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Voluntary Disclosure, Enterprise Risk Management, Culture and Stock Price Synchronicity

by

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**Voluntary Disclosure, Enterprise Risk
Management, Culture and Stock Price
Synchronicity**

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This work is dedicated to my Parents, Late Grandparents, My Wife, My Son, My Brother and My Sister without whom I would have not been able to achieve this accomplishment.



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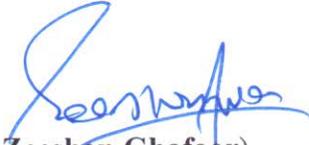
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List of Publications

It is certified that following publication(s) have been made out of the research work that has been carried out for this thesis:-

1. Ghafoor, Z., & Hassan, A. (2018). Voluntary Disclosure, Enterprise Risk Management and Stock Price Synchronicity: Evidence from Shariah Compliant and Non-Shariah Compliant Companies . *Journal of Islamic Business and Management*, Vol. 8(1), 102-115.

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Abstract

Recent literature reports that stock prices reflect non-only the systematic information but also the un-systematic information. The study, in this regard, is an attempt to explore the factors which are crucial for stock price informativeness or stock price synchronicity. The study significantly contributes in a way that it adds many new dimensions which are crucial for firms' and countries' information environment and that have not been tested in association with stock price synchronicity. The study applies the panel data regression on 450 companies from 15 markets as 30 companies from every market for the period of June 2009 to July 2017. The markets are grouped into three categories based on developed, emerging and developing markets.

The study finds that the firm's information environment and country's both formal and informal information environment significantly affect the stock price synchronicity. The low stock price synchronicity is found in developed economies in comparison to emerging and developing economies. Consistent with the same notion, voluntary disclosures are higher in developed markets in comparison to emerging markets. Overall the firm's internal control, financial constraints and enterprise risk management are found negatively related with stock price synchronicity. The study also finds the partial acceptance of firm age and government ownership with a positive relation with stock price synchronicity. The country's economic globalization is found significant and negatively related with stock price synchronicity. The same is the case with control of corruption, rule of law and regulatory quality of a country. Out of three cultural dimensions, only individualistic vs collectivistic dimension is found significant and consistent with the hypothesis. Lastly, the study repeats all the analysis with systematic volatility and idiosyncratic volatility in addition to stock price synchronicity and finds the significant results with them also.

Key words: Stock price synchronicity, Voluntary disclosure, Enterprise risk management, Corporate governance, Financial constraints, Culture and idiosyncratic volatility.

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Abbreviations

ACINED	Audit Committee Independence
ACMEETING	Audit Committee Meetings
ACSIZE	Audit Committee Size
AGE	Age of the Firm
BDMEETINGS	Board Meetings
BDSIZE	Board Size
BIG4	Audit Quality
CONTROL	Control Variables
CRO	Corporate Risk Office
ERM	Enterprise Risk Management
GOVOWN	Government Ownership
INED	Independent Directors
INTCOVER	Interest Cover Ratio
KZINDEX	Kaplan and Zingales Index
RC	Risk Committee
SPI	Stock Price Informativeness
SYNCH	Stock Price Synchronicity
VD	Voluntary Disclosure
WGI	World Governance Index

Chapter 1

Introduction

1.1 Background of the Study

The asset pricing models describe the variation in the returns of individual stock with respect to one or more systematic or macro-economic factors. The most famous model is CAPM which considers the market wide factor to explain the stock price movement. This model is one of the most important contributions in finance theory which first time formally identifies the risk in capital markets and provides complete model to quantify it properly. The model assumes that investors maintain fully diversified portfolios in which the unsystematic risk of individual securities is not important. The unsystematic or idiosyncratic risk is due to firm-specific factors such as fluctuations in firm's sales, operations, earnings and in other fundamentals. So unsystematic risk can be reduced and diversified away by expanding the portfolio to multiple other negatively correlated securities. Due to irrelevance of unsystematic risk, the only relevant risk for securities is systematic risk. The systematic risk, as name reflects, is the securities' sensitivity with market wide and economic variables like variations in inflation, interest and exchange rates, and fluctuations in business cycle. Since these economic factors affect all securities, but with varying proportions, so any level of diversification does not reduce the portfolio's systematic risk, therefore stockholders claim risk premium against the systematic risk. And higher return is demanded for bearing

systematic risk only. Consistent with the asset pricing models, [King \(1966\)](#) finds that the stock prices co-move with market-wide and industry related factors not with unsystematic factors.

However, [Roll \(1988\)](#) finds that average R^2 values from asset pricing models range from 20 to 40 percent which means that the systematic economic factors are insufficient to explain the stock price variation. This unexplained portion is required to be investigated, as he identifies the firm size, a firm-specific factor, as a significant factor to capture this unexplained variation. As there exists a positive association between firm size and the diversification effect so the larger firms should report high R^2 values. The inclusion of industrial factors also brings the improvement in R^2 values. So, [Roll \(1988\)](#) explains that the firm-specific factors should be explored in order to enhance the explanatory power. With hindsight the unique information should be discovered by linking its presence in the dissemination of economic information by the firms. He concludes that as the explanatory power of models is less than forty percent which either means that there prevails the firm-level information or a noise, frenzy, behavioral, and unrelated information in the stock prices.

Vast majority of prior studies confirm the [Roll \(1988\)](#)'s first proposition that low R^2 reflects the capitalization of firm-level information in addition to market-wide variation only ([Durnev et al., 2003](#); [Eun et al., 2015](#); [Morck et al., 2000](#)). The literature generated by the studies, [Eun et al. \(2015\)](#); [Dasgupta et al. \(2010\)](#); [Durnev et al. \(2003\)](#); [Grewal et al. \(2017\)](#); [Jin and Myers \(2006\)](#); [Li et al. \(2014\)](#); [Morck et al. \(2000\)](#); [Piotroski and Roulstone \(2004\)](#) confirms that the stock prices reflect not only the systematic or market-wide (macro) information rather it also reflects the firm-specific (micro) information and the co-movement of stock prices together with the market depends upon availability of its relative amount of firm-specific information in the market. And the significant portion of variation in stock prices is not attributable to systematic or market-wide variation, which shows that firm-level information significantly contributes in the stock price volatility. So, the information environment of the firm (firm-specific factor) and country (market-wide factor) affect the stock price volatility.

The study of [Morck et al. \(2000\)](#) is the pioneer study in the domain which uses a methodology named as Stock Price Synchronicity (SPS) in order to capture the comparative amount of unique information being capitalized into the stock prices. It interprets high R^2 values as the stocks which reflect more systematic or market-wide variation, because the asset pricing models use the systematic factors only not the firm-specific factors. So the firms with high R^2 values are explained as the firms exhibiting higher synchronicity or co-movement with market-wide variation. And the firms with low R^2 values are considered as the firms capturing more firm specific information.

1.2 Firm Level Information Environment

As mentioned above, the stock prices not only reflect the systematic or country level information but these also reflect the information related to firm-specific fundamentals and the extent to which stock prices move together with market-wide movement depends upon the level of its firm-specific information available in the market ([Eun et al., 2015](#); [Li et al., 2014](#); [Morck et al., 2000](#); [Piotroski and Roulstone, 2004](#); [Roll, 1988](#)). So based upon the suggestions of literature, the study considers several important firm-specific factors which are integral to diminish the problem of information asymmetry and to improve the firm's information environment and ultimately the *SPI*. The firm-specific areas covered by the study are related to voluntary disclosure, corporate board composition, audit committee composition, financial constraints, enterprise risk management, audit quality, firm age, government ownership and firm-specific control variables.

1.2.1 Voluntary Disclosure

Voluntary disclosure is considered as one of the most prominent economic information, which is provided by the firms in order to aware their stakeholders regarding firms' fundamentals. It is not mandatory disclosure which is required by IFRS or GAAP, rather it is disclosure provided by the firm voluntarily such

as management's discussion and analysis regarding firm's current situation and future prospects, press releases, supplementary schedules, conference calls and so on (Healy and Palepu, 2001). The voluntary disclosure mainly deals with the information related to firm's strategies, nature of business, future outlook, and other information like information associated with cash flow forecasts, firm's CSR practices and financial analysis. The study investigates the impact of voluntary disclosure on *SPS* with an expectation that firm's voluntary disclosures significantly influence and improve the firm's information environment by reducing information asymmetry. The voluntary disclosure affects the *SPI* because it has strong association with firm's information environment. The information asymmetry and agency conflict create problem in proper functioning of capital markets and this information problem can be addressed through voluntary disclosure of economic information by management.

Dasgupta et al. (2010) report that firm's voluntary disclosure is one of the significant source of information, related to firm fundamentals, which is considered by investors to value their respective stocks properly. And firm becomes opaque if it is not reporting the information properly. Brown and Hillegeist (2007) report that firm's information asymmetry reduces significantly with the firm's practices towards voluntary disclosure. Jin and Myers (2006) investigate the link between the firm's level of opaqueness and *SPS* and report positive association between opaqueness and *SPS* which means that the stocks of opaque firms are less informative. Firm opacity is in-fact complimentary to imperfect protection of investors' property rights in a country. They also find that firm's opaqueness is positively linked with stock price crash risk. Jin and Myers (2006) have used the global competitiveness report as a proxy for measuring transparency. It is a survey-based measure, in which the investors are asked to assess the level of financial disclosures and availability of financial information in their country on a scale from 1 (strongly disagree) to 7 (strongly agree). In literature, other studies also use the survey based proxies for voluntary disclosures developed by Association for Investment Management and Research (AIMR) and Standard & Poor (Brown et al.,

2004; Francis et al., 2008; Gelb and Zarowin, 2002). However, the study uses self-constructed voluntary disclosure scale to get the disclosure score for each company. Botosan (1997); Healy and Palepu (2001) report that self-constructed voluntary disclosure index has gained more confidence because it captures the level of firm's voluntary disclosures with more accuracy and objectivity. And it is obviously better than a subjective opinion based surveys. The study adapts the 25 items scale of Francis et al. (2008), which covers four broad categories; information related to firm's background, and other financial, non-financial and forecasted measures.

1.2.2 Board and Audit Committee Composition

The stock prices in developing and emerging markets, in comparison to developed markets, co-move more with the market-wide variation because in these markets investors have perceptions regarding weak corporate governance mechanism. Newell and Wilson (2002) provide survey based finding that investors are willing to pay additional premiums, even till 25%, for the stocks of firms having strong governance structure which shows that corporate governance structure is one of the utmost significant elements for the investors sitting in the market. Investors prefer good corporate governance structure due to agency conflict and information asymmetry problem, as the firms which have weak corporate governance and internal control mechanism report more vulnerability to information asymmetry, lesser disclosures and poor financial reporting. Gul and Qiu (2002); Haß et al. (2014); Veronica and Bachtiar (2005) report that strong corporate governance structure significantly improves the information environment of the firm by diminishing the issue of information asymmetry. So the good corporate governance system significantly makes the information environment richer which is important for the extent of firm-level information being revealed in stock prices. Based upon the studies mentioned above, the study expects the negative association between corporate governance and *SPS*.

As an audit committee is the sub-function of corporate board as it has the more specific task to oversee the quality of financial reporting and other information

disclosures. It is essential for the firm to maintain an internal audit committee in developed countries. [Varici \(2013\)](#) reports that the maintaining an audit committees signals the serious efforts by the firms in diminishing the problem of information asymmetry and to make the information environment of the firm richer. Consistent with the agency theory, [Vafeas \(2005\)](#) posits that the presence of audit committee significantly improves the financial reporting quality. [El-Mahdy et al. \(2013\)](#) investigate the impact of technical expertise of audit committee members on information asymmetry and find that the audit committee members with technical expertise mitigate the problem of information asymmetry which shows that audit committee is essential for a firm's information environment. [Baxter \(2007\)](#) also reports the similar findings that maintaining an audit committee ensures the transparency in the financial reporting. So based upon the importance of audit committee, the study examines the impact of audit committee composition on *SPI* with an expectation that audit committee composition significantly reduces the *SPS*.

1.2.3 Financial Constraints

The study, first time, explores the association between financial constraints and *SPS*. The rationale to study this association is because the imperfect capital markets, frictions in transactions and information asymmetry create hurdles for the firms to raise external financing. [Kaplan and Zingales \(1997\)](#) state that the firms face some extent of financial constraints because most of the firms face significant difference between cost of financing from internal and external sources. According to [Kurt \(2017\)](#), when a firm faces financial constraints then its financial reporting quality becomes poor and its information asymmetry increases. So the level of firm's financial constraints is directly associated with firm's information environment in a way that financial constraint impairs the firm's information environment. [Mansour \(2014\)](#) also reports the positive relationship between firm's level of financial constraints and information asymmetry. So the level of firm's financial constraints can be associated with *SPI* as according to literature mentioned, the firms having more financial constraints report poor quality of financial reporting,

higher asymmetry of information and opaque information environment. And when a firm becomes more opaque and exhibits poor information environment then its *SPS* should increase, and informativeness should decrease.

1.2.4 Enterprise Risk Management

The study also first time explores the association between Enterprise Risk Management (ERM) practices of the firm and *SPS*. The rationale to explore this association is that according to, [D-Arcy and Brogan \(2001\)](#) the *ERM* deals with the over-all holistic risk of the firm which is integral for firm's information environment. The *ERM* deals with the firm's interaction with capital market, firm's liquidity, operational efficiency, interest rate and exchange rate risks and so on. The main difference between *ERM* practices from standard risk management is that *ERM* considers all these risks collectively not individually, as these risks are not fully independent to each other rather these are interdependent ([Miller, 1992](#)). The demand of *ERM* significantly increases in recent time, particularly after the financial collapses like Enron, Sunbeam and others. [Quon et al. \(2012\)](#), state that due to high fluctuations in business world and highly dynamic environment, the approach of traditional risk management is not suitable rather the *ERM* practices should be emphasized. [Hoyt and Liebenberg \(2011\)](#); [Nocco and Stulz \(2006\)](#); [Quon et al. \(2012\)](#), report that *ERM* practices significantly mitigate the overall business risk and information asymmetry problem by enhancing the firm's information environment. So instead of considering the conventional risk management practices, the study explores the association of enterprise risk management with *SPS*. As the *ERM* significantly affects the information environment of the firm by reducing the information asymmetry so its association with *SPI* is seems to be positive.

The study also explores the association of audit quality with *SPI*. The audit quality, measured by presence of big 4 auditors, is important to study because it is integral for the transparency of firm's financial reporting. According to [Becker et al. \(1998\)](#); [Francis and Yu \(2009\)](#) the audit quality is important because it is a mechanism which challenges the management's wrong practices and improves the

quality of financial disclosures of the firm and ultimately the firm's information environment. [Krishnan \(2003\)](#) states that the audit quality restricts management from opportunistic behavior which is essential to reduce the agency and information asymmetry problem. In addition, the firms with high audit quality report accruals in alliance with firm's future performance and stock return which means that the audit quality enhances the transparency in quality of financial reporting. According to the study of [Gul et al. \(2010\)](#) the study expects the negative relation of audit quality with *SPS*.

