Study of Relationship between Capital Intensity and Corporate Governance Practices of Firms Listed in Indian Stock Exchange: A Sectoral Analysis

Pankaj M Madhani
ICFAI Business School, Ahmedabad

Abstract. This is an attempt to understand the role of capital intensity in corporate governance and disclosure practices of firms. Accordingly, this research studies the corporate governance and disclosure practices of firms listed in Indian stock market. The study has taken nine sectors into consideration – Auto, Capital Goods, Consumer Durables, FMCG, Health Care, Oil & Gas, Metal, and Power along with IT. These sectors are segregated into high capital intensity and low capital intensity sectors. Prior research found that capital intensity of firms is negatively correlated with governance and disclosure practices. This study aims to establish a relationship, if any, between capital intensity of firms and their corporate governance practices in Indian context. After thorough empirical research, the paper explains why Indian scenario is different from intangible assets-dominated economy such as United States.

Key Words: Corporate Governance, Disclosure, Capital Intensity, Intangible Assets

Corporate governance is not just about the process by which elected representatives as directors make decisions. It is also about the way organizations are held accountable. The most obvious way is via financial reporting. Although publication of an annual report is a statutory requirement, firms normally voluntarily disclose information in excess of the mandatory requirements. Disclosure is one of the fundamental goals of the financial reporting system. Transparency is the timely and adequate disclosure of the operating and financial performance of the firm and its corporate governance practices related to its ownership, board, management structure and processes. A system of corporate governance needs a good level of disclosure and an adequate information to eliminate (or at least reduce) information asymmetries between all parties, making corporate insiders accountable for their actions. Management recognizes that there are economic benefits to be gained from a well-managed disclosure policy. Prior research found significant relationship between capital intensity and corporate governance disclosure practices of firms. However, in Indian context there is very little research on the influence of capital intensity on the corporate governance and disclosure practices of firms. Hence, this research works in this direction to explore such relationship for firms listed in Indian stock market. Consequently, this study analyses the impact of the capital intensity on corporate governance and disclosure practices of Indian firms.

LITERATURE REVIEW

In recent times, corporate governance has received increasing attention both in academic research and in practice (e.g., Blue Ribbon Committee Report 1999; Ramsay Report 2001; Bebchuk and Cohen, 2004).

This increased attention and emphasis is due to the prevalence of highly publicized financial reporting frauds such as Satyam, Enron, WorldCom, and Aldelphia, large number of earnings restatements (Loomis, 1999; Wu, 2002) and claims of deliberate earnings manipulation by corporate management (Krugman, 2002). The corporate governance mosaic suggests we need to look beyond much of the focus of current research in corporate governance that has concentrated on documenting associations and not causal relationships (Larcker, Richardson and Tuna, 2004) and to complement the current research by also investigating the substance of the interactions in the corporate governance arena (Cohen, Krishnamoorthy and Wright, 2004).

Cooke (1989a) analyzed disclosure in Swedish firms and based on regression analysis indicated that listing status and size were major explanatory variables for voluntary disclosure. The earliest studies conducted for measuring the disclosure through an index method are by Cerf (1961), Singhvi and Desai (1971), Buzby (1974) and Choi (1973). These studies found that size, asset size, profitability and entry into European capital markets were positively associated with disclosure levels of firms. Meek et al., (1995) studied the voluntary disclosure practices of firms from the international perspective. Their study examined the various factors influencing the voluntary disclosures of mainly three types of information: strategic, nonfinancial and financial information contained in the annual report. The sample of the study with sample size of 226 firms was drawn from various countries such as UK (64 firms), US (116 firms), France (16 firms), Germany (12 firms) and Netherlands (18 firms). Their study revealed that, company size, country or region, and the listing status were very important factors in explaining the voluntary disclosures of firms.

Several authors (Cooke, 1989b, 1991; Chow and Wong Boren, 1987; Firth, 1979; Buzby, 1975) have examined the factors influencing the disclosure levels in different countries. These studies examined the influence of size, country, industry, leverage, multi nationality (extent of multi-national operations), profitability, institutional and other block shareholding and international listing status on disclosure.

Fewer studies seek to identify specific characteristics determining the variation across firms (Ruth, Garcia-Meca and Martinez, 2011). This study aims to contribute to the understanding of this issue by analyzing the specific firm characteristics such as capital intensity of the firm. Impact of the firm characteristics such as capital intensity on corporate governance and disclosure practices is the core theme of this research and accordingly this research identifies and tests the empirical evidence for such relationship.

Corporate Governance: Key Concepts

Corporate governance focuses on a company's structure and processes to ensure fair, responsible, transparent and accountable corporate behavior. There are actually many definitions of corporate governance but they all concern the following elements:

1. Systems of controls within the company
2. Relationships between the company's board/shareholders/stakeholders
3. The company being managed in the interests of the stakeholders
4. Greater transparency and accountability to enable users of corporate information to determine whether the business is being managed in a way that they consider appropriate.

Corporate governance is a priority for firms because it presents opportunities to manage risks and add value. Focus of corporate governance is shifting from mere obligation and compliance with laws and listing standards, to a business imperative for many firms. Corporate governance significantly influences the firm's performance. Corporate governance stands for responsible business management geared towards long-term value creation. Good corporate governance is a key driver of sustainable corporate growth and long-term competitive advantage (Madhani, 2007). Good governance means little expropriation of corporate resources, which contributes to better allocation of resources and better performance. Investors and lenders will be more willing to put their money in firms with good governance. Other stakeholders, including employees and suppliers, will also want to be associated with such firms, as the relationships are likely to be more prosperous, fairer, and longer lasting than those with firms with less effective governance (Shah, Butt and Hasan, 2009).

