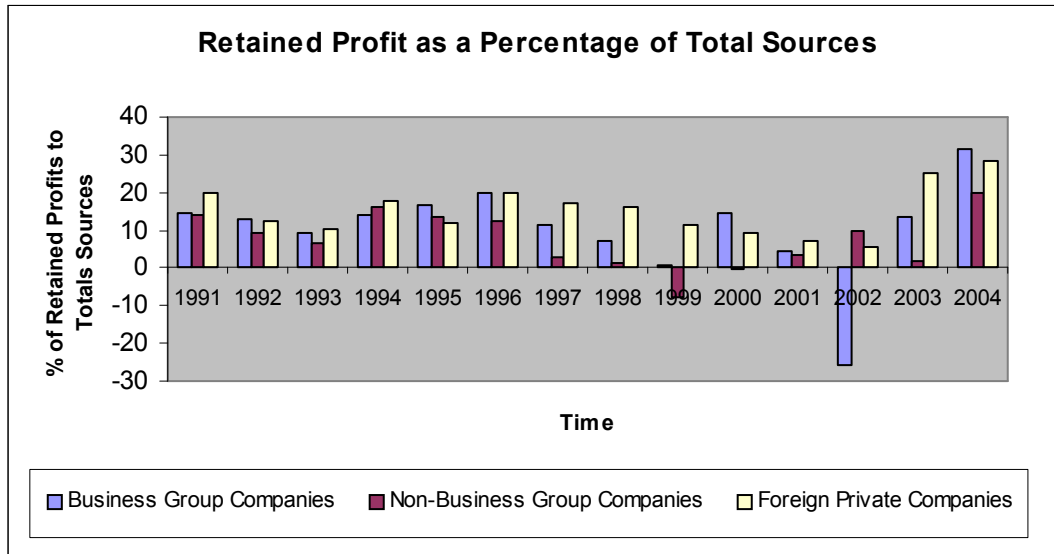
**Fig.2. Timeline of the Kumaramangalam Birla Committee recommendations**



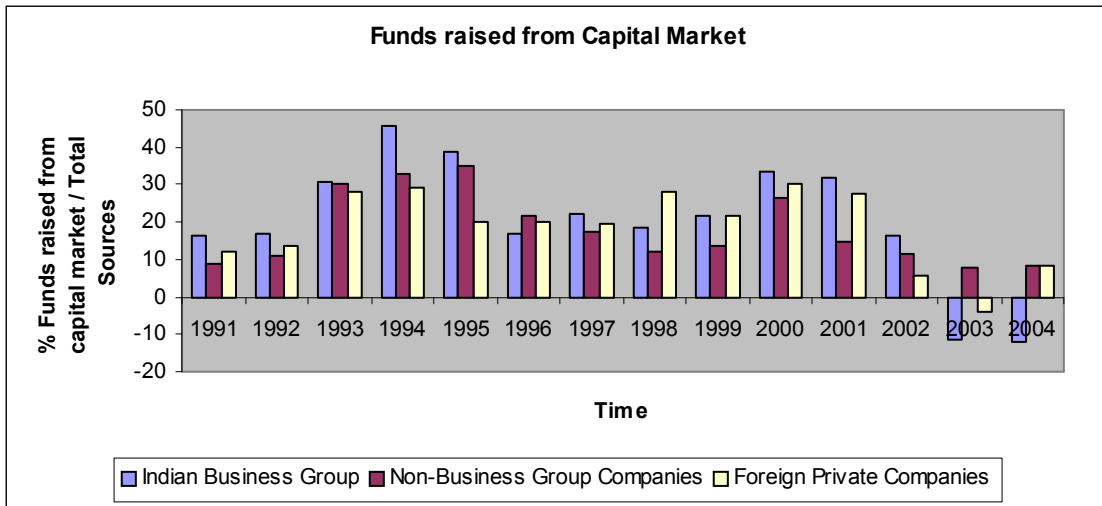
**Fig. 3. Internal Sources as a Percentage of Total Sources for the years 1991 – 2004 for different business groups**