1.2.5 Firm Age and Government Ownership

Firm age is usually perceived as positively associated with maturity in decision making process and improved information environment ([Akben-Selcuk et al., 2016](#)). [Majumdar \(1997\)](#) report that age of the firm is positively associated with firm's productivity, however it is negatively associated with firm profitability. [Loderer \(2010\)](#) finds that firm age negatively impacts the firm profitability in a way that the level of firm profitability decreases as a firm becomes old. This happens because when a firms gets older, it becomes more rigid in its decision making process and this rigidity comes with its success factor. However, according to the normal expectation the study expects the inverse association of *SPS* with firm age which means that as a firm gets older, it gets matured in terms of improved strategic decision making and improved information environment which should ultimate enhance the *SPI*.

Government owned firms are generally perceived as more opaque in comparison to non-government owned firms. [Tran et al. \(2014\)](#) find that the state ownership is inversely linked with firm performance. [Huang and Xiao \(2012\)](#) report that state-owned firms have excessive employees with them in comparison to non-state owned firms which reduce their efficiency and performance. [Borisova et al. \(2012\)](#) find that state ownership is inversely related with good corporate governance. These results show that the firms owned by government are inefficient, less profitable and exhibit more opaqueness and information asymmetry. Based upon the finding of [Gul et al. \(2010\)](#), the study explores the association between state ownership and

SPS with an expectation that government ownership is positively associated with *SPS*.

1.3 Formal Country Level Information Environment

The study of [Morck et al. \(2000\)](#) explores the country level information environment on *SPI*. The information environment of a country is significant to study because it influences the investors' decisions and market efficiency. Their study finds the positive association between economic development of a country and *SPI*. The informative stocks are those which reflect more information related to firm fundamentals, exhibit low R^2 , in comparison to the stocks which reflect more market-wide information, exhibit high R^2 . They report high R^2 values in poor economies because in such economies firms have less diversified portfolios, investors' property rights are not properly protected, political instability is high and institutions are less developed, and this condition shatters the investors' confidence and makes the informed arbitrage less attractive. [De Long et al. \(1990\)](#) report that when informed arbitrage is unattractive then market-wide variation and noise trading increase significantly which cause the stocks to co-move more with market-wide variation and less with fundamentals. So according to [Morck et al. \(2000\)](#), the countries with low GDP have high *SPS* in comparison to *SPS* in high GDP economies. [Li et al. \(2004\)](#) posit the differences in the R^2 values in emerging economies and report that the R^2 values in different markets are declining gradually. The declining trend is particularly in the economies with less corruption, better legal systems and capital market openness.

[Dasgupta et al. \(2010\)](#) study the impact of a country's information environment, measuring through good governance index, on *SPS* and find that the governance structure of a country significantly affects the *SPS*. The good governance index is constructed by [Kaufmann et al. \(2004\)](#) which mainly considers the institutional development of a country. The institutional development is integral for investors' property rights protection and a country's information environment and ultimately

for capital market efficiency. Eun et al. (2015) also consider the good governance index which is based on the study of Kaufmann et al. (2004) to measure the government effectiveness and control of corruption. Fernandes and Ferreira (2008) also explore the good governance index as control variable and argue that the degree to which a country offers sufficient protection to investors' property rights is integral for the stock price informativeness. They use the good governance index developed by Porta et al. (1998) which captures the three country level dimensions, the level of corruption, risk related to insecurity of private property and the risk related to repudiation of contracts by government.

Fernandes and Ferreira (2008) study the impact of first time enforcement of insiders trading law on *SPI* and find that first time execution of insider trading regulations improves the overall *SPI*, reduces R^2 values, but only in developed countries. The results further extend that initial enforcement of insider trading rules improves the *SPI* in the countries with strong legal institutions comparing with countries having fragile legal institutions. So the findings confirm that the extent to which a country protects the investors' property rights with developed legal institutions significantly improves the *SPI* and decreases the *SPS*, or R^2 , with market-wide variation. This is consistent with the interpretation of Morck et al. (2000) that the institutional development and investor's property rights protection significantly improve a country's information environment and motivates the informed arbitragers to gather and analyze the firm-specific information and take more informed decisions.

Hasan et al. (2014) take the analogy from the finding of Grossman and Stiglitz (1980) that the informative stock pricing and informed trading are integral for *SPI* but it significantly depends upon the information collection cost and benefits. Hasan et al. (2014) argue that institutional development is integral for the information collection cost, as poor legal institutions and insufficient protection of investors' property rights increase the information collection cost which demotivate the informed arbitragers. When in a country information collection cost is high and public investors and informed arbitragers are demotivated then it reduce the information content of stock prices which increases the *SPS*, or R^2 . Their study

explores the association of institutional development and *SPS* in China because over last 20 years China faces significant fluctuations in institutional setting. They find that institutional development, dealing with protection of property rights and rule of law, significantly decreases the *SPS*, or R^2 . In addition to institutional development, the more pluralistic regime is also found negatively associated with *SPS* because pluralistic regime significantly decreases the ambiguity and opacity in government interventions which increase the value for firm-level information and ultimately reduce the *SPS*.

Consistent with the literature, the study also explores the association between variables related to country's information environment and *SPS* by hypothesizing that improved information environment should increase the *SPI* and decrease the *SPS*. The study first time considers the *WGI*, developed by World Bank, which are more detailed and comprehensive (World Bank, 2016) to measure the country's information environment. *WGI* deals with six dimensions related to Voice and Accountability (VA), Political Stability (PS), Government Effectiveness (GE), Control of Corruption (COC), Rule of Law (RL), and Regulatory Quality (RQ). The study expects the negative association between these country level governance indicators and *SPS* in 15 markets, comprising of developed, emerging and developing markets. The inverse association between *WGI* and *SPS* is expected because *WGI* are directly associated with a country's information environment, investor's property rights protection, institutional development, and rule of law.

In addition to *WGI* the study also first time investigates the impact of *KOF* economic Globalization index with *SPI*. Economic globalization is another important factor related to formal information environment which deals with country level economic factors related to trade, FDI, portfolio investment, income payments to foreign nationals and trade restrictions. The globalization affects a country's various elements mainly the business environment, economics, socio-cultural aspects and overall environment of the country, which are important for a country's preferences to maintain the good information environment and tolerance to absorb the cultural diversity. As the *KOF* globalization index measures different economic parameters related to economic growth such as trade, FDI, and other

growth related aspects so according to suggested literature related to economic development, Eun et al. (2015); Morck et al. (2000) negative relationship between *KOF* globalization index and *SPS* is expected.

1.4 Informal (Culture) Country Level Information Environment

As the firm's formal information environment is very important however, according to North (1990) the informal constraints and norms embodied in a country's customs and traditions are equally important or sometimes more essential than the formal settings. The influence of culture and individual behaviors are thoroughly discussed in the literature of management and psychology, while the behavioral finance discusses the systematic biases in investors' decision making process. Taking the combination of both the management and behavioral finance, it carries worth to study the cultural dimensions which create the systematic biases in investors' decision making process and affect the *SPI* (Eun et al., 2015). Eun et al. (2015) first time explore the impact of culture and *SPS* and find the significant association. Their study takes two dimensions, tightness vs looseness and individualism vs collectivism, and suggests that further cultural dimensions should be explored in association with *SPS*. Based upon their finding, the study considers three dimensions of culture by following Hofstede (2001) individualistic and collectivist culture, high and low power distance culture and finally uncertainty avoidance in association with *SPS*.

The dimension of individualism is expected to exhibit opposing association with *SPS* because in individualistic society, people collect and analyze information by themselves rather to rely on the opinions of others in comparison to collectivistic society where people are inclined to follow herds and obey other's opinions. So the *SPI* should be high in individualistic societies (Eun et al., 2015). The dimension of Power Distance Index (PDI) is expected to exhibit positive association with *SPS* because in *PDI* societies people show the acceptance to secrecy and concentration

of information at all levels of hierarchy. Hope (2003) reports that due to concentration of information at hierarchy of power, the low level of public disclosures are expected in high power distance societies. So, the study expects the positive association between high *PDI* and *SPS* as high *PDI* societies exhibit low *SPI*. The dimension of uncertainty avoidance is expected to exhibit positive association with *SPS* because in uncertainty avoidance society, managers are uncomfortable with risk and ambiguity so they become more secretive and disclose less level of information in public (Jaggi and Low, 2000). So the study expects the positive linkage between uncertainty avoidance and *SPS* which means that societies with high uncertainty avoidance exhibit stock prices less informative. The study also runs the interaction of *KOF* globalization index with each dimension of culture, because globalization impacts the domestic culture as a country opens its border for foreign investors and ultimately the foreign culture. So the study expects the significant association between interaction terms of culture and *KOF* globalization index.

Robustness

The study incorporates the future direction of Li et al. (2014) that upcoming researches should use the other measures also in addition to *SPS*, in order to better explain the factors related to *SPI*. So the study uses two alternate measure of *SPS*, one is systematic volatility and the next one is idiosyncratic volatility and repeats all the analysis with alternate measures.

1.5 Problem Statement

A growing number of studies confirm the Roll (1988)'s first proposition of reflection of firm-specific information into stock prices in addition to systematic information only (Eun et al., 2015; Dasgupta et al., 2010; Durnev et al., 2003; Grewal et al., 2017; Jin and Myers, 2006; Li et al., 2014; Morck et al., 2000; Piotroski and Roulstone, 2004). So, the firm's information environment is integral in explaining the

stock price volatility. It emerges a need to explore the areas which are related to information environment of both the country and individual firms also. The study is an effort to explore the areas which are integral for country or firm's information environment and which have not been explored or very less explored in the domain of SPS.

Brown and Hillegeist (2007); Dasgupta et al. (2010); Haggard et al. (2008); Healy and Palepu (2001); Jin and Myers (2006) report that firm's voluntary disclosures are negatively correlated with firm's information asymmetry and significantly improve the firm's information environment. Haggard et al. (2008); Jin and Myers (2006) explore the association of firm's voluntary disclosures and SPI and find the positive impact of voluntary disclosures and SPI. They have used the secondary survey based measure of voluntary disclosure, however the study constructs the self-constructed index which is more accurate and objective (Botosan, 1997; Healy and Palepu, 2001). So, the study takes the better measure of voluntary disclosures and explores its association with SPS. The study explores the board and audit committee composition more comprehensively with SPS which have also not been tested in details. According to El-Mahdy et al. (2013); Gul and Qiu (2002); ?; ?; Veronica and Bachtiar (2005) corporate board and audit committee composition are very important for the information environment of the individual firms as these have direct linkage with firm's information asymmetry, so the study explores their association with SYNCH.

The study, first time, tests the effect of level of financial constraints on SPS because firm's financial constraints are crucial for firm's information environment (Kaplan and Zingales, 1997). Kurt (2017) reports that the association between financial constraints and non-operating decisions of firms receive no attention. By taking the same analogy, the study explores the impact of firm's financial constraints and SYNCH with a negative expected association. The study also, first time, tests the impact of Enterprise Risk Management (ERM) practices and SYNCH. ERM or integrated risk management approach is integral for the internal information environment of individual firm in current era due to high fluctuations in business environment (Quon et al., 2012; Nocco and Stulz, 2006; Hoyt and Liebenberg,

2011). So instead of considering the conventional risk management approach the study explores the influence of ERM practices on SPS. The study also considers other variables which have been used by researches including the control variables in order to provide the better and comprehensive explanation regarding the sources of SPI. According to [Eun et al. \(2015\)](#) and [Morck et al. \(2000\)](#) the SPI is reporting low in developing and emerging economies and it is high in developed countries so the study repeats all analysis separately on developed, emerging and developing groups.

According to [Eun et al. \(2015\)](#); [Dasgupta et al. \(2010\)](#) and [Morck et al. \(2000\)](#) if a country has transparency in information environment and its rule of law exists then it encourages the informed arbitragers to take informative decisions which is essential for SPI. These studies use the good governance index which deals with one or two dimension, however the study, first time, uses more detailed and comprehensive measures named as World Governance Indicators developed by World Bank to better understand the impact of information environment of a country on SPI. In addition to WGI, the study also, first time, explores the association of KOF economic globalization index on SPI. Economic globalization is also important to study in the context of SYNCH because it deals with a country's economic friendly policies with international community. When a country is able to attract the international investors then its economy develops tremendously in terms of high level of trade, FDI and portfolio investment which automatically improve the country's information environment. So the study explores the association between KOF globalization index and SYNCH with an expectation that globalization index decreases the SPS and improves the SPI.

In addition to formal information environment, the study also explores the informal environment of a country in terms of traditions, codes, and individual's information processing styles, norms and so on. The informal environment of a country, measure by cultural, is first time explored, by [Eun et al. \(2015\)](#), in association with SPI and suggests for extension to explore more culture dimensions. The study extends their discussion further regarding influence of culture on SPS

by adding more culture dimensions and their interaction with economic globalization. The purpose is to study a country's information environment in details by exploring the culture dimensions in association with SPS. According to [Li et al. \(2014\)](#) the study runs the robustness tests by repeating all the analysis with two other measures; idiosyncratic volatility and systematic volatility in order to get the better insight regarding SPI.

1.6 Research Questions

The study addresses the following research questions:

1. Does Voluntary Disclosure significantly affect the stock price synchronicity?
2. Does Board Independence significantly affect the stock price synchronicity?
3. Does Board Size significantly affect the stock price synchronicity?
4. Does Board Meeting Frequency significantly affect the stock price synchronicity?
5. Does Audit Committee Independence significantly affect the stock price synchronicity?
6. Does Audit Committee Size significantly affect the stock price synchronicity?
7. Does Audit Committee Meeting Frequency significantly affect the stock price synchronicity?
8. Does KZ Index significantly affect the stock price synchronicity?
9. Does Interest Coverage significantly affect the stock price synchronicity?
10. Does Audit Quality significantly affect the stock price synchronicity?
11. Does Corporate Risk Officer significantly affect the stock price synchronicity?
12. Does Dedicated Risk Committee significantly affect the stock price synchronicity?
13. Does Firm Age significantly affect the stock price synchronicity?
14. Does Government Ownership significantly affect the stock price synchronicity?
15. Does Stock price synchronicity significantly different in Developed, Emerging and Developing markets?
16. Do World Governance Indicators (WGI) significantly affect the stock price

synchronicity?