Firm Performance: Impact of Tangible vs. Intangible Assets

Assets have been considered as the important factor in firm performance because assets determine the value of the firm. Balance sheets have been used to capture assets of the firm and firms use them as important tools to measure and communicate assets' value. Therefore, many firms work hard to maintain a good balance sheet as it influences the firm's perceived value. Firms also monitor changes in the balance sheet closely as any change in value will influence the decisions of various stakeholders (Loury, 2008). In the past, this approach worked well because physical assets were considered the main factor and sometimes the only factor that provided value to firms. By relying on the balance sheet and its financial indicators, organizations have ignored that there is another important factor, the intangibles that provide value to the firm.

Intangibles and market services may account for two-thirds of the gross domestic product (GDP) of the U.S., yet few of these assets appear on financial statements (Jhunjhunwala, 2009). Since the industrial revolution, the value of a business was primarily based on its tangible assets, which are represented on the balance sheet. Firms priced these tangible resources and linked them to all the measurement of the firm performance. While tangible assets have determined the wealth of the 20th century, the wealth of the 21st century resides in intangible assets (Garcia-Parra, Simo, Sallan, & Mundet, 2009). Intangible assets are far from a homogenous category of assets. They include diverse heterogeneous components such as R & D, brands, organizational capital (e.g., distribution channels and manufacturing skills), relationships with customers and suppliers, reputation, alliances, and so on.

Today's business model in a globally competitive environment is increasingly dependent on the use of intangible resources that offer value for firms. Intangible asset is becoming more important than the value of tangible assets. Intangible assets are developing into an unmatched resource for the creation of business wealth. Although, tangible assets such as buildings, facilities, and equipment are still the main elements of producing goods and services, its relative significance has diminished over time as the intangible assets come to replace tangible assets (Martins & Alves, 2010).

What is Capital Intensity ?

Most firms need to invest capital in their revenue generating process to make revenue. Capital refers to the plant and equipment used in the production function of a business, as well as its stock of financial assets (Link & Boger, 1999). Capital is the term used to refer to the amount invested in plant, property, equipment, inventory and other physical assets (Samuelson & Nordhaus, 2004). Capital expenditure represents the funds used to acquire or upgrade fixed assets other than those associated with acquisitions (Koller, Goedhart & Wessels, 2010). Firms typically go through capital cycles – periods of increased capital expenditure followed by periods of lower capital expenditure. Firms that can produce a unit of sales revenue with the least amount of capital expenditure through the capital cycle are probably more reliant on intangible assets for their competitive advantage.

Capital intensive industry refers to that industry, which requires substantial amount of capital for the production of goods. Capital intensive industry requires high value investments in capital assets because of the specific industrial structure and type. In the traditional sectors of economy such as Metal, Power, Oil & Gas etc., physical capital plays an essential role. These sectors are basically capital intensive sectors, which require large capital investment for starting up the business and to run the business as well. Capital intensive industries involve high level of fixed cost as its major project costs result from investments in plant, equipment, machinery, or other expensive capital goods. Hence, capital intensity ratio is a measure of the relative importance of fixed asset in the firm's output. However, in the service sector, physical capital is having subsidiary role. As in the case of IT industry the physical capital intensity is very low while human capital intensity is very high. IT industry is less capital-intensive and more labour-intensive as the low physical capital intensity and high human capital intensity is major feature of this industry (Mowery, 1999).

The ratio of fixed assets to net sales is called the capital intensity ratio and is reciprocal of the asset turnover ratio.

Capital Intensity Ratio = 1 / Asset Turnover Ratio

= Total Fixed Asset / Total Sales

This ratio tells us the amount of assets needed by the firm to generate a unit of sales revenue. The higher the ratio, the more physical asset the firm needs to generate sales - the more capital intensive the firm and subsequently less significant role of intangibles. Capital intensity is an important consideration for business, because capital-intensive firms typically rely more on physical, as opposed to intangible assets as a source of income. The amount of capital expended to produce a unit of sales revenue gives an indication of the level of capital intensity of a firm. A business that requires a large amount of capital investment in physical assets to generate revenue can be labeled as being more capital-intensive (Parker, Ortega, Neuhart & Kausar, 2011) whereas less capital-intensive firms typically do not rely as much on physical assets in their business model. These firms rather depend on their intangible assets as sources of income.

A firm that relies heavily on physical assets and requires continuous capital expenditure in order to sustain its competitive advantage is unlikely to outperform over the long term (Elmasry, 2004). A high capital-intensity ratio would mean that the company relies heavily on the competitive advantage of its physical capital in order to earn a return.

A firm that relies on its physical assets for its competitive advantage is more exposed to the risk of duplication by competitors, invite incursion from rivals and as such leads to excess capacity and erosion of returns (Porter, 1979).