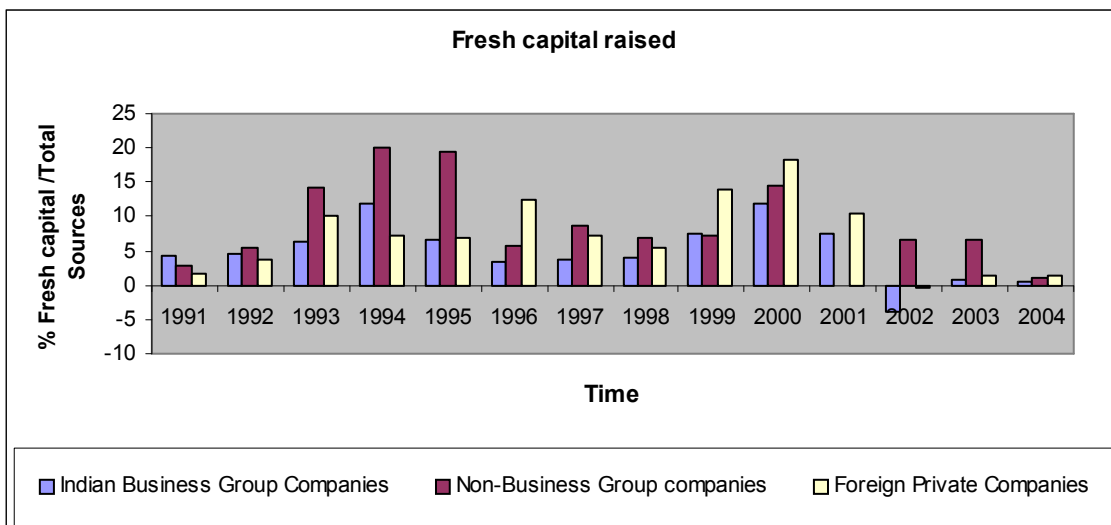
**Fig. 4. Retained Profit as a Percentage of Total Sources for the years 1991 – 2004 for different business groups**



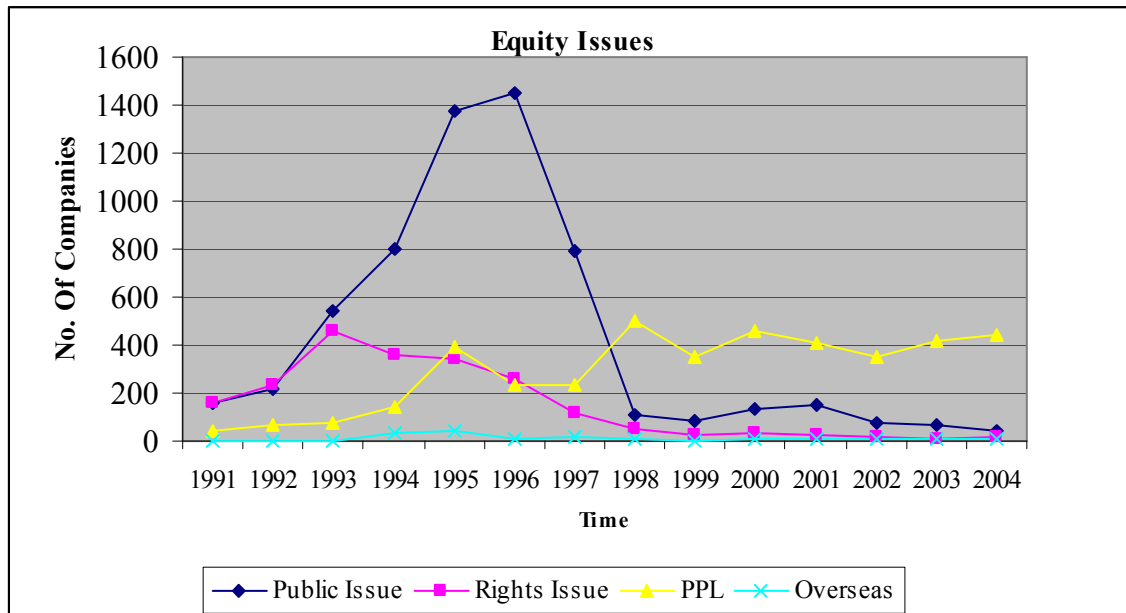
**Fig. 5. Funds Raised From Capital Market by different business groups for the years 1991 – 2004**