17. Does KOF Globalization Index significantly affect the stock price synchronicity?

18. Does Individualism significantly affect the stock price synchronicity?

19. Does Power Distance Index significantly affect the stock price synchronicity?

20. Does Uncertainty Avoidance significantly affect the stock price synchronicity?

1.7 Research Objectives

The study aims to fulfill the following objectives:

1. To explore the impact of voluntary disclosure on stock price synchronicity.
2. To explore the impact of board composition on stock price synchronicity.
3. To explore the impact of audit committee composition on stock price synchronicity.
4. To explore the impact of firm's financial constraints on stock price synchronicity.
5. To explore the impact of audit quality on stock price synchronicity.
6. To explore the impact of enterprise risk management on stock price synchronicity.
7. To explore the impact of firm age and government ownership on stock price synchronicity.
8. To explore the impact of formal country level indicators on stock price synchronicity.
9. To explore the impact of informal country level indicators on stock price synchronicity.

1.8 Significance

The first significance of this study is in the measure of Opaqueness. [Jin and Myers \(2006\)](#) and [Haggard et al. \(2008\)](#) have identified the importance of opaqueness for

the SYNCH, while their measures are survey based on perceptions, however this study uses the self-constructed voluntary disclosure score, which is the objective based and hand held data for each company [Botosan \(1997\)](#); [Healy and Palepu \(2001\)](#). The disclosure level is calculated accurately for each company which is a strong proxy of disclosure, and so its impact on synchronicity can be tested more reliably.

The literature regarding association of board and audit committee composition with SPI receives little attention. In order to fulfill this research gap, the present study explores the association of board and audit committee composition in details with SYNCH. The rationale to explore this association is that the board and audit committee composition are crucial for firm's internal control and information asymmetry [Gul and Qiu \(2002\)](#); [?](#); [Veronica and Bachtiar \(2005\)](#). More specifically, the survey of [Newell and Wilson \(2002\)](#), describe that investors are ready for paying additional premium against the stock of firms which have strong internal control and corporate governance mechanisms, so the corporate board and audit committee composition can be directly associated with SPI.

The study, first time, explores the domain of financial constraints in association with SYNCH which has received no attention. The firms financial constraints are crucial for firms information environment as if a firm is facing financial constraints then it develops poor information environment [Kaplan and Zingales \(1997\)](#); [Kurt \(2017\)](#). Another contribution of the present study is the usage of ERM in association with SYNCH, which has not been tested before. Although, the governance structure and traditional risk management procedures have been considered and tested by the prior studies but the consideration of ERM is still lacking, as the ERM is embraced as one of the very vital and emerging area of risk management. It is important because it deals with the integrated risk management approach which is integral for firms information environment [Hoyt and Liebenberg \(2011\)](#); [Quon et al. \(2012\)](#). In addition to ERM, there is another significance based on the future direction provided by [Eun et al. \(2015\)](#), it is the first paper which considers the dimension of culture. According to them, in addition to formal dimensions of country environment such as GDP and FDI, the informal dimension such as

culture, norms and traditions are equally important to effect the country's information environment. And they have suggested to explore further dimensions of cultural in association with SYNCH. The study adds two more culture dimensions of Hofstede, which are Power Distance Index and Uncertainty Avoidance Index. It is argued that the PDI and UAI are directly linked with the country's information environment and so linked with SPS.

Eun et al. (2015); Jin and Myers (2006) and Morck et al. (2000) use the good governance index to measure the formal information environment of a country and explore its impact on SYNCH. The good governance index primarily covers the institutional development and investors' property rights protection. However, the study, first time, uses the WGI, developed by World Bank. The WGI covers six different dimensions related to VA, RQ, RL, PS and COC. The WGI is more detailed and comprehensive so it provides better explanation regarding country level governance indicators in association with SYNCH. In addition to WGI the study, first time, explores the association of KOF economic globalization index and SYNCH. As the KOF economic globalization covers the FDI, portfolio investment, payment to foreign nationals and trade restrictions which creates another significant analysis with a purpose to better explain the impact of country level economic indicators on SPI. In addition, the study also runs the interaction of KOF globalization index with each dimension of culture in association with SYNCH. Finally, the study repeats all the analysis with systematic volatility and idiosyncratic volatility as robustness measures.

1.9 Plan of the Study

Chapter 1: Deals with the brief introduction of the thesis

Chapter 2: Deals with the empirical research work already done by other researchers in the related area.

Chapter 3: Deals with the methodology of the study which mainly covers the definitions of variables, data, sources of data and empirical testing methods.

Chapter 4: Deals with the empirical findings, results, interpretations and analysis.

Chapter 5: Deals with the comprehensive discussion regarding results in association with the existing literature and conclusion of the study.

Chapter 2

Literature Review

2.1 Agency Theory

Before 1976, the finance theories consider the traditional firm's model to explain the corporate behavior. The standard economic model views the firm as a black box which efficiently processes the inputs into the productive outputs by pursuing the rationality. Little attention was given on the motivation and incentives of managers who actually run the firm. It was generally assumed that the regular operations of the firm and decisions are controlled by the wealth maximizing shareholders, whose interests were in alliance with the interests of other parties and stakeholders. So the models generally assumed that the managers would be acting in the best interest of their shareholders. [Jensen and Meckling \(1976\)](#), first time discuss the importance of human nature in the corporate behavior. The agency model explains the firm as a nexus of different contracts among various economic agents like shareholders, managers, suppliers, debt providers, customers and other related parties. In all parties, there are rational agents who act in their respective self-interests. So the agency model considers all economic agents as rational beings having better understanding regarding their incentives and apply various measures in order to protect them from possible exploitation by other agents. Agency theory is most famous among other prominent theories of economics and management ([Bosse and Phillips, 2016](#)). It clarifies the relationship of shareholders

(known as principal) with the managers (known as agents), where owners appoint the managers to execute the operations of the firm by securing their best interest, for which the managers are compensated (Jensen and Meckling, 1976). By considering the principal-agent as self-interest maximizers, conflict of interest may occur when (1) shareholders and managers have different interests and when (2) managers have superior/privileged information than the shareholders (Bosse and Phillips, 2016). The divergence of interest between shareholders and managers leads to the characterization of governance policies (Jensen and Meckling, 1976). This is required because CEOs peruse their own self-interest, at the cost of principals, for the sake of increasing their compensation (Hendry, 2002).

The theory explains that managers of the firms voluntarily disclose information about social activities of the firm only in case if social disclosure is directly associated with their own welfare and this is possible when the benefits of social disclose exceed its cost. Company's annual reports offer managers the opportunity to be seen and to be acting in such a manner, as accounting reports are a primary source by which managers provide relevant information to shareholders (Watts, 1977). The social information that shareholders consider, to be relevant, is likely to differ in different industries. Shareholders and other users of annual reports tend to associate a particular industry with specific areas of social performance, due to the nature of an industry's operations (Cowen et al., 1987; Dierkes and Preston, 1977). For example the activity of oil companies are generally viewed as it affects the natural environment (Dierkes and Preston, 1977). Therefore, it is plausible to assume that companies operating in oil industry would emphasize environment-related social performance in their annual reports. Agency theory focuses on the demands from the outside investors and contracting parties which emphasize managers to prefer value maximization activities than their own interest. This phenomenon causes the problem of asymmetry of information (Jensen, 1986). The conflict of interest and problem of information asymmetry have important role in creating the demand of transparent financial reporting and other financial disclosures. In this regard the intermediaries, regulators, auditors and

standard setting bodies play pivotal role in supplementing the reliability of disclosure (Healy and Palepu, 2001). Jensen (1986). reports that the debt financing can increase the efficiency of managers by bonding them to promise the payout in the future. So the debt is a best alternative for payout which is not normally considered by the finance literature as the debt financing bonds the managers to the future cash flow.

Agency theory proposes that more lucrative firms are under public monitoring, so they probably devise their own internal control mechanism (self-regulation) to keep them in compliance (Ng and Koh, 1994). The situation of incomplete information and uncertainty leads to two problems; first is moral hazard and second is problem of adverse selection. The issue of adverse selection deals with the situation in which the principle cannot ascertain that either the agent is putting his efforts in the same direction for which he is getting monetary reward. And the moral hazard problem deals with the situation in which principal is not sure that either the agent is putting forth his maximal efforts (Eisenhardt, 1989). So, both the problems provide guidance that the contracts having fixed amount of reward (wage) are not optimum choices for all the time to manage the principal-agent relationship. Because the fixed wage contract can reduce the motivation of agent for putting his best efforts as he may think that the wage remains same irrespective of quality of his contribution. In that case the efficient way is to offer the performance based, residual claims on profits, wages system instead of fixed one. Agency costs arise when the managers (agent) act against the interest of the principal (shareholder). It is linked with monitoring, bonding and structuring the contracts with the parties who are in conflict of interest. Fama and Jensen (1983) explain that agency cost arises when contracts and their enforcement/implementation are very costly. It involves the monitoring cost, which is the cost associated with keeping an eye on the practices of the agents (managers), the bonding cost which is the cost of structure designed for examining the conformity on agent's acts with the interest of principal Jensen and Meckling (1976), and the residual loss cost which incurs when enforced contract exceeds its benefits Fama and Jensen (1983). However, Healy and Palepu (2001) suggest that agency cost

may be reduced by making optimal contracts, devising a monitoring mechanism through board of directors and continuous evaluation by financial analysts, news and rating agencies because information intermediaries may also watch the managers from any misuse of resources.

In agency relationship, the performance of agent is associated with the efforts and the amount of risk linked with the pertinent efforts, however it's impossible for the principal (shareholders) to accurately predict the agent's efforts because of the information asymmetry problem. This consequently leads to greater compensation for risk averse managers who put less efforts (Sappington, 1991). This risk base dilemma inherent in the principal-agent relationship (Hart, 1995) is a prominent issue which highlights the problem that how to settle on desired balance between risk-taking and efficiency of decision. To tackle this problem, the principal devises a strong monitoring mechanism to monitor the actions of agents in his best interest (Arnold and De Lange, 2004; Sappington, 1991). Arnold and De Lange (2004) further document that tough monitoring mechanism leads to a tradeoff between monitoring cost and information asymmetry.

2.2 Theory of Information Asymmetry

Information asymmetry and agency theory have gained significant attention in the field of finance (Haugen and Senbet, 1979). The researchers like Brealey et al. (1977) and Jensen and Meckling (1976) suggest that firm's financial structure is very important in managing agency and information asymmetry problems. The implications of signaling model in the informational asymmetric market is also discussed by the Spence (1978) who distinguishes signaling mechanism into two classes; contingent contracts and exogenously costly signals. The first form is associated with potential ability of the buyers in assessing the products' quality and later form is the activity in which the seller is involved. In the field of finance entrepreneur is recognized as seller and capital market as a buyer, so the activities/decisions exercised by the entrepreneur regarding capital structure, dividend policy and other related activities in the firm serve as a signal in capital markets

(Haugen and Senbet, 1979). Stiglitz (2000) classifies two important perspectives of information asymmetry, information about quality and information about intent. The former becomes significant when one party has limited information about the distinctiveness of the other party, while the later one deals when the concerning party's intentions/behaviors are important for other party (Elitzur and Gaviious, 2003).

The problem of information or lemon arises when the concerned parties (entrepreneurs and savers) may have divergence of interest which can lead them to distort the functioning of capital markets (Akerlof, 1970). The literature offers many well-established solutions for the problem of lemon like optimal contract between concerned parties (entrepreneurs and savers) gives a motivation to comply with disclosure of private information (Kreps, 1990), second potential way is to strengthen the regulations that call for disclosure of private information by the managers. Financial intermediaries like rating agencies and analysts' engagement also play a vital role in production of private information which unveils the opportunistic behavior of managers who possess the superior information (Healy and Palepu, 2001). In essence, the lemon problem causes the capital market to under-value some good stocks and over-value some bad stocks on the basis of information available in the market.

The asymmetry of information arises when one party (managers) holds superior information than the information held by other party (shareholders). Watts and Zimmerman (1979) explain the lemon problem as if the information regarding internal cash flows of a particular project are unknown to outsiders, which means that the information held by the management about the project are unavailable in the market, then market will be unable to properly value that project and it will be difficult to distinguish between profitable and non-profitable projects. And if the information are released with transparency then market will be able to reflect the true economic reality. However it doesn't mean that management has superior information than information available in the market, rather it simply means that management has some necessary information without which the true valuation of the project is not possible (Barnea et al., 1981). The literature of finance suggests

various methods to resolve or reduce the problem of information asymmetry. For instance capital structure serves as signaling mechanism about true value of the firm (project), in the same way the financial structure (dividend policy, ownership structure etc.) of firm also conveys the signal. [Brealey et al. \(1977\)](#) explain that higher fraction of ownership stakes held by the entrepreneur work as signaling device for reducing the asymmetry problem.

The body of empirical research by [Dann \(1981\)](#); [Israel et al. \(1989\)](#); [Masulis \(1980\)](#) explore the signaling role of leverage in perspective of reducing information asymmetry and on the other side, [Brealey et al. \(1977\)](#); [Ross \(1977\)](#); [Talmor \(1981\)](#) consider dividend as signal for reducing information asymmetry problem. The costly signaling from either policy (leverage or dividend) seems to be very puzzling due to which numerous firms use debt and dividend simultaneously ([Ravid and Sarig, 1991](#)). The study of [Ravid and Sarig \(1991\)](#) show that high quality firms take more debt and pay high dividend than low quality firms. Because announcement of leverage or dividend payout conveys positive signal about the future cash flows of the firm which consequently increases the value of firm. So the increase in either dividend payout or leverage negatively affects the information asymmetry. Furthermore the literature of finance uses insider trading as proxy for asymmetry of information because insider trading is done on the basis of value-relevant information before incorporation of that information into stock prices by market through formal disclosure. So the earnings through insider trading occur due to information gap between insiders who have privilege information than the outsiders and it is called as asymmetry of information ([Frankel and Li, 2004](#)).

2.3 Signaling Theory

Signaling theory explains how well-informed individuals transmit important information to the stakeholders who have less amount of information. [Spence \(1978\)](#) mentions that it is a degree to which the college students emit signals about their capabilities to the potential employer, or the distribution of large dividends which generates signals that the firm is more lucrative and profitable, or the issuance

of guarantee by the manufacturer generates signals regarding high quality of the product [Spence \(1978\)](#). Signaling theory deals with the asymmetry of information phenomena which exists in the market by taking the assumption that asymmetry can be reduced by exhibiting more signals in the market through disclosure of information ([Morris, 1987](#)). Initially, the development of this theory takes place in the labor market; however the theory may be applicable in any market where the problem of information asymmetry prevails ([Akerlof, 1970](#)). [Ross \(1977\)](#) explains that the contract between managers and shareholders requires the agents (managers) to transmit signals in the market by deciding the debt-equity ratio in the capital structure. As the increase in the proportion of leverage is one of the implications of signaling theory because the excess proportion of leverage in the capital structure conveys positive signal about the value of firm.