On the other hand, firms that have a proclivity to intangible assets, tend to have lower capital intensities. Such firms require less capital investment to sustain their competitive advantage. Hence, they rather enjoy a competitive advantage by virtue of their intangible assets, and are more likely to earn consistent excess returns over the long term (Barney, 1991). Intangible assets are more difficult to replicate than physical assets. Firms that rely more on their intangible assets, have lower capital intensity, and are expected to achieve and maintain superior returns on capital and increase shareholder wealth over time. The consistently low capital intensity of a firm should reflect the fact that the firm does not rely on capital-intensive physical assets to drive revenues, but rather has a sustainable competitive advantage arising from its intangible assets. Asset tangibility is simply the capital intensity ratio. Firms with high capital intensity pose lower risk as tangible assets make better collateral.

Capital Intensity and Corporate Governance

The bulk of corporate governance research aims to understand the consequences of the separation of ownership from control on firms' performance. According to La Porta et al. (2000), corporate governance is, to a large extent, a set of mechanisms through which outside investors protect themselves against expropriation by the insiders. Agency problems play a central role in the emergence of corporate governance structures as such problems arise because contracts are not costlessly written and enforced (Fama & Jensen, 1983) and as contracts are not complete, moral hazard and adverse selection problems remain. Also, the level of contracts' incompleteness seems to increase with the level of intangible asset intensity. Particularly in intangible asset-intensive firms, managers can improve their bargaining position by developing “manager-specific investments”. The costs of writing and enforcing (increasingly incomplete) contracts become severe when managers possess better business expertise than financiers (shareholders and debt holders) (Martins & Alves, 2010). Agency theory argues that financial policies are determined by agency costs. Given intangible asset characteristics, agency costs are expected to be high in intangible asset-intensive firms (Alves & Martins, 2010).

Severe agency costs and information asymmetry problems of intangible intensive firms have obvious impact on the relationship between firm managers and investors (shareholders and debt holders) and the way they share risks and returns. Given the nature of such firms, asset-substitution and under-investment effects are ever more important. Very often, investors (shareholders as well as debt holders) have limited knowledge about the technicalities of the firms in which they invest. Intangible assets have a set of specific characteristics – namely, high levels of risk/uncertainty, firm-specificity, human capital intensity, low observability and long-term nature - that make them distinctly different from other categories of assets. These characteristics are likely to have substantial impact on the levels of agency costs of equity (hidden action and hidden information problems) and debt (asset-substitution and under-investment problems), information asymmetry levels between managers and investors and transaction costs of equity and debt. Lev (2001) argues that the riskiness of intangibles is, in general, substantially higher than that of physical and even financial assets.

As the assets of high growth firms are largely intangible, debt holders have more difficulty observing how stockholders use assets in high growth firms (Goyal et al., 2002). Consequently, as the scope for discretionary behavior is higher in intangible asset-intensive sectors than in traditional industries, the asset substitution (risk shifting) and under-investment problems increase, exacerbating adverse selection problems. Debt holders limit the amount of credit to intangible asset-intensive firms because of high agency costs, high information asymmetry and high bankruptcy costs. As financial distress costs are high in intangible asset-intensive industries and expenses with intangible assets generate non-interest tax shields, the level of debt is expected to be low in intangible asset-intensive industries. In this vein, Sen & Oruç (2008), using Turkish data, find a negative relationship between debt and intangible assets.

The composition mix of the assets of a firm will affect its contracting environment because fixed assets (i.e. physical capital such as plant, machinery and equipment) are easier to monitor and harder to steal then "soft" asset (i.e. intangibles, and R&D capital.) The more significant the amount of intangible assets, the greater is the scope for managerial discretionary power. Also, as intangible assets cannot serve as collateral, the risk-shifting incentive (asset-substitution risk) increases. Summing up, intangible assets are associated with significant equity and debt agency costs, information asymmetry costs, transaction and bankruptcy costs. These costs are likely to have an impact on the design of corporate governance and disclosure policies.

As Himmelberg, Hubbard, & Palia (1999) pointed out, firms facing large information asymmetry because of their characteristics may signal to the market their intent to protect investors better by adopting good corporate governance policies. This might be the case for large firms, young firms, or firms with relatively large intangible assets. Therefore, firms operating with higher proportions of intangible assets in their total asst base may find it optimal to adopt stricter corporate governance mechanisms to signal to investors that they intend to prevent the future misuse of these assets. Klapper & Love (2004) found support for this hypothesis using a capital intensity measure, and concluded that capital intensity is significantly negatively correlated with governance. They used fixed capital (i.e. property, plant and equipment) to total sales ratio to define capital intensity ratio.

RESEARCH DESIGN AND METHODOLOGY

Research design and methodology comprises objective of the study, nature of data (primary or secondary), research tool applied, etc. Data source for this descriptive research was primarily secondary data. The research methodology adopted for this research is given below:

Objective of the Study

1. To study overall corporate governance and disclosure practices in sample firms.
2. To measure extent of corporate governance and disclosure practices of sample firms with the help of an appropriate instrument as an evaluation tool.
3. To know to what extent firms from different sectors disclosed their financial activities to their existing and prospective investors and regulators at large through their annual reports.

4. To know how capital intensive nature of the firms influences their corporate governance disclosure practices.

Scope of the Study

This study will help us to understand whether capital intensity of firms is associated with corporate governance and disclosure practices of firms in Indian context.