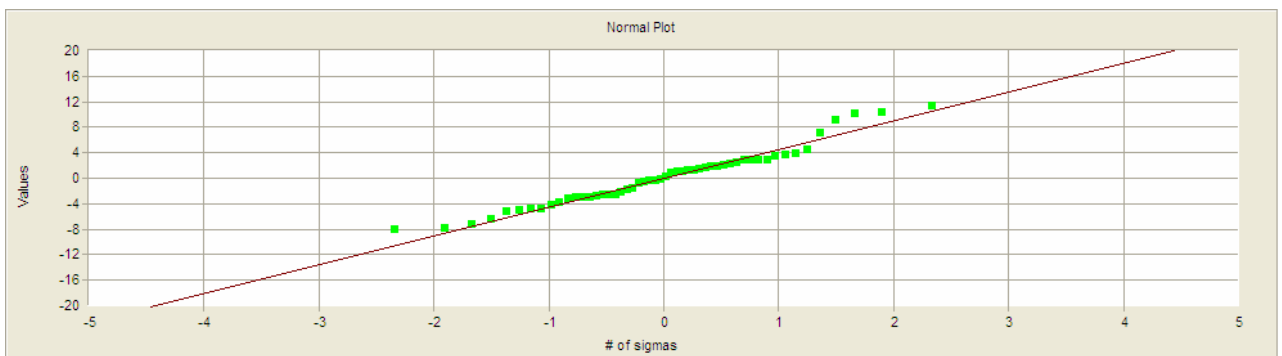
**Fig. 6. Fresh Capital Raised From Capital Market by different business groups for the years 1991 – 2004**



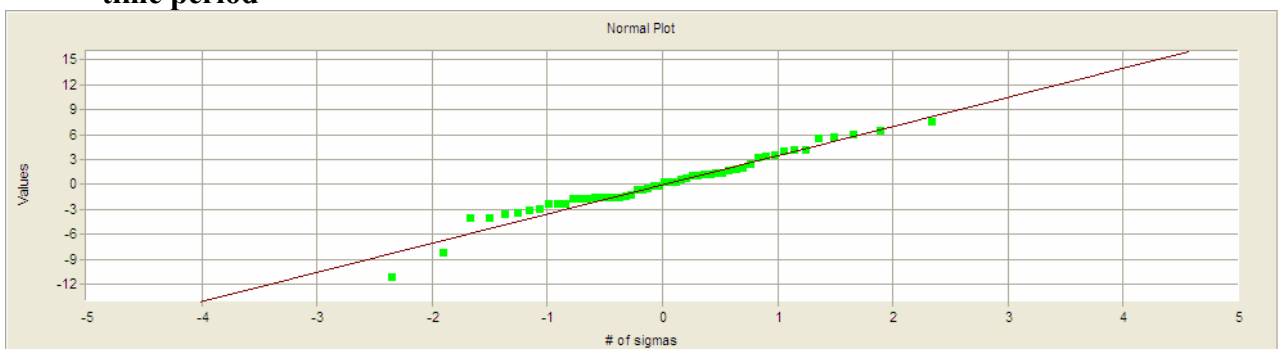
**Fig. 7. Number of Equity Issues by different business groups for the years 1991 – 2004**