The signaling theory deals with the variety of signals and the scenario in which the particular signal works ([Spence, 2002](#)). The signals generated by seller transmit information about seller's characteristics, which buyers assess that to what extent the exhibited signals are valid and credible about the qualities of seller ([Mavlanova et al., 2012](#)). In essence, the theory clarifies the link between communicated signals and the quality of signals by mentioning that why some offer more reliability than other ones because the costs of deceptively fabricated signals must surpass the benefits of maneuvering it. When the signals about reliability of the information emerge in the market it allows the users to accurately evaluate the real value of the firm. However, the reliability of signal is essentially an important factor, and there may be inefficiency in the production of information because the efficient information provider may have scarce resources to generate the signals reliably. So, it is important that the efficient information provider should also be equipped with adequate resources for testing the reliability of signals ([Campbel and Kracaw, 1980](#)). On the other hand, [Ross \(1977\)](#) mentions that even the firms having no material insider information also disseminate some sort of information to differentiate themselves from the firms disclosing no information. The purpose of disclosing less material information actually is to send signal in the market to differentiate themselves from under-performers.

The dissemination of material economic information by management acts as a signal which can help in assessing the true inherent value of an asset. However it can be fabricated by noisy information, because the release of such signal in the market depends upon the discretion of management (Verrecchia, 1983). Verrecchia (1983) further discusses that management's discretion for withholding or releasing the signal is also concerned with management's value in the market that how market rates it in absence of signals. So, the management has to select a threshold level of disclosure by evaluating the expectations of market. There is another concern that the information withheld by the managers is either good or bad. The literature suggests the criteria for good and bad news is the difference of real earnings from expected future earnings. The news is considered as good if the reported difference is positive and vice versa. Patell and Wolfson (1982) state that the firms report good news and bad news on a regular basis, in interims and at year end. Kross and Schroeder (1984) provide institutional interpretation of delays in reporting bad news as generally the bad news gets delayed due to delays in preparation and audit. Verrecchia (1983) also offers almost same justification for delays in reporting bad news as the managers usually expect the occurrence of good news in interims and wait for it with a hope that it will offset the impact of bad news.

The concept of Signaling Equilibrium emerges from the theory of Modigliani-Miller's capital structure, which considers that the expectation of investors regarding firm's value is associated with decision of capital structure (Heinkel, 1982). The signaling equilibrium becomes costless when the seller faces no deadweight loss and yields same benefit as he can earn in the informational symmetric market. This type of equilibrium is not subject to any instability problems, because investors will not be able to differentiate between different firms if signals are not present. The costly signaling equilibrium will be subject to instability when pooling offer prevails which is advantageous for the buyer, so in this situation the seller of good quality product may offer the same price relatively the product of low quality. The study of (Heinkel, 1982) additionally adds that in information asymmetric environment the costly signals may not produce desired results. Myers and Majluf

(1984) posit that in case of information asymmetry, the issuance of equity instead of debt will generate the negative signal due to which the equity may not be correctly priced (underpriced) by the outsiders, consequently the new equity holders may reap more benefits than the NPV of a project which may cause loss to current equity-holders. Myers and Majluf (1984) suggest that this issue of undervaluation can be mitigated by exercising less severe options of financing like internal funds or other low-risk debt. This strategy is known as Pecking order Theory. Harris and Raviv (1991) also verify that the issuance of equity at initial level generates a negative signal which causes decline in the security prices.

Brealey et al. (1977) shift the focus to entrepreneurs of firm by assuming that the managers have adequate information about the real value of business than the lenders or outsiders, so if the insider is willing to invest in his own project, then it generates good signal regarding the project success and quality. So the investment made by the entrepreneur will emit a positive signal about the quality of project and will ultimately contribute towards the value of firm and vice versa for investment made by the outsiders. There are two practical implications of this signaling model (Copeland et al., 1983), first, if the entrepreneur issues the equity to the general public then such firms should have high value of price-earnings multiples, second, if there exists a positive connection between proportion of stock held by the entrepreneur and the value of firm then firm will have better capacity to issue debt. Although the use of debt is not considered as signal in this model of signaling, it only has linear association with the firm's value.

2.4 Capital Market Theory

The models of asset pricing explain the changes in individual stock returns with respect to one or more systematic or macro-economic factors. The basic one is capital asset pricing model, CAPM, which considers one systematic or market wide factor to explain the stock price movements. This CAPM is one of the utmost important contributions in finance theory which first time formally identifies the risk in capital markets and provides complete model to quantify it properly.

The model assumes that investors maintain fully diversified portfolios in which the unsystematic risk of individual securities is not important. The unsystematic or idiosyncratic risk is due to firm-specific factors such as fluctuations in firm's sales, operations, earnings and in other fundamentals. So it can be reduced and diversified away by expanding the portfolio to multiple other negatively correlated securities. Due to irrelevance of unsystematic risk, the only relevant risk for securities is systematic risk. The systematic risk, as name reflects, is the securities' sensitivity with market wide and economic variables such as variations in interest rate, exchange rate, inflation rate and fluctuations in business cycle. Since these economic factors affect all securities, but with varying proportions, any level of diversification does not reduce the portfolio's systematic risk, therefore investors demand additional return against risk premium for bearing the systematic risk. And higher return will be demanded for bearing systematic risk.

Sharpe's main contribution is the definition of systematic risk and exact specification that how investors can do trade-off between risk and return. He suggests that an investor can invest either in riskier assets like stocks or in risk free assets like the treasury bills. And the rational investors are those who invest only in efficient portfolios which offer the lowest risk at given level of return or highest return at given level of risk. Sharpe then mentions that as investors invest either in risk free asset or risky portfolios, there is a unique risky asset portfolio which is superior among all of others which is labelled as Market Portfolio, M. This leads to a condition where all investors will construct a portfolio which should be the combination of risk free and riskier portfolio M, and the line which measures the trade-off between risk and return is called Capital Market Line (CML). And according to individual risk appetite, the risk averse investors will be inclined to the risk free assets which is the left side of CML, while the riskier investors will be more inclined to market portfolio which is the right side of CML. The riskier investors can even borrow money at risk free rate and invest levered money in addition to their equity so they get extreme right side of CML. In simple words, investors can take any desired position on CML by making allocation between risk free asset and risky portfolio M. Sharpe's another important contribution is that

in equilibrium every security offers the expected rate of return which is linearly related to covariance of securities returns and returns of market portfolio M. This relative sensitivity of stock with respect to market volatility is called beta, β , that is the proxy for the systematic risk. Every individual security, to be included in portfolio M, should be at a price which yields investors the appropriate rate of return which is implied by its level of systematic risk and t-bills rate. The model of traditional CAPM may be expressed as:

$$r_{i,t} = r_f + \beta(R_{m,t} - R_f) \quad (2.1)$$

In the above equation $(R_{m,t} - R_f)$ is called market risk premium, which represents the investors rate of return demanded in addition to risk free rate for expanding their portfolio to riskier assets instead of sticking only on risk free assets. In simple words the model says that an individual security's rate of return is equal to addition of market risk premium with t-bills rate (risk free rate) after adjustment with security's systematic risk.

$$r_{i,t} = \alpha_j + \beta_j r_{m,t} + \varepsilon_{i,t} \quad (2.2)$$

Where $\varepsilon_{i,t}$ is residual portion of stock's return which is unexplained portion by the equity risk premium $(R_m - R_f)$.

2.5 Stock price Synchronicity

[King \(1966\)](#) reports that the stock price variation depends upon market and industry wide factors. The returns of stocks co-vary with the industry or market wide variation, which is compatible with the phenomenon that stock's returns are influenced by set of macroeconomic factors. Inferring the same logic, [Brown and Ball \(1967\)](#) report that significant fraction of companies' annual earnings are described by common industry and market specific earnings news. And the fraction of firm's earnings news similar with industry and market wide factors is almost of similar degree to the portion of firm's stock movement with common industry and market

wide factors. So the variation in returns and firm's annual earnings is partially attributable with the common industry and market wide factors. And the residual fraction, that is unexplained by industrial and market wide variation, is likely to be the factors related to firm's internal matters and events which are purely firm specific (Williams, 1967). Consistent with the above arguments, Roll (1988) explores low R^2 values from asset pricing regressions suggest weak association of returns of individual stock with industrial and market wide factors. The study explores that this weak association, between individual stocks and systematic factors, can suggest the impounding of firm level information in stocks' returns. The decline in stock's association with industry and market wide variation means that more firm-relevant or idiosyncratic information is being impounded in prices.

Several studies empirically support with the Roll's interpretation of firm-relevant information being incorporated into stocks' prices if low association is found between individual stocks and industrial and market wide information. Morck et al. (2000) is the first paper in the series, and reports that economic development is one of the integral factors in co-movement of stocks with industrial and macroeconomic information. In the high Gross Domestic Product (GDP) economies the stocks co-move relatively in less synchronized manner in comparison to the low GDP economies. There are three possible reasons for this analogy, first the stocks in low income countries may have high correlated fundamentals due to which they are probably to have high synchronicity. This happens because low income economies seem to be undiversified, and due to less diversification the industry wide events are mainly the market wide events. Second, in low income economies the investors' private property rights are poorly protected. In such situation the political rumors and instability are primarily the significant source of market wide stocks fluctuations. Moreover, the poor protection of property rights might make the informed arbitrage unattractive in the capital markets. De Long et al. (1990) report that the risk of noise trade significantly increases when there are hurdles in informed arbitrage. And this noise trade risk increases the market wide movement, so more uncorrelated fundamentals are observed in economies with low GDP. Third, the countries with low GDP offer inadequate protection to investors

from corporate insiders; this increases the problem of inter-corporate income shifting which makes the firm-level information less relevant for arbitrageurs. In such case the stocks are less informative and reflect more market wide variation. All three factors, in combination, ultimately reduce the firm-level stock return variation and increase the *SPS*. So the economic development and good or bad country governance system significantly matter in stocks' co-movement with industry and market wide variation. As the bad governance system significantly impairs the degree of informed arbitrage which ultimately increases the *SPS*.

2.5.1 Literature in Favor of Standard Interpretation of Stock Price Synchronicity

As [Morck et al. \(2000\)](#) report that *SPS* is higher in less developed and emerging economies in comparison to developed economies. They report the reasons of different levels of synchronicity beyond the domain of corporate governance and corporate finance, and focus on economic development like GDP, institutional development, investor's property rights protection and so on. However [Jin and Myers \(2006\)](#) find that in addition to imperfect protection of investor's property rights, the level of firm's opaqueness matters a lot. The imperfect protection of property rights may not affect the level of R^2 in case of transparency in the firm. Some fraction of firm's opaqueness is essential to create the impact of investor's property rights protection. The limited information or information asymmetry is important for classification of risk-bearing among insiders and outside investors. As the insiders have control on firm's operations so they capture some part of firm's cash flows from operations. And they capture more cash flows in a case where investor's property rights are not perfectly protected. What outside investors perceive regarding firm's future cash flows and value, matters a lot in the extent of extraction of these cash flows. And investors' perception is imperfect regarding firm's prospects because they don't have perfect information regarding firm's operations so they cannot see all the changes. The insiders capture more cash flows in a situation when the actual cash flows are more than the expectations of investors. And if the actual cash flows are less than the estimations of investors

then managers are bound to reduce the capture proportion in order to run the operations. So the increase in capture of operating cash flows by managers and firm's opaqueness decrease the incorporation of firm-level information into stock prices and ultimately increase the *SPS*.

In reality, opaqueness at firm level works together with the inadequate protection of investors' rights by complementing each other. As the insiders or managers have strong motivation to keep the firm opaque so that they can extract more amount of operating cash flows, and obviously which is not that possible if the firm is more transparent. Therefore it is said that stocks in opaque environments report high value of R^2 from regression models, and low incorporation of firm-level information into stock prices. This leads the stocks to be less informative. [Piotroski and Roulstone \(2004\)](#) explore the role of trading activity by three informed participants of financial markets such as managers or insiders, financial analysts and institutional investors. It is believed that the informed participants of capital markets can affect the information related to firm-level and market-wide factors being capitalized into the stock prices. There should be different informational role by different participants according to their nature and access to particular type of information. So the extent to which these parties contribute in the incorporation of different information, the *SPS* should significantly differ with the presence or absence of activities by the each participant. To be more specific, each party's contribution in *SPS* should be linked with its comparative advantage and capacity in gathering, interpreting and analyzing the firm-specific, market level and industry specific information. It is generally expected that there should be low *SPS* in the presence of activities by informed participants in the market.

By essence the insiders, who are firm's directors and executives, have key advantage on firm's information related to its operations and other important aspects. And they are generally perceived as the most informed participants as they have maximum information access related to firm's operations and risks and future prospects. Based upon this advantage, it is assumed that the presence of their activities in market has direct link with the capitalization of firm-level information into the stock prices, which seems to be very obvious. [Manne \(1966\)](#) reports

that managers disseminate the firm related information with other participants of market through their own trading activities. The higher trading activities should enhance the informational efficiency of stocks by capitalization of firm-level information which should reduce the *SPS*.

The institutional investors, on the other hand are either the constructive insiders or outsiders depending on their ownership proportions and trading stakes in the firm. The institutions are perceived as they influence information environment of the firm and in price determination (El-Gazzar, 1998; Jiambalvo et al., 2002). The change in institutional holding is one of the noteworthy factors in explaining the extent of changes in private information. If there is significant proportion of institutional ownership then it signals about increased monitoring by having access on firm-level information and finally this process facilitates the transfer of information to other firms. Moreover, the large changes in institutional ownership are linked with mainly the firm-specific information while small changes in institutional ownership are associated with liquidity and rebalancing considerations. The financial analysts are the outsiders who are at the bottom in the hierarchy of informational access. They have least access to firm level information than insiders and other major institutional investors, so they usually focus on industry specific and market-wide information in obtaining and mapping the information into the stock prices. Ramnath (2002) points out that financial analysts revisit forecasted earnings in case of different earnings figures have been announced by other firms on the similar industry. Based upon the finding it is said that comparative edge of financial analysts lies with the distinction of information they possess about specific industry and market wide trends. The difference of analysts' forecasts from corporate insiders and institutional investors is that the financial analysts provide or publish their earnings forecasts and stock recommendations to public.