Sources of Data

For the purpose of study, data of the sample firms were collected from the annual reports of the same for the year 2011-12. The year taken for this study is the financial year ending 2012, which was the latest at the time of this study. Annual reports are important documents for assessing and analyzing the company performance concerning corporate governance standards and compliance. Annual reports of firms were collected from various sources. The annual reports of 54 firms for the period ending March 2012 or December 2012 (based on the firms' financial year) have been downloaded from the Ace Equity database software maintained by the Accord Fintech Pvt. Ltd as well as from the company websites.

Sampling Technique Applied

Stratified sampling was used for obtaining data of firms listed in Bombay Stock Exchange (BSE) and is constituent of S&P BSE sectoral indices.

Sampling and Data Collection

The sample for the study was collected from the firms listed in BSE in the form of S&P BSE sector indices. Sectoral indices at BSE aim to represent minimum of 90% of the free-float market capitalization for sectoral firms from the universe of S&P BSE 500 index. This sector index consists of the firms classified in that particular sector of the BSE 500 index. From these sectors, banking sector (Bankex) was eliminated as the disclosure requirements for these firms are specialized and regulated by other regulatory authorities. Likewise, realty sector was also not considered because of specific issues of governance. Hence, remaining all nine sectors from S&P BSE sectoral indices were studied for this research. In each of these sectors, top 6 firms as per market capitalization are selected for sample. Out of sample size of 54 firms, the sample consists of 9 public sector firms (16.67%), 13 multinational ownership (24%) and others with dominant Indian ownership (59.25%).

The sample firms represent different sectors viz.: Auto (11.1%), Metal (11.1%), Oil & Gas (11.1%), Consumer Durables (11.1%), Capital Goods (11.1%), FMCG (11.1%), Health Care (11.1%), IT (11.1%), and Power (11.1%). As shown below in Table 1, these 54 firms selected from 9 different sectors represent 91% of overall sectoral index weight. Hence, these samples of 54 firms truly represent selected 9 sectors.

Table 1: Weight of Sample Firms in their respective Sectoral Indices

Sr. No.	S&P BSE **Sectoral Indices**	No. of Firms Studied	Weight in Index
1	S&P BSE Auto	6	89 %
2	S&P BSE Capital Goods	6	94 %
3	S&P BSE Consumer Durables	6	90 %
4	S&P BSE Healthcare	6	88 %
5	S&P BSE IT	6	95 %
6	S&P BSE Metal	6	82 %
7	S&P BSE Oil & Gas	6	94 %
8	S&P BSE Power	6	97 %
9	S&P BSE FMCG	6	91 %
	Total Sample Size	54	91 %

(Source: Calculated from BSE Web Site)

The Research Instrument: Measurement of Corporate Governance Disclosure Score

A review of the existing literature is undertaken to enhance the understanding and identifying the factors that influence corporate governance disclosure decisions such as firm characteristics, and the firm specific incentives for corporate governance disclosures. It also explores the methodology used for measuring corporate governance disclosure of firms. Prior research studies on disclosure have been broadly classified as those on disclosure indices, event studies and specific disclosure analysis. Researchers have used various methods of computing disclosure score for determining the level of disclosures. The disclosure index provides a reasonable method for measuring the overall disclosure quality of a firm.

Prior research in this area has made extensive use of such index methodology as a research tool (Marston & Shrives, 1991). Index method involves the development of an extensive list of disclosure items, which are expected to be relevant to the users of information. The methodology adopted for computing the disclosure score can be of two types: use of the published disclosure index used in relevant prior research or to have a self-constructed disclosure index for the specific research. In this study, corporate governance and disclosure practices of firms are measured by using index developed by Subramaniana & Reddy (2012).

They developed a new instrument to measure corporate governance disclosure levels of firms, considering only voluntary disclosures in the Indian context. Although, this instrument is based on S&P methodology, it overcomes the limitations of the S&P instrument regarding non-segregation of voluntary and mandatory disclosures. According to Clause 49 of listing agreement of stock exchange, firms have to mandatory disclose corporate governance practices as per the guidelines stipulated in Clause 49. It is now binding for the Indian listed firms to file with SEBI the corporate governance compliance report along with the financial statements. Hence, there was need to develop a methodology for measuring voluntary corporate governance disclosure practices as mandatory disclosure is already taken care of by Clause 49 of listing agreement.

Subramanian & Reddy (2012) also focused on the quality of practices and not just the disclosure of certain practices by firms. On the basis of the S&P instrument, the instrument also classifies corporate governance-related disclosures under two categories: ownership structure and investor relations (*ownership*), and board and management structure and process (*board*).

The final instrument had 67 items: 19 questions in the ownership disclosure category and 48 in the *board* disclosure category. In the latter, the questions in the instrument were not just about the disclosure of board practices, but also about the quality of board practices. For example, the S&P instrument just quizzes whether or not the attendance details of board members are disclosed, whereas this instrument checks whether an attendance at board meetings of at least 60% is maintained. Thus, the scores of board practices (maximum score: 48) from this instrument indicate not just the disclosure of board practices, but also the level of adoption of best board practices by firms.

Disclosures to the market participants can be made by firms through annual reports, quarterly reports and continuous disclosures to the stock exchanges. In this study, only the annual report information is used for calculating corporate governance and disclosures (CGD) score of firms. The annual reports of the selected 54 firms were carefully examined for the financial year 2011-12. Hence, to arrive at the overall disclosure score for each category, i.e. ownership and board, annual reports of each firm under study was scrutinized for the presence of specific items under the above mentioned categories. One point is awarded when information on an item is disclosed and zero otherwise. All items in the instrument were given equal weight, and the scores thus arrived at (for each category), with a higher score indicating greater disclosure. Final corporate governance and disclosure score (Maximum: 67) for each firm was calculated by adding overall score received in ownership (Maximum: 19) as well as board category (Maximum: 48).