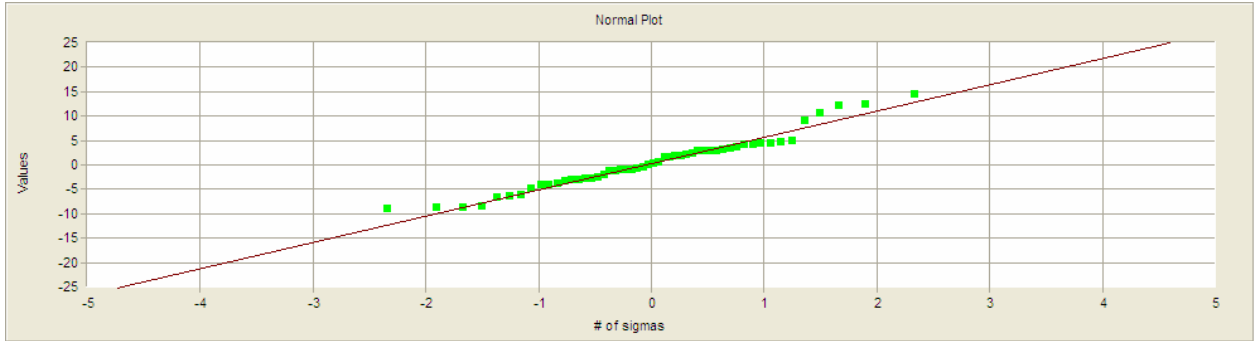
**Fig.8. Normal probability plot of BSE 200 weekly returns for the pre-regulation time period**



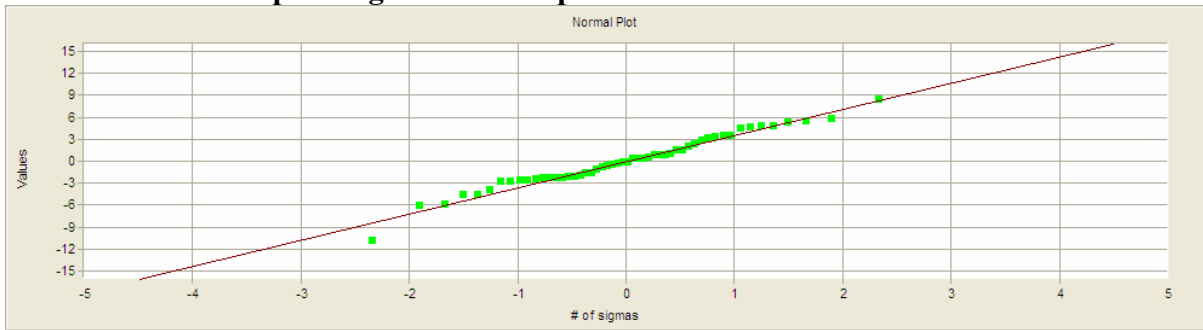
**Fig.9. Normal probability plot of BSE 200 weekly returns for the post-regulation time period**



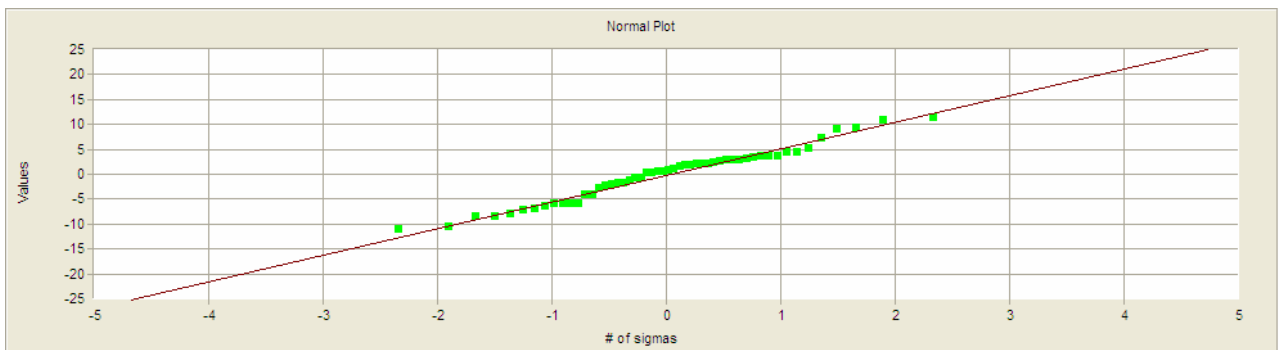
**Fig.10. Normal Probability Plot of average weekly returns of experimental group – Set I for the pre-regulation time period**



**Fig.11. Normal probability plot of average weekly returns of experimental group – Set I for the post-regulation time period**



**Fig.12. Normal probability plot of average weekly returns of experimental group - Set II for the pre-regulation time period**





**Fig.13. Normal probability plot of average weekly returns of experimental group – Set II for the post-regulation time period**