Piotroski and Roulstone (2004) conclude that financial analyst activity is positively related with *SPS*. This result is compatible with their reliance on market level and industry level information, as ultimate influence of their activity increases the revelation of industry and market wide information. While a negative association between insider trading and *SPS* has been identified, as the insiders have ultimate

access on the information regarding the firm's operations due to which the main source of their trading activity is the firm level information which increases the reflection of such information into the stock prices and stock prices become more informative. Moreover, the relationship between *SPS* and activity by institutional investors is not clear. And mainly positive relationship is found, which reflects that institutional investors' activity also facilitates the industry based information. Based upon the findings it is said that the influence of informed traders' activities significantly affect the informational efficiency. Chan and Hameed (2006) also study the informational role of financial analysts in emerging economies. The recent financial crisis in Asia also suggests that the availability of firm relevant information to general public investors is not adequate. Chan and Hameed (2006) report that this low level of *SPI* in emerging economies comparative to developed economies is due to three important factors. First, enforcement of laws and other legal regulations are weak which are related to information disclosure by companies. Second, low level of voluntary disclosures is seen in emerging markets which is linked with corporate transparency. Third, several companies in emerging markets have concentrated ownership by different groups and families, and this ownership concentration creates difficulties for the investors and analysts to collect the firm-specific information for these companies. Chan and Hameed (2006) also explore the effectiveness of financial analysts' activities in emerging economies, and identify that due to difficulty in collecting the firm specific information and difficulty in informed arbitrage the role of financial analysts generally stick to the collection of industry and market wide information. So in emerging economies the financial analysts' reports generally reflect more macro-economic information.

There are positive and negative aspects of insider trading activities, as the insider trading has both costs and benefits due to which its need for regulation has been under discussion. The benefits side of insider trading is that the insider trading makes the market more informative, because the insiders have ultimate access on the information about the operations of the firm and its future cash flows. So their trading activity is considered in a context of reflection of firm related information

in share prices, and so this enhances the market's informational efficiency. However the opposing view is that the insider trading reduces the opportunity and motivation to collect information for outside investors by limiting their potential gains (Fishman and Hagerty, 1992). When market professionals believe that insider trading exists in market then it automatically reduces their motivation to put efforts and allocate fewer resources to gather and process the information. This phenomenon is called the crowding-out effect. If the crowding-out effect dominates, then it is more likely that stock prices will be less informative and market will be less informationally efficient. The opposing view also suggests that if there is information asymmetry then it further intensifies the crowding-out effect because it will further discourage the investment (Ausubel, 1990), by demotivating the market professionals to search and analyze the firm-specific information. So the asymmetric environment amplifies the crowding-out effect which significantly increases the cost of insider trading.

Fernandes and Ferreira (2008) explain the impact of insider trading regulation on *SPI*. Particularly, they have analyze the impact of initial adoption of insider trading regulations on *SPI*, and find a significant positive relationship. The positive relationship of insider trading rules with *SPI* is expected because by initial execution of insider trading law, the professionals and other market participants get motivated to gather and process the firm-specific information, due to which more firm-specific information impounds in stock prices which makes market more informative. Thus the *SPS* is low in the markets where enforcement of insider trading laws exists, as insider trading laws are positively linked with *SPI*. Crawford et al. (2012) explore that what happens when analysts initiate their coverage first time and what happens when other analysts provide their subsequent coverage. The empirical evidence points that the type of information which financial analysts report is dependent on the reports by other analysts on a specific firm. It is found that the first analyst coverage report on a particular firm deals with more industry and market wide information rather than firm-specific information, while the subsequent analysts' coverage reports provide more firm level information. So for the firms, with existing analysts' coverage, their *SPS* decreases, and for firms with

initial coverage the SPS increases.

[Durnev et al. \(2004\)](#) explore that firm's profitable capital budgeting decision, which enhance firm's value, are linked with the degree to which stock prices are more informative in capital markets. This happens because the stock prices perform the role of critical signaling and incentives determination in several corporate governance mechanisms. The stock prices also reflect the information regarding what investors are thinking about managers' strategies and decisions. As the stock prices' reactions on decisions of managers can provide important feedback to managers in order to devise their governance mechanisms and to improve their decisions. And if the investors in capital markets are well informed then it is easier for firms to raise more capital for their profitable value-enhancing capital projects. So the more efficient and informative capital markets play significant role in firm's value-enhancing decisions.

[Durnev et al. \(2004\)](#) explore that to what extent corporate finance decisions enhance value of firm. According to the analogy of [Roll \(1988\)](#), the low SPS reflects more firm relevant information in stock prices and more informative stock prices, the corporate finance value-enhancing decision should be optimal in those firms which are more informative and less synchronous with market wide movement. Similarly, idiosyncratic volatility and firm's more value-enhancing decisions are positively associated ([Durnev et al., 2004](#)). So the finding supports the analogy that more informative stocks enhance the optimal capital budgeting decisions, and higher firm level return volatility means more informative stocks.

[Durnev et al. \(2003\)](#) state that the variation in share prices in stock markets reflect as signals for firm's resource allocation decision and other strategic decisions. If share prices reflect their fundamentals then this role of stock markets has two dimensions, first the capital is appropriately priced and second, this information gives important feedback to managers regarding their strategies and decisions. These two dimensions improve the economic efficiency of capital markets. [Tobin \(1982\)](#) reports that it is capital markets' functional efficiency if stock prices reflect the highest value uses of capital. And this happens when the microeconomic

information regarding firm's operations is reflected in share prices. The information regarding firm's fundamentals is incorporated in stock prices through two ways, first is by adjustment of any new public information like the unemployment rate or interim earnings announcement and second is related with the trading activity of market professionals as they gather the firm-specific information and take their positions accordingly. [Durnev et al. \(2003\)](#) confirm the first opinion of [Roll \(1988\)](#)'s explanation and report that there is significant positive relationship between stock price variation and its informativeness. The *SPI* is measured by how much information the stock prices reflect regarding firm's forecasted earnings and the current marginal variation of stock prices explained by future earnings. Both of the proxies of informativeness are in positive linkage with firm level stock price volatility.

[Morck et al. \(2000\)](#) find that china has second highest SPS among the sample of 40 economies. This is because of poor investor's protection in emerging countries comparative to developed economies which discourage the informed arbitrage. When informed arbitrage is discouraged in any market, it reduces the informativeness and increases the market wide variation than the firm level variation. [Gul et al. \(2010\)](#) report that the higher *SPS* in emerging markets is due to two main factors, first in emerging markets disclosure regulations are not fully enforced to that level of developed markets. Second, in emerging markets the ownership structure is found more concentrated by family members, governments, financial institutions and affiliations with large groups through cross listings. The ownership concentration provides conducive environment for management to increase their entrenchment and offers the opportunities to entrenched shareholders to reap their private rights on the cost of outside shareholders ([Bertrand et al., 2002](#)). In such concentrated environment, the majority shareholders have incentives to withhold or not to disclose complete private information to outside shareholders ([Kim and Yi, 2006](#)) which increases the cost associated with acquisition of private information and decreases the incentives for market professionals to engage in informed trading activities, which in turn reduces the price informativeness in emerging economies. So the concentration ownership is negatively correlated with *SPI* which increases

the *SPS*. Moreover, [Gul et al. \(2010\)](#) report several findings about the information environment of the firm and *SPS*; first is that *SPS* is higher when the state is controlling shareholder, as because of government related ownership there is positive impact on information asymmetry. This finding confirms the belief that government ownership is directly linked with poor protection of investors' property rights and low transparency in financial disclosures, which brings stock prices to be less informative and reflect more industry and market wide variations. Second, is that *SPS* is less for the firms having both domestic and foreign share holdings as well, which suggests that the participation of foreign shareholders improves the information environment which increases the stock prices informativeness. Third, the audit quality, measured by audit by the big four auditors affects the quality of information disseminated by firm. Audit by one of the big four auditors support the view of high quality audit which facilitates more credible dissemination of firm-related information in capital markets. So, in this way the audit quality enhances *SPI* and decreases *SPS*. [Kim and Shi \(2010\)](#) explore the impact of voluntary adoption of International Financial Reporting Standards (IFRS) in non-U.S companies on *SPI* and find that voluntary compliance with IFRS is linked with the information environment which expects to improve the dissemination of quality of information by these firms. The mandatory compliance with IFRS is a country based compulsion with an intention to improve the public disclosures while the voluntary IFRS adoption is an individual firm's strategic plan to adopt for better and more transparent financial reporting practices ([Covrig et al., 2007](#)). Obviously, such commitment can be costly for the firms but it also ensures the credibility, because it requires nontrivial commitment of efforts and resources by preparers and auditors of financial statements. It is also challenging for the firms to oppose the adoption decision once it has been done. The voluntary IFRS adoption is associated with lesser financial analysts' forecasts errors, lower cost of capital, better stock liquidity and better accounting quality ([Ashbaugh and Pincus, 2001](#); [Barth et al., 2008](#); [Kim et al., 2014](#); [Leuz and Verrecchia, 2000](#)). The higher level of disclosure can also be a motivation for informed market professionals to gather, process and evaluate the firm level information due to which stock prices can

reflect more fundamentals and low synchronicity with market wide movements. [Kim and Shi \(2010\)](#) find that the voluntary compliance with IFRS is in positive association with *SPI*, which confirms the view that voluntary IFRS adoption significantly contributes towards the information environment by disseminating and facilitating the incorporation of firm level information into the stock prices. This is further verified that the *SPS* is high before adoption period and becomes low after adoption period. It is further explored that *SPS*'s reducing effect for the voluntary IFRS adoption is less for those stocks having analysts' coverage and in the countries with poor institutional development.

[Chun et al. \(2008\)](#) state that the higher firm performance heterogeneity (firm specific variation and sales growth) is found in the companies which are engaged in intensive informative technology practices. The usage of more IT based services indicate that firms are more concerned regarding innovation. This process of creative destruction is linked with several further aspects, first the intensity of creative destruction is higher for the firms in higher income countries. Because according to [Morck et al. \(2000\)](#), firms in higher income countries report higher variation in firm level return and low *SPS*. Second, the impact of creative destruction is higher in the countries where investors' property rights are more protected, which supports the process of informed arbitrage. Third, the intensity of creative destruction is higher in those firms which are less opaque and provide more disclosures to guide informed professionals in the process of informed arbitrage. Fourth, the creative destruction is higher where financial systems are more developed, because the development of financial systems is an integral feature to get the benefits of creative destruction.

The resource-based view (RBV) posits that the intangible investments by the firm are critical indicator of the firm's differentiation strategy which is essential to create a sustainable competitive advantage over competitors in the industry ([Barney, 1991](#); [Lamb, 1984](#)). However, the other side of the literature, industrial organization, about intangible investments argues that the intangible investments are susceptible to imitations by other competitors because intangible resources are non-competitive in nature and behave like public property from which all other

firms can take advantage out of it. So, according to [Brown and Kimbrough \(2011\)](#) the intangible resources can have either positive or negative impact on firm's profitability. The firm's investments on intangible assets can create a unique information regarding firm's future prospects and strategic position in the industry.

[Brown and Kimbrough \(2011\)](#) explore three dimensions of intangible assets, goodwill, other than goodwill identifiable intangibles, and R&D expenditures. They find the positive association between firm's investments in intangible resources and earnings non-commonality which is defined as to what extent firm's performance is explained by individual firm related factors rather than industry and market wide factors. The finding confirms the RBV theory that the possession of intangible resources creates a positive impact on firm value by creating its competitive differentiation which increases the firm-specific variation in stock prices and low market-wide variation.

According to [Chen et al. \(2006\)](#), the stock prices and real investments in an economy should have high association. There are two possible explanations for this association, the first explanation says that stock prices reflect the firm-specific fundamentals. As the firm's fundamentals reflect the real decisions by managers within the firm like the decisions related to firm's operating, financing and investing decisions so it is expected that stock prices should observe positive association with firm's fundamentals. The second possible explanation is that the firms face constraints in raising additional financing from capital markets so it affects the firms to pursue their desired investment plans. According to this hypothesis, increase in stock prices means that the firms are facing less constraints which reduce cost of equity and increase opportunities for firms to raise more capital to increase their investments. [Chen et al. \(2006\)](#) explore that whether price informativeness has significant association between stock prices and real investments. The *SPI* is measured by the sensitivity of stock prices to different fundamentals. The study finds the positive association between stock price informativeness and real investments. This finding confirms that the stock prices reflect more private information which is being incorporated by informed traders. This means that the managers

continuously learn from stock price movements to improve their investment decisions which suggests that the stock markets reflect the health of an economy.

[Brockman and Yan \(2009\)](#) explain that the distribution of shareholding rights in different competing interests can have impact on incentive structures and on information environment. In order to resolve the principal-agent conflict, full fledge compensation plan is devised like the performance based rewards and so on. In this regard, the block shareholding can reduce this conflict as they have more control on the management in comparison to diffused shareholding. Due to this control, the block shareholders possess more firm level information which finally leads to information asymmetry between diffuse shareholders and block shareholders. It is significant to investigate the impact of block shareholders on firm's information environment. Stock prices are inefficient in capital markets by having hurdles in collection of information because it discourages the informed arbitrage [Grossman and Stiglitz \(1980\)](#). And prices will be more efficient when cost to collect information is very less and arbitragers get the precise firm specific information. So the cost of information collection is inversely related with market efficiency.

The block shareholders, as a group, have more access on firm's operations, size of cash flows and strategic plans so their trading activity will impound more firm specific information in share prices, which should decrease the SPS and increase the *SPI*. So the block shareholder's informational advantage increases the market efficiency ([Brockman and Yan, 2009](#)). In addition to total block shareholding, [Brockman and Yan \(2009\)](#) segregate between inside block shareholder, such as firm's management and directors, and external block shareholders, such as institutions and governments. As insiders are probably have more insight regarding the firm's operations and cash flows in comparison to outsiders and insiders are also somehow more concerned regarding firm's future prospects. So the trading activity by insiders are expected to have more impact in share prices in terms of reflection of firm-specific information and increase in informativeness. Firm opacity is one of the important factors in determining the stock price co-movement with industrial and market wide variation ([Jin and Myers, 2006](#)). [Hutton et al. \(2009\)](#) also investigate the linkage between firm opacity and stock price co-movement. They consider

the firm opacity from the dimension of earnings management as measured from the level of discretionary accruals. Discretionary accruals are the accruals which a firm takes by its own choice and it is opposite to mandatory accruals. And when a firm is recording high level discretionary accruals then it means that there is big difference between firm's actual cash flows and income flows. So, this means that a firm is relying more on judgment and subjectivity rather than the objective based measures. The aggressive earnings management or normal earnings management activity is an indicator that management is hiding some material information from public investors which reduces the quantum of available information to investors to analyze and foresee the firm's future prospects. So the high level of discretionary accruals recorded by firm means that the firm is less transparent and more opaque which increases the co-movement of stock price returns and increases the SPS.