Reliability and Validity of the Instrument

The instrument has been validated in two stages using the pilot study and Delphi methods.

DATA ANALYSIS AND INTERPRETATION

As explained earlier, with the help of instrument corporate governance and disclosure practices of firms were calculated by thoroughly scrutinizing annual report of firms. The CGD score was calculated for all 54 firms of sample and is tabulated in Annexure-I. Capital intensity of sample firms was also calculated by taking ratio of fixed asset and gross sales for each firm. This is also reported in Annexure-I.

Explanatory Variable and Testable Hypothesis

The explanatory variable used in the present research is capital intensity of firm. The study aims to find out if corporate governance and disclosure scores of low capital intensity and high capital intensity sector firms are significantly different. In the given sample of 54 firms, 18 firms are high capital intensity sector firms, while 36 belong to the low capital intensity sector firms. As shown in Table 2, sectors are divided into high capital intensity sector and low capital intensity sector depending on whether capital intensity ratio is above or below mean value.

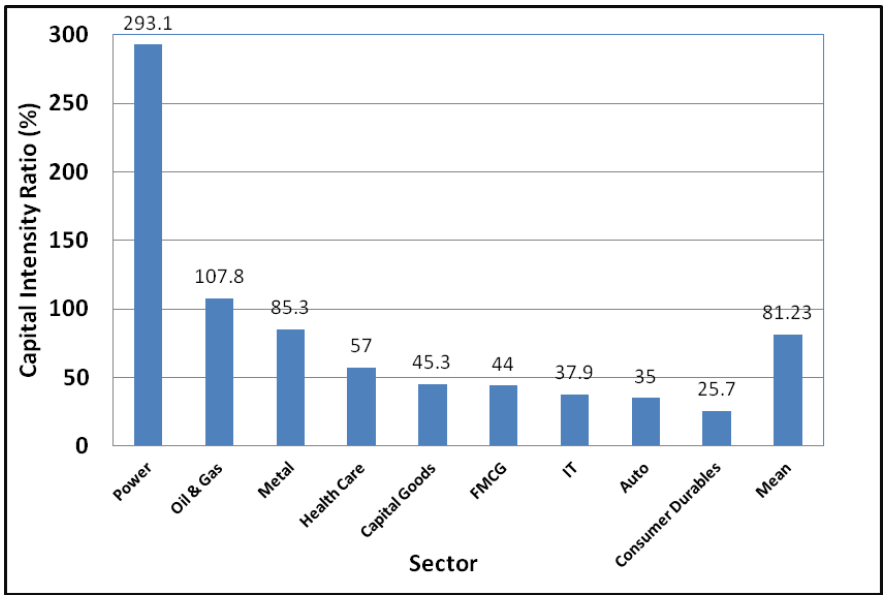
Table 2: High Capital Vs Low Capital Intensity Sectors

Sr. No.	Capital Intensity	Sector	CGD Score	Capital Intensity Ratio (%)	Remark
1	High	Power	28	293.1	Capital Intensity Ratio > Mean
2	High	Oil & Gas	27.83	107.8	
3	High	Metal	26.33	85.3	
4	Low	Health Care	23.83	57	Capital Intensity Ratio < Mean
5	Low	Capital Goods	24.83	45.3	
6	Low	FMCG	27.50	44	
7	Low	IT	32	37.9	
8	Low	Auto	23.67	35	
9	Low	Consumer Durables	19.67	25.7	
Mean			25.96	81.23	

(Source: Calculated by Author from Annual Report of Firms)

Capital intensity of sample firms is also shown in the chart of Figure 1 below. It is evident from the Figure 1 that Power, Oil & Gas and Metal are highly capital intensive sectors.

Figure 1: Capital Intensity across Various Sectors



(Source: Chart developed by Author)

On the basis of in-depth analysis of extant literature review, the following hypothesis has emerged to make this research more reliable and conclusive:

Null Hypothesis (H_0): *There is no significant difference in corporate governance practices between low capital intensity and high capital intensity sector firms.*

Research Procedures for Testing Hypothesis

This research conducted an inferential statistical analysis for testing the hypothesis. In order to test the significant differences in the corporate governance disclosure of low capital intensity and high capital intensity sector firms, parametric t-test and non-parametric Mann Whitney technique were used.

Summary of Findings and Empirical Results

A detailed analysis of the CGD score for sample firms is presented in Table 3. Values of minimum, maximum, average and standard deviation of CGD score for low capital intensity and high capital intensity sector firms have also been reflected. Results show that there is a difference between mean and standard deviation of CGD score for low capital intensity and high capital intensity sector firms. Analysis of the result shown in Table 3 indicates that mean of CGD score is higher for high capital intensity sector firms at 27.39. However, the standard deviation of CGD score is higher at 8.40 for low capital intensity sector firms when compared with high capital intensity sector firms in the sample.

Table 3: Descriptive statistics of dependent variable – CGD Score

	No. of Firms	Minimum CGD Score	Maximum CGD Score	Mean CGD Score	Std. Deviation
All	54	13	47	25.96	7.44
Low capital intensity firms	36	13	47	25.25	8.40
High capital intensity firms	18	17	35	27.39	4.90
Source: Computed from company annual reports by applying Research Instrument					

For the purpose of this study, the firms have been taken from nine different sectors for making meaningful comparison of low capital intensity and high capital intensity sector firms. The reason behind this classification is to find out the extent of disclosure in low capital intensity and high capital intensity sectors. The sector-wise disclosure is shown in Table 4, for high capital intensity sector firms and in Table 5 for low capital intensity sector firms.

High Capital Intensity Sector

Table 4, shows that high capital intensity sectors are related to Oil & Gas, Power and Metal sectors. The power sector comprising three private sector and three PSUs is found to have higher level of corporate governance disclosure score of 28 than other sectors in this category. In the sample of 54 firms studied for this research, 9 firms belong to PSU. Out of 9 PSU, 8 PSU are in high capital intensity segment. Hence, out of 18 firms in this segment, 44.44 % firms are PSU. According to ICAI Research Committee Report (1985), public sector firms disclosed more information than private sector firms. As out of total 9 PSU in the sample, 88.88% PSU belong to high capital intensity sector; this logic explains higher CGD score of high capital intensive sector firms.

Table 4: Sector-wise Breakup of CGD score of High Capital Intensity Sector

Sectors	No. of Firms	Minimum CGD Score	Maximum CGD Score	Mean CGD Score	Std. Deviation
Power	6	25	30	28	1.79
Oil & Gas	6	20	34	27.83	5.08
Metal	6	17	35	26.33	7.12
Source: Computed from company annual reports by applying Research Instrument					

Low Capital Intensity Sector

For the low capital intensity sector firms, Table 5 indicates that it is the IT firms which are found to have the highest corporate governance disclosure. Mean CGD score of 32 for IT sector is considerably higher than mean score of 25.25 reported for low capital intensity sector. This could be attributed to the fact that firms in these sectors have seen great expansion in the last few years. As a result, there is an increased need for capital and to meet this requirement of capital; such firms have increasingly approached global capital markets. Out of 6 firms in this sector, 2 firms (33%) are listed abroad (US). As a consequence, the firms in these sectors have had to meet disclosure requirements of two countries - the host country and new country of listing. Hence, it is reflected in higher CGD score for IT sector compared to other sectors in this segment. CGD score of Consumer Durable sector is lowest at 19.67 and at the same time this sector exhibits lowest capital intensity ratio (25.7%) in this segment.

Table 5: Sector-wise Breakup of CGD score of Low Capital Intensity Sector

Sectors	No. of Firms	Minimum CGD Score	Maximum CGD Score	Mean CGD Score	Std. Deviation
IT	6	20	47	32	10.20
FMCG	6	15	41	27.50	10.82
Capital Goods	6	21	31	24.83	3.87
Health Care	6	14	40	23.83	8.68
Auto	6	13	34	23.67	7.55
Consumer Durables	6	15	26	19.67	4.59
Source: Computed from company annual reports by applying Research Instrument					

The hypotheses have been tested using the univariate t-test and Mann Whitney test. Results of parametric and the non-parametric Mann Whitney test, as indicated in Table 6, show that significance value p is greater than 0.05, therefore at 5% level of significance; null hypothesis of equality of means fails to be rejected. Thus, there exists no significant difference between the average corporate governance disclosure scores of low capital intensity sector firms and high capital intensity sector firms. Both tests yielded similar results.

Table 6: Results of Univariate Test

Null Hypothesis	*t* - Value	Significance Level	*Z*- Value	Significance Level
No significant difference between	.996	.324	-1.453	.146
corporate governance disclosure scores of low capital intensity and high capital intensity sector firms				
Source: SPSS 20 output				

Table 7 presents Pearson correlation coefficients for all variables considered for regression analysis. Table 8 present the results of regression analysis.

Correlation Analysis

To examine the correlation between the dependent and independent variables, Pearson product moment correlation (r) was computed. A correlation matrix of all the values of r for the explanatory variables along with dependent variables was constructed and is shown in Table 7.

Table 7: Correlation Matrix of Dependent and Independent Variables

Correlation Matrix		
Independent Variables	Capital Intensity	CGD Score
Capital Intensity	1	.117
CGD Score	.117	1
Source: SPSS 20 output		

Correlation Matrix shows pair wise correlation coefficients between the CGD Score and Capital Intensity. As p value is >.05 (.398), no correlation exist between capital intensity and CGD score. When Pearson's r is close to 0, it means that there is a weak relationship between two variables. As our Pearson's "r" is 0.117, we could conclude that our variables are not strongly correlated. If the Sig. value is greater than .05, we can conclude that there is no statistically significant correlation between two variables. That means, increases or decreases in one variable do not significantly relate to increases or decreases in the second variable.

Regression Analysis

Regression analysis was performed and the results indicated that capital intensity of firms has no significant association with corporate governance and disclosure practices of firms.

Table 8: Results of OLS Regression on CGD Scores

Dependent Variable	CGD Score	
	Standardized Coefficients	t-value
(Constant)		1.011
Capital Intensity	.117	.851
R-Square	.014	
F- Value	0.725	
Source: SPSS 20 output		

The value of the test for our data is F(1,52) = 0.725. Since the Sig. value is .398 (which is more than .05), we can say that there is no significant correlation between the capital intensity and CGS score. If this value is less than .05, then the correlation is considered to be significant, meaning that the researcher can be 95% confident that the relationship between these two variables is not due to chance. Table 8 showed that the

coefficient of determination R2 = 0.014; hence it indicates that only 1.4% of the variation in CGD score is explained by the independent variable capital intensity.