2.5.2 Literature against the Standard Interpretation of Stock Price Synchronicity

The stock prices are supposed to reflect both the micro (firm level) and macro (market wide) information. [Dasgupta et al. \(2010\)](#) document the opposite interpretation of R^2 as a measure of informational efficiency. In efficient capital markets the prices respond to the economic events which the markets have not addressed yet. When the governance environment of the market improves then it is easier for both the public investors and informed arbitragers to gather and evaluate the firm specific information which ultimately increases the *SPI*. Comparatively informative stock prices are expected to incorporate the occurrence of future events today and when the events actually happen in the future then market does not feel overwhelmed as these news have already been adjusted in prices and so market does not respond to them. So the more informative stock prices today are expected to have low firm level variation in the future, which results into higher SPS.

[Skaife et al. \(2006\)](#) explore the standard interpretation of SPS as high R^2 from asset pricing regressions represents low market efficiency in which a stock represents more market wide variation and less firm-specific information which makes

the stock less informative. They have run different analysis to test this interpretation of synchronicity. According to [Durnev et al. \(2003\)](#), the first analysis deals with the informativeness interpretation of SPS as high SPS leads to low informativeness and vice versa. If this assumption holds true then the high informative stocks should be linked with future earnings of the firm. But on the other hand, [Ashbaugh-Skaife et al. \(2006\)](#) find opposite result in majority of the markets which is high R^2 values represent more informative stock prices instead of low R^2 values. Second analysis of [Skaife et al. \(2006\)](#) study the impact of analysts' forecast errors, as analyst forecast errors increase SPS because SPS should be less when a firm discloses more fundamentals related information. Again, opposite result is found in most of the markets which is that high R^2 values represent low analyst forecast errors and vice versa. The third analysis of [Skaife et al. \(2006\)](#) deals with the firm's cross listings in multiple markets. The cross listing event is considered as very important event in which firm has to provide more disclosures according to regulations by other capital markets. So the negative relationship should be observed between cross listing and *SPS* as the cross listing provides more firm-specific information to market participants. But no concrete evidence is found regarding decline impact of cross listings of firm on *SPS*. [Skaife et al. \(2006\)](#)'s fourth analysis deals with the relationship of firm's fundamentals and *SPS* and in that they also report mixed results which does not make clear that *SPS* is a clear informativeness measure. [Skaife et al. \(2006\)](#) repeat all the tests by using zero-return matrix as dependent variable instead of *SPS*, and found consistent results with zero-return matrix. The zero-return matrix is a construct in parallel to *SPS* as when there is no significant firm specific information which is unable to exceed the returns from cost then marginal investors are not likely to trade ([Lesmond et al., 1999](#)). And when marginal investor does not trade then it results into the same price which brings the returns to zero. The ratio of zero-return days reveals the arrival of information tendency as when there is no new firm-specific information available to informed arbitrageurs then it is less likely that they trade which results into higher proportion of zero-return days. By following this analogy [Skaife et al. \(2006\)](#) state that the application of *SPS* measure is weak in different

markets, and zero-return metric measure is more appropriate to explain the *SPI*. [Teoh et al. \(2009\)](#) report the contradictory view of stock efficiency measured by low level of *SPS*. They classify the early resolution (ER) hypothesis as the low R^2 represents better information environment. The opposing hypothesis they have classified is Cross-sectional uncertainty variation (XUV), which is that the uncertainty part of low R^2 firms remain continued in future. [Teoh et al. \(2009\)](#) investigate the empirical standing of R^2 measure by evaluating the relationship with different anomalies as the anomaly is considered as violation to efficient market hypothesis. And the presence of anomalies in stock markets means that the stock prices are not efficient and fully informative regarding firm's future prospects. The presence of anomalies is also due to the inability of investors to gather, analyze and incorporate the entire firm-specific information in prices. According to ER hypothesis, there should be direct relationship between existence of different anomalies and R^2 values as the firms reporting low values of R^2 are more informative so are least affected by different anomalies in the market. However the findings offer no support to the ER hypothesis because the anomalies get stronger for the firms reporting low R^2 s. This suggests that the stocks prices having low *SPS* are more probably to be influenced by different anomalies and so become less informative ([Teoh et al., 2009](#)).

[Li et al. \(2014\)](#) report that different proxies to evaluate the *SPI* are not interchangeable like the R^2 (for *SPS*) from asset pricing regressions and e^2 (for idiosyncratic volatility) as the variance of residuals. In the researches these two proxies are used interchangeably as high R^2 values are equivalent to low idiosyncratic volatility and vice versa. [Li et al. \(2014\)](#) confirm that both mentioned measures of informativeness provide very different results instead of complimenting each other. As in the literature mixed results are found between quality of earnings and idiosyncratic volatility such as [Rajgopal and Venkatachalam \(2011\)](#) report negative relationship between poor earnings quality and firm specific return volatility while [Durnev et al. \(2003\)](#) report the positive relationship between them and [Fernandes and Ferreira \(2008\)](#) report insignificant relationship. So the association between

idiosyncratic return volatility and firm fundamentals is ambiguous, and the possible explanation is that as R^2 captures the overall impact of both systematic and unsystematic volatility that's why it is essential to test association between firm fundamentals and systematic risk. The association between firm fundamentals and idiosyncratic volatility or synchronicity depends upon the association between firm fundamentals and R^2 . Therefore according to [Li et al. \(2014\)](#) it is important to be cautious by using different proxies of informativeness as different proxies can yield different results and to see which proxy is more appropriate in the specific context.

[Bramante et al. \(2015\)](#) also report that there is conflicting evidence of R^2 as an opposite proxy of SPI . Some researchers find that R^2 from asset pricing regressions is an opposite proxy of SPI while others argue that it is a direct measure of informativeness as higher R^2 values mean more informative stock prices. [Bramante et al. \(2015\)](#) explore the relationship between SPS and the delay in stock price discovery process. The delay in price discovery refers to the sensitivity of current prices to past market-wide information and due to delay in information a correlation is found between inter-temporal returns which causes low R^2 values. Thus a positive association between information delay and R^2 means that the SPS is directly associated with informativeness and vice versa. They have found the significant and negative association between information delay and SPS which shows that SPS is a direct measure of informativeness rather than the inverse.

2.6 Voluntary Disclosure

Voluntary disclosure is a useful economic information which company's management provides to guide different stakeholders who are analyzing the company's future prospects. The voluntary disclosure is a type of information which does not deal with mandatory disclosure required by IFRS or GAAP, rather it is a useful information relevant to the decision makers, which companies disclose by their own choice ([Meek et al., 1995](#)). Voluntary disclosure is generally carried out by numerous companies but it varies with respect to differences in geographic region,

industry and firm's size. It is also affected by different structures and different aspects of firms like the structure of corporate governance, ownership structure, firm's top executives, managers' disclosure styles and their backgrounds (Ho and Wong, 2001). All these factors significantly affect the extent of voluntary disclosure.

Voluntary disclosure has numerous benefits for stakeholders, firms and for overall economy. For example it can help investors in capital markets in their capital allocation decisions which is important for reduction in agency conflict and better functioning of capital markets (Meek et al., 1995). For firms the most important impact is on their cost of capital, as firms can manage their cost of capital through voluntary disclosure. This in turn leads to economic growth and development. In recent era it is in high demand by investors that company should disclose their prospects voluntarily in addition to the mandatory disclosures. In S&P 100 index, sixty percent of the companies have adopted the voluntary disclosure policies due to high demands by investors. However, to disclose the economic information voluntarily is obviously not free of cost, as the firm has to bear the cost of procuring the information. So the companies generally have to maintain a balance between cost of procuring the voluntary disclosure and the benefits sought by firms (Healy and Palepu, 2001).

Voluntary disclosures include the information regarding strategies of the firm, firm's characteristics including nature of the business, non-financial information such as practices related to corporate social responsibility, financial analysis, cash flow forecasts and etc. FASB has classified the voluntary disclosure into six categories. First deals with business data, second the analysis of business data, third the forward-looking information, fourth the information regarding management and shareholders, fifth the company's background, and sixth is about information about intangible assets. The business data is about the growth in market share, sales and marketing teams, expansion plans and new products, details of different products and strategic partners, labor contracts, performance with respect to employees like sales per employee or operating income per employee and so on. The analysis of business data deals with the firm's goals for contribution in

revenue from the products which have been introduced recently, market share in various products line, discussion about impact of technology on firm's research and development, discussion regarding highlights and accomplishments, sensitivity of financial analysis and so on.

The forward-looking information deals with forecasts for different aspects like unit sales, plans for expansion and growth opportunities, different performance and profitability measures like gross profit margin, operating profit margin, operating cash flow, return on assets, return on equity, free cash flows and so on. Information about management and shareholders deals with the information about principal shareholders and creditors, hierarchy and detailed information about board of directors, and details about ownership structure like the proportion of ownership by general public, management and other institutions. The background of the company deals with the information related to firm's values and vision, history of the firm, major achievements, total number of employees and so on. The information about intangible assets deals with research and development, patents, copyrights, and other intellectual capital disclosures particularly for the firms which are knowledge based companies.

2.6.1 Motivation of Voluntary Disclosure

The agency problem and information asymmetry create hurdles in the proper functioning of financial markets, the voluntary disclosures have important role to resolve this information problem. There are some motivations for managers to opt for voluntary disclosures. One of the most significant motivation is to seek the advantage of decline in cost of capital, because the capital market transaction hypothesis explains that it is very difficult for the firm to issue public debt or equity in case of information asymmetric environment (Barry and Brown, 1984). So management is always encouraged to voluntarily disclose the economic information related to firm when they are considering to raise capital from general public, and in order to reduce the information asymmetry and ultimately the cost of external capital.

Another important motivation of voluntary disclosures for managers is linked with

litigation cost of the firm (Healy and Palepu, 2001). The threat or litigation risk has two sided effect, one is that managers may be motivated to disclose the information related to their poor performance before time in pre-disclosure. The reason of managers' decision for pre-disclosure of bad news is the general perception of litigants. The litigants generally perceive that if the company's operations are not going good then they usually delay the announcement of bad news and do not disclose the economic information on time. So in order to diminish the litigation risk managers may be motivated to opt for pre disclosure of bad news. The other sided impact is that, due to litigation risk, the managers may be discouraged to opt for voluntary disclosure because it is generally perceived that litigation risk increases for the firms who provide good news forecasts. Managers think that the firms that always forecast positive information are more probably to face litigation penalty. The empirical evidence also supports this perception as the firms which are commonly engaged in positive news regarding their future earnings bear high litigation risk. So the litigation risk may reduce the managers' motivations to provide future economic information regarding firm's prospects on voluntary basis. There are also other motivations due to which managers can change the level of voluntary disclosure, such as management talent signaling hypothesis which describes that the competent managers are motivated to disseminate the voluntary information regarding earnings and cash flow forecasts. The motivation for higher disclosure is that it reduces the risk of undervaluation of shares in the market, due to which management can absorb the impact of poor performance also (Trueman, 1986). However, the proprietary cost hypothesis states that management may avoid high level of disclosure, by knowing that it will increase the cost of capital, because high amount of voluntary disclosure may impair the competitive status of the firm in the market. And this condition gets worse when the threat of new entry is less or the company is in more competitive position. So, sometimes it is in firm's interest to opt for low voluntary disclosure policy as in some conditions high amount of voluntary disclosure may provide entrance opportunity to other firms.

Overall, one of the possible solutions to the problem of asymmetry of information

and agency problem is the strategy of management to opt for voluntary disclosures of firm relevant information. Because high voluntary disclosure gives benefits to stakeholders and also gives fewer opportunities to management to withhold the private information with them and consequently it improves the financial transparency in capital market.

2.6.2 Capital Market Effects of Voluntary Disclosure

There are different influences of voluntary disclosure on capital markets. The study of [Healy and Palepu \(2001\)](#), three important influences of voluntary disclosures on capital markets are found. The first most important effect is stock liquidity, as discussed earlier that voluntary disclosure decreases the agency and information asymmetry problems and helps out both the informed and uninformed stakeholders in the market. That's why investors feel confidence to invest in those firm which disclose the maximum information, because the information supports the financial instruments to be valued near to fundamental value. This process of fair valuation of financial instruments aids liquidity ([Leuz and Verrecchia, 2000](#); [Welker, 1995](#)). These studies find that as the disclosure level of firms increases, it reduces the bid ask spread which increases the liquidity levels of those firms. [Healy et al. \(1999\)](#) argue that as the firms disseminate the voluntary information to capital markets, their share prices experience significant growth and this increase is usually unrelated to firms' performance based fundamentals. [Gelb and Zarowin \(2002\)](#) explain that the firms offering high disclosure ratings generally experience higher price relationship with current and future performance comparative to those firms which do not offer high disclosures. So the firms' disclosure policy significantly affect the responsiveness speed of information in share prices for firms which offer high amount of disclosures.

The second influence of voluntary disclosure deals with the reduction in cost of capital. As discussed above that information asymmetry gives incentives to managers to offer the high amount of voluntary disclosures in the market for mitigating the cost of capital. [Barry and Brown \(1984\)](#) explain that when disclosure level in capital markets is imperfect, then the risks are felt by investors to estimate

their future returns and payoffs by the firms. And if this risk is systematic (non-diversifiable) then investors claim additional return to bear the information risk. In this condition the firms which are having high level of financial disclosures, will be having less information risk because these are perceived as more transparent. So such firms are expected to have less cost of capital in comparison to those whose level of disclosure is low and bearing high level of information risk. [Botosan \(1997\)](#) also documents the evidence which supports the hypothesis of cost of capital. She explores that voluntary disclosure is negatively linked with cost of capital for the firms with relatively low level of analyst following.

The last important influence of voluntary disclosure on capital markets deals with the information intermediation. [Bhushan \(1989\)](#) and [Lang and Lundholm \(1996\)](#) explain that when the availability of private information is not possible through mandatory disclosures then in that case the provision of voluntary disclosures reduces the information acquisition cost which increases their supply. With high disclosures analysts are motivated to provide their services to forecast the firm's prospects and to provide the superior analysis and recommendations to buy or sell the stocks. However, public voluntary disclosures may reduce the demand of analysts' services. [Veldkamp \(2006\)](#) explores that the cost to information acquisition for individual investors is high when voluntary disclosures are less. And the information acquisition cost is less for investors regarding the firms which opt to provide more disclosures, because these firms generate high demand of their securities in capital markets. So the high demanded securities attract the financial intermediation which ultimately reduces the information acquisition cost.

2.6.3 Voluntary Disclosure and Stock Price Synchronicity

According to the arguments mentioned above, different companies can opt for different disclosure policies which change the investors' information accessibility and affect their investment decisions. The firm's voluntary disclosure is one of the significant sources of information based upon which investors are evaluating the share prices by analyzing the firm's fundamentals. The better and higher amount of information disclosure provides support to general market participants

and informed arbitrageurs to know about time-invariant firm's cash flows and other fundamentals with more accuracy [Dasgupta et al. \(2010\)](#). And if the firm are not disclosing sufficient information to investors then those firms are supposed to be more opaque. [Jin and Myers \(2006\)](#) investigate the opaqueness of a firm on *SPI*. And it is in the best interest of managers, who want to get part of the firm's cash flows in ignorance of shareholders, to keep the firm informationally opaque. Because when the firm's information environment is opaque, then it is easier for managers to get maximum cash flows because the cash flows estimations by investors cannot be perfect in opaque environment. [Jin and Myers \(2006\)](#) find that the stocks of opaque firms report high synchronicity with industry and market wide movement and are less informative.