Corporate Governance and Disclosure Practices: Top 5 Firms

The research was able to identify the top five firms as regards corporate governance and disclosure score. These firms are Wipro, ITC, Dr. Reddy's Lab, Infosys and Godrej Consumer Products. The list of top five firms is dominated by low capital intensity sector firms, as all five firms belong to that sector as shown below in Table 9. Within this segment, IT sector dominates the list as 2 out of top 5 firms are from IT sector.

Table 9: Top 5 Firms with Highest CGD Score

Sr. No.	Name of Firm	Capital Intensity	Sector	CGD Score
1	Wipro	Low	IT	47
2	ITC	Low	FMCG	41
3	Dr. Reddy's Lab	Low	Health Care	40
4	Infosys	Low	IT	37
5	Godrej Consumer Products	Low	FMCG	36

(Source: Tabulated by Author)

An analysis of the low capital intensity sector indicates that corporate governance disclosures vary considerably across sectors; IT sector is having highest CGD score with mean of 32 while Consumer Durables is having lowest score with mean of 19.67 and none of the firms from this sector appears in the list of top five firms with highest CGD score.

Out of 9 sectors studied in this research, Health Care, Auto and Consumer Durable sectors represent lowest mean score for corporate governance and disclosure. Also, top 3 lowest scoring firms out of 54 firms of sample belongs to these 3 sectors. Hence, there is a need for the firms listed in Health Care, Auto and Consumer Durable sectors to undertake financial reporting with more extensive coverage and provide better quality information to all its stakeholders. Such firms should view corporate governance as a tool for enhancing competitiveness rather than viewing it as compliance mechanism.

DISCUSSION AND DIRECTIONS FOR FUTURE RESEARCH

The earlier findings of researchers Klapper & Love (2004) show that capital intensity is negatively correlated with governance and disclosure practices of firms. It means sectors with low capital intensity will exhibit higher corporate governance score compared to high capital intensity sector. However, in current Indian context this research does not support findings of Klapper & Love (2004). According to Mehra (2010), during period of 1991-2004, tangible assets alone account for over 95% of the value of the entire market, emphasizing greater contribution of tangible assets in Indian context. In India, expenditure on R&D is 0.9 % of GDP. In world GDP of US$ 70.2 trillion in 2011, the share of services was 67.5 per cent. For US, share of services was 78.4% of GDP while, for India service sector contributed 58.2% of GDP for same period (Economic Survey, 2012-13). As per Global Competitiveness Report 2012-13, published by World Economic Forum, Global Competitiveness Index rankings is 59 for India with rank for capacity for innovation being 42, company spending on R&D rank being 37, while in all these categories rank for US being 7.

All these statistics confirm that Indian economy is still not dominated by intangible assets. Compared to Indian economy, US economy is highly dominated by intangible assets.

US Economy: Dominance of Intangible Assets

According to Klock & Megna (2000), in more innovative industries the market value of the firm is markedly higher than book value, while in the traditional industries the difference between the two variables turns out to be modest. Market value of the firm captures the importance of intangible assets. Vergauwen et al. (2007) emphasized that non-traditional industries have more incentive in disclosing more information about intangibles since investors expect continuous investments in R&D and immaterial projects. Firms in traditional industries, on the contrary, tend to invest less and randomly in immaterial assets and are less prone to reveal since such expenditures may signal to competitors innovative strategies.

US firms exhibit higher proportion of intangible assets in overall asset base. According to a Federal Reserve Board analysis of 2006, investment in intangible assets in the US exceeds all investment in tangible property (Corrado et al., 2006a). It was also reported that during period from 2001 to 2007, intangible investment in US was 45% larger than tangible investment. Increasingly, intangibles are a principal driver of the competitiveness of US firms and economic growth (National Academies Press, 2009). Corrado et al. (2006b) report that for the period 2000-03, the aggregate U.S investment in intangible assets averaged 11.19% of GDP and estimate that these investment levels translate into a stock of intangible capital valued at 33.18% of GDP.

Nakamura (1999) evaluated the US gross investment in intangibles to be one trillion dollars annually. Similarly, Nakamura (2001) shows that almost one third of the value of US corporate assets were intangibles. Corrado et al. (2005) estimated that in the early 2000s the value of US intangible assets was already close to $3.4 trillion and suggest that in the same period intangible assets accounted for more than the 75% of US output growth. Recent studies estimate annual investment in intangibles in the United States of between US$ 800 billion and US$ 1 trillion, with a stock of intangibles of up to US$ 5 trillion (OECD, 2012).

According to The U.S. Commerce Department's Bureau of Economic Analysis (BEA), the agency responsible for the National Income and Product Accounts (NIPAs), it will reconfigure its GDP calculation methodology in July 2013 and thus instantly make the U.S. economy 3% bigger than it does presently. Billions of dollars of intangible assets will enter the GDP of the world's largest economy in a revision aimed at capturing the changing nature of US output. The addition will constitute of a one-time addition of intangibles, amounting to 3% of total US GDP, or more than the size of Belgium at $500 billion, to the US economy and will make the US one of the first adopters of a new international standard for GDP accounting. The change is designed to recognize the importance of R&D to the creation of wealth.