[Brown and Hillegeist \(2007\)](#) explore the role of quality of disclosure on problem of asymmetry of information. The information asymmetry arises when informed participants have more access on firm-specific information while other non-informed public investors rely only on public disclosures. Information asymmetry creates an adverse selection problem in the market as some informed participants are taking their decisions based upon private information which others cannot do. Research evidence explains adverse relationship between quality of information disclosure and asymmetry of information ([Healy et al., 1999](#); [Hefflin et al., 2005](#)). [Brown and Hillegeist \(2007\)](#) further argue that high quality financial disclosures enhances the informational efficiency of capital markets which motivates the ordinary uninformed investors to take better decisions. And when more firm level information is used by investors for their respective decisions then obviously stock prices will become more informative and will show less co-movement with industry and market-wide variations.

[Grossman and Stiglitz \(1980\)](#) report that as the collection of firm-specific information is not free of cost and it is not commonly available so entire firm-specific information is not likely to be incorporated in share prices. This is also not possible because it would eliminate the motivation of those people who put efforts in order to gather and analyze the costly information and earn better returns. [Grossman and Stiglitz \(1980\)](#) find that there is negative association between cost

of obtaining information and informed arbitrage, as informed arbitrage increases when cost of obtaining information decreases. In this regard, a stable disclosure policy by firms plays a prominent role, as the transmitting of firm level information, related to firm's operations and cash flows, significantly reduces the cost of obtaining information by outsiders. [Durnev et al. \(2004\)](#) by using the same analogy, of [Grossman and Stiglitz \(1980\)](#), argue that in stock market some companies, which are more transparent, disseminate more firm related information to investors so the cost of collecting information for such companies is very less in comparison to the companies which are less transparent and provide lesser information to investors. Consequently, the stocks of former firms, which are more transparent, reflect more firm-specific variation, idiosyncratic volatility, and become more informative in comparison to later firm, which are less transparent and opaque.

[Veldkamp \(2006\)](#) explores the information markets not as an equity pricing market rather as a source of frenzies and herds, and report that information as a commodity is totally distinct from other commodities because an information requires fixed cost to be explored and it can be replicated free of cost. Contrary to other commodities market system, the information production system with free entry in the information market results into reduction of information prices as its demand increases, instead of increase in prices which happens normally in any commodity market. The firm-specific information affects, in-facts significantly determines, the stock prices due to which information is always demanded in capital markets. The agents who purchase the firm-specific information observe a part of risky stock's payoff and firm-specific information reduces the conditional variance. Conditional variance is the difference between expected and actual variation, and in equilibrium where information cost is very less and demand is high there conditional variance becomes very less which increases the asset prices. In the other case, where information is very costly and having low demand, assets will be more risky which results into low prices. So according to [Veldkamp \(2006\)](#) the most important factor for asset pricing and informativeness is the cost and demand of firm level information.

Haggard et al. (2008) infer the information market framework provided by Veldkamp (2006) and risk division framework provided by Jin and Myers (2006) and explore the role of voluntary disclosure on *SPI*. If a firm adopts reliable and expanded voluntary disclosure policy then it will provide support to outside investors, sitting in market, to get the low cost firm-specific information. In such case, investors will be processing more firm level information and relying less on market wide and other common information. As a result, the information market theory, shows that the stock prices, of firms reporting more voluntary disclosures, reflect less co-movement with industry and market wide information, low SPS and higher firm-specific return or idiosyncratic volatility. According to the risk division model of Jin and Myers (2006), the firms which are less opaque, having more voluntary disclosures, are more transparent so their share prices become more informative and display less co-movement with industry and market-wide variation. On the other hand, the stocks of more opaque firms are more probably to possess the higher crash risk and reflect more *SPS*.

H1: Voluntary Disclosure is negatively associated with stock price synchronicity.

2.7 Corporate Governance

Corporate governance is a full fledged discipline which explains the firm's structure, regulations, practices, and procedures through which a firm is managed and controlled. As there are different stakeholders of a firm like shareholders, debt providers, management, rating agencies, government, customers, suppliers, and society, having different type of stakes in the firm. The core aim of corporate governance is to create balance of interest in the firm for different stakeholders. The corporate governance also provides detailed structure to obtain firm's objectives so it devises detailed action plans and internal control systems to measure the firm's performance and devises corporate disclosure policy in the context of market, regulatory and social environment. The interest and need of corporate governance activity has significantly increased after different financial collapses of largest institutions like collapse of Enron, Sunbeam, WorldCom and etc. These

scandals have brought both public and political interests on regulatory perspective of corporate governance, as serious political enactment can be seen in 2002 in the form of Sarbanes-Oxley Act by U.S. federal government with a purpose to restore the public confidence on regulatory institutions. Same type of efforts can be seen in Australia after financial collapses, like HIH and One.Tel, in the form of CLERP, the Corporate Law Economic Reform Program. So these serious governance reforms by government are evidence on the importance of corporate governance policies.

Among different stakeholders, the most important external stakeholder is firm's equity holder. And in large firms equity holders do not have control on firm's operations which in-fact is held with top management so there is a possibility of conflict of interest between agents and principal. That's why the main emphasis is put on the mitigation of principal-agent conflict as one of the prime objectives of corporate governance practices. There can be multiple ways to mitigate and or control the principal-agent conflict such as different processes, norms, policies, codes and laws, and institutions which can have impact on this process. One of the most significant themes of corporate governance is corporate accountability and efficiency by putting more emphasis on shareholder's value.

Worldwide there are three most important discussions explaining principles of corporate governance, Cadbury report by U.K., Organization for Economic Cooperation and Development (OECD), and Sarbanes-Oxley act by U.S Fed. The core principles mentioned in these documents are:

- The rights of shareholders should be protected by organizations and shareholder should be given opportunities to exercise these rights.
- The non-shareholder stakeholders should also be recognized by the organizations as the organizations have legal, social and market driven obligations to them. The non-shareholder stakeholders can be creditors, suppliers, employees, customers and society as a whole.
- The board of directors' competence and independence is a key integral part of corporate governance. Because if a board is equipped with competent

and independent directors then board will be in a position to challenge and review the activities and decisions of management.

- For executives and board members, the integrity is one of the most important characteristics for their selection. The organizations should devise a thorough code of conduct which should promote the members' ethical and responsible code of conduct.
- To enhance to level of confidence of shareholders and other stakeholders, the organizations should clarify and disclose publically the roles and accountabilitys of its executives and board of directors. Organizations are mandated to establish thorough codes to improve the transparency and independence of financial reporting. And any important material information should be disclosed to general public on time and with accuracy so that investors sitting in the market should have clear and factual information regarding organizations.

There are three main established models of corporate governance namely the Anglo-US model, Japanese model and German model. The Anglo-US model's main emphasis is on share ownership by outside investors like the individual investors and institutions. It is a well-established framework which explains the rights and roles of three main players, the management of organization, board of directors and outside shareholders. It also provides a mechanism of interaction between organization and shareholders and among different category of shareholders. The Anglo-US model's board composition is like that the executive directors are mainly the executives of corporation or the people who have significant business relationship with the corporation while the non-executive or independent directors are outsiders and have no direct association with the management.

In Japanese model the role of affiliated banks and other companies is very high in characterizing by high level of stock ownership. In this model the banking system is considered to have strong and long-term relationship with corporations. In most of the Japanese corporations, the major shareholders are insiders and their affiliates due to which insiders have more control on firm's decisions. On the

other hand, the stake of outside investors is very less and same with the case of foreign shareholding. The German model is different from both Anglo-US model and Japanese model, however it has bit similarity with Japanese model which is that in German model the bank also plays important role by having long-term interests in corporations but here bank representatives are also elected as board of directors in the corporations. Most importantly, this model is different from other models in two perspectives, one is board composition and other one is shareholders' rights. The board composition is unique in this model which is called two tier board system, which contains two level of boards in one organization, one is management board and other one is supervisory board. The management board consists of all insiders that is management or executives, while the supervisory board is representative of shareholders and employees which usually consists of independent non-executive directors. The second uniqueness is regarding voting rights restriction in German governance model, in which a voting restriction can be imposed to a certain proportion of total shareholding irrespective of shareholders' share position.

2.7.1 Corporate Governance Standards for Stock Exchange Listing Requirement

The listing requirement also includes the compliance with corporate governance code by local body of almost every market. The main elements of governance requirement by NYSE are:

- The maximum board members should be independent directors and non-executive, as this is essential for independent judgment.
- The board meeting, excluding management, should be held on a regular basis as this is essential for board effectiveness.
- Board should be organized into different committees like nomination committee, risk management committee, compensation committee, audit committee and etc.

2.7.2 Board Responsibilities and Independence

The board responsibilities defined by OECD are that the corporate governance codes should confirm the strategic direction of the company through strong monitoring of management decisions from corporate board and to ensure the accountability of board and management to shareholders. These codes guide that board is responsible for two important aspects one is advisory and other one is oversight. The advisory function deals with the board responsibility to provide consultancy to management regarding both the strategic and operational matters. The appointment of board members is based on their technical capabilities which are required to perform the role. While in the role of oversight, the board is responsible to look after the management in order to make it sure that management is securing the interest to enhance firm value (Muth and Donaldson, 1998). While doing this job the board can hire or fire the top executives like the CEO, evaluates the performance of management and devises appropriate compensation plans. The board also oversees the compliance of management with legal and regulatory requirements which can include the audit process and independence, risk management practices, financial reporting requirements for public companies and other industry based regulations. In order to achieve this overseeing objective, the board has to rely on different professionals and bodies such as external auditors, legal council, compensation consultants, financial institutions and other advisors.

The board responsibilities are quite distinct than that of management. The board of directors are required to advice the aspects related to corporate strategy but not to develop it, as it is the job of management. In the same notion the board of directors' job is to ensure the quality and integrity of financial statement but not to prepare them as preparation is the job of management. So the corporate board is not the part or extension of management rather it performs the role of governing body which is elected to represent and protect the interest of shareholders (Adams and Ferreira, 2007). The most important areas which corporate board look after deal with the firm's performance and value, risk management, future prospects and growth, and development of firm's employees.

In order to achieve the advisory and vigilant eye on management, the board of

directors should exhibit independence. The board independence means that the board members should be free from any conflict of interest, between board responsibilities and management interests, which can compromise the integral duty of members in pursuit of best interest of firm (Fama, 1980; Fama and Jensen, 1983). That's why a corporate board is considered more independent when it is constituted by majority of independent non-executive directors in which management has less or no representation. As the firm's executives should not be the part of it so the more independent board is expected to have more vigilant eye on firm's operations and decisions taken by management which is essential to control the managerial opportunisms and to enhance firm's value. The more independent corporate board provides a conducive environment for observing shareholders' interest in the firm, that's why more independent corporate board provides a sense of confidence to shareholders.

However, the board independence required by regulatory bodies may not be able to achieve the true independence. The board members who have been working with firm's management over a long time frame are likely to establish good ties with management, which may hinder their independence capacity. The individual factors are also important like board members' background, intelligence, education, experience, values and personal contacts with management. It is not necessary that highly competent board of directors always complement independence like in the case of Enron in which highly competent board of directors have been in alliance with management decisions. Klein (2002) studies the association between board independence and quality of financial reporting through earning management. The study motivates from the common perception at SEC, NYSE and NASDAQ that poor earnings quality has positive relationship with governance quality. So it reports that the boards which are more independent and out of influence of CEO tend to be stronger in overseeing the quality of financial reporting. Weisbach (1988) explores the association between monitoring of CEOs from executive directors and independent directors. The CEO resignations are more probably to happen in case of independent directors' dominated boards than in case of executive directors' dominated boards. The unexpected stock returns are

also observed in the days of announcement of CEOs resignations, which is consistent with the perception that good and independent corporate boards enhance the firm's value by removing the bad management. So, the more independent and effective boards may fire the CEOs for poor performance.

[Rosenstein and Wyatt \(1990\)](#) examine the relationship between stock price volatility in response to hiring of new independent director on board. They report significant relationship between stock price's positive reactions with the hiring of new independent director. Their study confirms the positive perception of board independence for enhancing firm value by protecting the interest of shareholders. The firms with more independent boards are also probably to use resistance strategies against takeover attempts in comparison to the firms with less independent boards ([Cotter et al., 1997](#)). Particularly they study the role of presence of independent outside directors in the time of takeover attempts. Their study reports that due to the independent boards there are higher tender offer premiums and shareholder gains which is primarily due to the presence of poison pill and takeover resistance strategies. [Krivogorsky \(2006\)](#) investigates the effect of composition of board and ownership structure on firm profitability ratios which are ROA, ROE and MTB. The study finds strong positive association between higher ratio of independent outside directors and firm profitability ratios which insists the ratio of independent directors in the board. [Liu et al. \(2015\)](#) also find consistent evidence in Chinese firms that their prevails a positive association between board independence and firm performance. In particular, they report that independent corporate boards have positive association with operating performance of firms in china and this linkage gets more stronger in case of government related firms. The association is also stronger for the firms which are having low information acquisition cost meaning that financial reporting transparency and open information environment of firms contribute positively in corporate governance efficacy in enhancing firm value.

On the other hand some studies also report that the board composition is insignificantly correlated with firm value. [Bhagat and Black \(2002\)](#) report that the corporate boards in American companies have majority of independent directors

which confirms the common belief that independent corporate boards are barometer of firm value and growth by playing its role of monitoring more rigorously. They explore the relation of proportion of board independence with various measures of performance of firm and find that low profitable firms are more inclined to increase the proportion of independent boards. While the firms with higher proportion of independent directors do not perform differently than the firms which shows that board independence do not affect the firm performance. [Fairchild and Li \(2005\)](#) explore the board efficacy depending upon the independent outside directors and find that only above average directors are associated with firms above average performance. [Fich and Shivdasani \(2006\)](#) explore the relationship of busy boards with its effectiveness. They have classified busy boards as majority of its independent outside directors are holding board memberships at three or more places, and find that independent boards which are very busy, having memberships at multiple other places, are related with inadequate monitoring and corporate governance as a whole. Due to weak corporate governance, these firms report low performance, smaller MTB, and lower association of CEO turnover based upon performance. In consistent with the results, the stock prices for these firms observe positive abnormal returns when a busy outside director leaves the corporate board, which is against to the general perception that the departure of independent outside director creates negative impact on stock prices.