Limitations of the Study

In the sample study Tech (technology) and PSU sectors were separately not considered. However, firms from these sectors were already included in either IT or other sectors of sample, and hence they are not totally excluded from the study. Similarly, as explained earlier, Bankex (banking) and Realty sectors are also excluded. The firms which have been included in research may not represent the difference of all industries prevailing in the country. While this study tries to capture some aspects of the corporate governance and disclosures practices of firms, it is not possible to assess or verify the quality of the information provided. Similarly, this research study cannot control the accuracy of disclosure made by firms and it is not meant to identify any disclosure that may be incorrect or fraudulent.

Conclusion

In this research, the corporate governance and disclosure practices of firms listed in S&P BSE sectoral indices were studied. A clear picture emerges from this study that in the current Indian scenario, there is no difference in the corporate governance and disclosure score of firms across low capital intensity and high capital intensity sector firms. Prior research found that capital intensity is inversely proportional to corporate governance and disclosure practices of firms. As focus of Indian economy will further shift in future from traditional industries to research and innovation based industries, proportion of intangible assets in overall asset base will go up for Indian firms. It will also get further boost from increased investment in R&D. Hence, in this context future research on corporate governance should focus on other variables such as size of firm, management holding, institutional holding, leverage, profitability, liquidity, size of audit firm and overseas listing in order to explain the behavior of Indian firms regarding corporate governance disclosure.

ANNEXURE – I

Sr. No.	Firm	Sector	Fixed Asset = (A) (INR Crores)	Gross Sales = (B) (INR Crores)	Capital Intensity (%) = 100*(A)/(B)	CGD Score
1	Infosys	IT	9194	33734	27.3	37
2	Wipro	IT	18277	37308	49.0	47
3	Oracle Financial	IT	1324	3147	42.1	20
4	HCL	IT	9582	20831	46.0	34
5	TCS	IT	12991	48894	26.6	33
6	Mahindra Satyam	IT	2321	6396	36.3	21
7	Mahindra & Mahindra	Auto	35008	63030	55.5	30
8	Tata Motors	Auto	94012	170678	55.1	34
9	Cummins	Auto	700	3924	17.8	13
10	Maruti Suzuki	Auto	15056	40050	37.6	19
11	Bajaj Auto	Auto	3839	20541	18.7	24
12	Hero MotoCorp	Auto	6308	25235	25.0	22
13	L & T	Capital Goods	25778	64960	39.7	31
14	ABB	Capital Goods	1612	7610	21.2	22
15	Siemens	Capital Goods	1998	12479	16.0	28

16	Pipavav Defence	Capital Goods	2558	1867	137.0	21
17	Cropmton Greaves	Capital Goods	4409	11615	38.0	23
18	BHEL	Capital Goods	10017	50654	19.8	24
19	IOC	Oil & Gas	107631	442459	24.3	28
20	Bharat Petroleum	Oil & Gas	42550	223315	19.1	24
21	Reliance Industries	Oil & Gas	233475	368571	63.3	34
22	Cairn India	Oil & Gas	35704	11861	301.0	30
23	ONGC	Oil & Gas	254415	151121	168.4	31
24	GAIL	Oil & Gas	31769	44861	70.8	20
25	Tata Power	Power	38256	26020	147.0	29
26	Reliance Infrastructure	Power	17045	24181	70.5	30
27	NTPC	Power	88882	66366	133.9	28
28	Reliance Power	Power	6936	2019	343.5	27
29	NHPC	Power	30293	6920	437.7	29
30	Power Grid	Power	64519	10312	625.7	25
31	Sterlite	Metal	37290	43116	86.5	30
32	Tata Steel	Metal	130491	135976	96.0	32
33	Hindalco Industries	Metal	53961	82549	65.4	20
34	Coal India	Metal	38096	78410	48.6	24
35	Jindal Steel & Power	Metal	22422	22473	99.8	17
36	JSW Steel	Metal	42690	36964	115.5	35
37	HUL	FMCG	4016.16	24506.4	16.4	33
38	Colgate	FMCG	613.16	2805.54	21.9	15
39	Nestle	FMCG	4368.68	8581.88	50.9	16
40	Godrej Consumer Products	FMCG	4185.74	4986.61	83.9	36
41	ITC	FMCG	15519.38	36990.37	42.0	41
42	United Spirits	FMCG	8898.4	18233.54	48.8	24
43	Videocon Industries	Consumer Durable	14892.29	13684.51	108.8	18
44	Titan Industries	Consumer Durable	813.83	8983.15	9.1	26
45	TTK Prestige	Consumer	202.86	1122.71	18.1	15
46	Gitanjali Gems	Consumer Durable	408.65	12498.28	3.3	24
47	Rajesh Exports	Consumer Durable	87.81	25653.85	0.3	15
48	Bluestar	Consumer Durable	417.6	2847.8	14.7	20

49	Glaxo	Health Care	316.18	2766.92	11.4	20
50	Cipla	Health Care	4626.9	7128.82	64.9	14
51	Lupin	Health Care	4191.84	7124.93	58.8	24
52	Ranbaxy Laboratories	Health Care	3258.79	6331.46	51.5	22
53	Dr Reddy	Health Care	8842.3	9855	89.7	40
54	Glenmark Pharmaceuticals	Health Care	2650.96	4020.64	65.9	23

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