2.7.3 Board Size

The size of the board is generally related with the firm size, as larger boards are observed in bigger and higher revenue based organizations. The larger boards possess more resources in comparison to smaller boards for monitoring and advisory functions. This is possible because the larger boards tend to have more specialized and diverse members which can be translated into different functional committees. The specialization and diversity in independent outside directors are very important features to oversee the management's decisions and perform the better advisory role. [Klein \(2002\)](#) reports that larger boards allocate resources in different monitoring committees by focusing on specific specialized tasks which

facilitates the discussions on various corporate issues and increases firm value. However, to maintain the larger board is not free of cost. The larger boards generate additional cost for compensation of board members and coordination cost to arrange board meetings. In addition to the costs, due to larger boards the decision making process can be slow in comparison to shorter boards because it is more easier to bring less numbers of members on consensus in comparison to larger boards. The slower decision making in larger boards is primarily due to diverse opinions, generic discussions instead of focused discussions, complexity in responsibilities, and risk averse behavior. Based upon pros and cons, it is believed that an optimal trade-off number of board size exists depending upon the size of organization such as the study of [Lipton and Lorsch \(1992\)](#) shows that the board of directors should ideally be eight to nine and their number should not exceed from ten members.

[Jensen \(1993\)](#) and [Lipton and Lorsch \(1992\)](#) explain that the large size boards are less effective in comparison to small size boards for two possible reasons. One is that for larger boards it is not easy for the board to call the regular meetings and to build the consensus quickly. Second, the motivation to control the management gets lower when board size increases because the cost of an individual director for not exercising one's diligence duty is the ratio of that individual director to total number of directors which is obviously very less. So the larger board size allows the board of director for free riding, which is in-fact very less in smaller boards. [Upadhyay and Sriram \(2011\)](#) report that board size is positively associated with information transparency and the firms with high transparent environment do not get benefits from larger boards. Overall their results show that investors think that larger board signal about effective monitoring and improves transparent information environment of the firm. [Nguyen et al. \(2014\)](#) also report that larger board enhances the value of firm. [Guest \(2009\)](#) refuses the positive association of board size with firm performance and reports that board size has negative impact on Tobin's Q and stock returns. This result confirms the perception that larger boards face the problems related to poor communication and delayed decision making which undermine the effectiveness of the boards. [Coles et al. \(2008\)](#) re-examine

the impact of board size on firm performance and they find that complex firms, having more advising requirement than simple firms, usually have larger boards comprising more independent outside directors. In-fact they report that the association of board size with the performance of firm is U- shaped which suggests that either very larger or very small board sizes are optimal and this holds with the condition of firm complexity and simplicity. [Ning et al. \(2010\)](#) also explore the optimal board size if it exists, and report that majority of US base firms maintain the board size containing eight to eleven members. And over long run the firms having small boards tend to increase their board size and the firms having larger boards tend to decrease their board size. This result shows on average significant mean reversion trend by several firms over time and it may be due to trade-off between cost and benefits of larger board size.

2.7.4 Board Meeting Frequency

The meeting frequency of the board shows the total number of annual meetings held by the board of directors. The literature suggests that board should conduct meetings on a regular basis in order to discuss the issues related to firm's activities. Generally, the firms disclose the information about frequency of meetings and attendance details in the annual reports. [Chen et al. \(2006\)](#) argue that on one side high frequency of board meetings can indicate that the board members are fully aware about firm's operations, however on the other side the board meeting frequency may also be high if a company is facing distressed situation. [Lipton and Lorsch \(1992\)](#) explore the relationship of board meeting frequency with firm performance and conclude that the boards which meet more frequently are more active and make sure that the management is doing in the best interest of shareholders. [Kamardin and Haron \(2011\)](#) also report that board meeting frequency has positive impact on the firm value, as the high meeting frequency enables boards to know more about the firm's operations and better able to perform the monitoring activities.

The linkage of board meeting frequency with firm value is not crystal clear, according to [Vafeas \(1999\)](#) there are costs and benefits attached with high board

meeting frequency, the possible costs can include managerial time, members travelling expenses, and meeting fees while the benefits can include extra monitoring and advising services by board of directors to management. According to [Vafeas \(1999\)](#) if a firm is overemphasizing the cost of board meetings and arranges fewer meetings than necessary then the board meeting frequency enhances the value of the firm performance. While on the other hand, if a firm is overemphasizing the benefits of high board meeting frequency, then high meeting frequency is negatively associated with firm value. So the agency conflict can be minimized if a firm is able to set the optimal board meeting frequency depending upon its environment. However, [Salleh and Othman \(2016\)](#) report that board meeting has positive association with firm value, showing that the board meetings can be used to monitor the management's activities more effectively by extending the board's access on the firm operations in details.

2.7.5 Corporate Governance, Information Environment and Stock Price Synchronicity

Share prices in emerging markets are likely to be discounted due to investors' perceptions about weak corporate governance mechanisms. [Newell and Wilson \(2002\)](#) report in a survey that the firm's corporate governance mechanism is very important factor for investors, so they are ready to give 25% extra premium for strongly governed firms. Because due to agency conflict, investors are concerned regarding the firm's financial information environment and the firms, where corporate governance and internal control systems are weak, become more vulnerable to information asymmetry with reduced disclosure and financial reporting quality. [Haß et al. \(2014\)](#) explore the relationship of corporate governance with the firm's information environment, by constructing the firm level corporate governance index. To measure the firm's information environment they take different proxies such as the analyst's following for a firm's share, the accuracy of analysts' forecast, and their forecast's dispersion. They find that better governance mechanism in a firm is positively related with greater analysts' following for firm's share and more accurate and informative forecasts.

Gul and Qiu (2002) explore the impact of country related governance, legal protection and firm level corporate governance on firm's information asymmetry. The information asymmetry exists when one party, primarily the management or agents, possesses superior information than other party, the shareholders or principal. The results find that the countries where investors' property rights are protected by law, and firm's corporate governance practices are strong, low information asymmetry is observed in those countries resulting into low agency conflict. Veronica and Bachtiar (2005) investigate the impact of firm's corporate governance practices on information asymmetry which results into earnings management preferences. They report the firm's corporate governance has negative impact on information asymmetry, as due to strong governance and proper internal control mechanisms, the quality of information disclosures increase which contributes towards the informational environment of the firm and decreases the problem of asymmetry of information.

Morck et al. (2000) suggest that firm-specific information is essential for reducing the investors' risk, as when they get more reliable financial information they get more aware of the firm and are able to take better decisions. Durnev et al. (2004) argue that the effective allocation of resources in the market depends upon the *SPI* which is achieved when the economic information is incorporated in stock prices more quickly. As mentioned, the better governance mechanisms in a firm are key essential which positively contributes towards the transparent information environment by mitigating different types of expropriation. So, the improved corporate governance mechanisms in a firm result into information transparency and better information environment which facilitate the informed arbitragers to collect more firm level information. This improved information environment, due to good corporate governance, ultimately results into incorporation of more firm level information and higher level of SPS.

H2: Board Independence is negatively associated with stock price synchronicity

H3: Board Meeting Frequency is negatively associated with stock price synchronicity.

H4: Board Size is negatively associated with stock price synchronicity.

2.8 Audit Committee

The audit committee is one of the most important committees of board of directors having the primary job of overseeing the financial reporting and other financial disclosures. In U.S and other capital markets, it is mandatory for all firms to maintain their internal audit committees, composed of competent and skilled members, to get them listed in stock exchanges. The audit committees usually maintain the communication linkage with firm's chief financial officer and controller of the firm having different important roles including overseeing the process of financial reporting and disclosure, different accounting policies, external auditors, risk management policies of firm, independence of external auditor, regulatory compliance, internal control process and performance of internal audit. The audit committee also possesses the authority to investigate the cases related to problematic accounting practices or any other related serious issues. According to Sarbanes Oxley Act, the audit committee must contain minimum of three members who must have financial literate by having financial expert as chairman. The committee members may be changed over time with respect to personnel's movement or due to change in nature of assignments. In general, the audit committee assists the board of directors in order to fulfill the objectives of corporate governance, with true essence, from the perspective of internal control and risk management practices of management which is integral in the process to fulfill the interest of shareholders.

2.8.1 Audit Committee Independence

The audit independence is defined as the proportion of external directors to total directors in the audit committee (Beasley, 1996). According to NASDAQ and NYSE guidelines the audit committee will be independent if it is comprised of 100% independent external member, because for independence the audit committee has to be entirely free from any managerial influence. While on the other hand, Dechow et al. (1996) demonstrate that that if independent external directors are

more than fifty percent then an audit committee can be classified as an independent committee as the majority rule works and majority of independent outside directors take control with them.

The independent audit committee can be associated with effectiveness. [Klein \(2002\)](#) explores the relationship between audit committee independence and other board features with earnings management and report that independence of audit committee is positively linked with level of firm's abnormal accruals. The result shows that audit committee independence is essential for better functioning of audit committee with a purpose to oversee the internal control and risk management practices more effectively. This result is further supported as significant increase is found in abnormal accruals when there is reduction in audit committee independence. [Klein \(2002\)](#) reports the non-linear relationship between independence of audit committee and earnings manipulation. The finding states that the significant relationship only in the case when audit committee does not contain majority of independent outside directors. Furthermore, the study does not find the significant results between the stringent or tight audit independence requirement of 100% outside independent directors and earnings manipulation.

[Bedard et al. \(2004\)](#) explore the impact of audit committee independence on firm's financial information quality and report that independent audit committee decreases the aggressive earnings management practices. These results are same for income increasing and income decreasing earnings management practices, which show that members of audit committee are concerned with both types of earnings management practices and do not demonstrate the asymmetric loss function.

[Zhang et al. \(2007\)](#) explore the effect of audit quality and auditor independence on firm's disclosure of internal control weaknesses particularly after the Sarbanes-Oxley Act. They have applied the conditional logit analysis on firms with and without internal control weaknesses and find that the more firms are likely to be identified with internal control weaknesses if their audit committees possess less financial expertise, more independent auditors and more recent auditor changes.

[Abbott et al. \(2004\)](#) investigate the influence of audit committee characteristics

on financial restatements, and report that independent audit committee and frequency of meetings by the committee decrease the chances of occurrence of financial restatements. To get the robustness of results, they also find the similar results on fraud and no-fraud firms. The results show that the audit committee independence strengthens the audit committee's monitoring and oversight role in financial reporting process. [Pomeroy and Thornton \(2008\)](#) conduct the meta analysis to analyze the impact of independent audit committee on quality of financial reporting. They report three important findings; one is that diverse proxies of financial reporting quality used in the literature of audit committee independence explain only half of the variation in results. Second, the independent audit committees are more effective in enhancing the audit quality than to improve the quality of financial statements. The audit committee independence can also reduce the quality of financial statements by emphasizing the need of financial restatements and abnormal accruals. And third, the quality of audit and quality of financial statements are complementary to financial reporting quality. [Shafe and Zainal \(2016\)](#) conduct the study to investigate the influence of various features of audit committee on financial restatements in the context of Malaysia. They find audit committee independence reduces the chances of financial restatements which shows that the audit committee independence has vital role in effective monitoring perspectives.

2.8.2 Audit Committee Size

The number of directors in an audit committee is considered as an indication that how much resources have been allocated to audit committee. According to United Kingdom Corporate Governance Combined Code, there should be at least three members in the audit committee. The reasonable audit committee size is required in order to fulfill the job of overseeing and advising services related to firm's financial information environment and risk management practices. However, there are mixed results as [Anderson et al. \(2004\)](#) discuss that as debt providers are more concerned with debt covenants so board characteristics are important in this regard. They have reported adverse association between cost of debt financing and audit committee size which shows that bigger audit committee can oversee

and make sure the quality of financial reporting which reduces the information asymmetry. [Carcello and Neal \(2000\)](#) find no linkage between audit committee size and chances to receive going concern reports. [Beasley \(1996\)](#) suggests that the smaller audit committees are more effective than the larger audit committees as the effectiveness increases if the audit committees are not too large. Based upon this analogy the [Carcello and Neal \(2003\)](#) report no linkage of audit committee size with the management's optimism of financial disclosures. [Bedard et al. \(2004\)](#) explore the relationship between different measures of earnings management and audit committee size and report the insignificant relationship between audit committee size and firm's inclination to aggressive earnings management practices. The same type of results have been reported by [Baxter and Cotter \(2009\)](#), as they also find no significant impact of audit committee size on firm's earnings quality measured by multiple methods.

Based upon the empirical evidence in literature, the association between audit committee size and its effectiveness or chances of negative events is not clear.

2.8.3 Audit Committee Meeting Frequency

The common perception with the meeting frequency is linked with the committee's efficiency. As the higher number of meetings held in a year means that the committee is more active and doing its job of monitoring more vigilantly [Xie et al. \(2003\)](#). They find the negative link with the board and audit committee activity, commonly measured as meeting frequency, with the level of discretionary accruals. This finding shows that the audit committee meeting frequency is positively associated with the audit committee activity of monitoring the aspects related to financial reporting quality and risk management practices of the firm. [Sharma et al. \(2009\)](#) explore the association of audit committee meeting frequency with several important factors with an assumption that frequency of audit committee meeting is positively related with audit activity. The results report that meeting frequency of audit committee is adversely linked with multiple directorship and audit committee independence. The audit quality, measured by audit by big 4 auditors, has negative impact on audit committee meeting frequency. The other

variables with negative association with audit committee meeting frequency include the firm's growth opportunity and regulated industry. However, the audit committee size and audit committee meeting frequency is positively associated. [Abbott et al. \(2003\)](#) explore the relationship between audit fee and audit committee features. According to their hypothesis, the audit committee meeting frequency should be positively associated with the audit fee, however in contrary to conventional analogy the results report the negative association between audit committee fee and audit meeting frequency. The results show that higher ratio of meetings held by the committee can also be due to significant problems in the firm related to internal control. [Zhang et al. \(2007\)](#) take the dummy variable to measure the internal control weakness and find the positive association between audit committee meeting frequency and dummy variable, showing that audit committee meeting frequency is negatively associated with its efficiency. So based upon the mixed results regarding audit committee meeting frequency, it is not possible to draw the directional hypothesis.

2.8.4 Audit Committee, Information Environment and Stock Price Synchronicity

As discussed, the audit committee is integral for ensuring financial reporting quality, financial disclosures and internal control. It is mandatory for firms in developed financial markets to construct the audit committees, from the financially skilled members. The main function of audit committee is to look after the aspects related to financial reports and other financial disclosures, internal and external audit, accounting policies, risk management and compliance with regulatory bodies. So the audit committee is most relevant to contribute towards the information environment and to decrease the information asymmetry.

The presence of an audit committee in a firm signals the firm's efforts to reduce the information asymmetry ([Varici, 2013](#)). The audit committee characteristics are important, in this regard, to judge the quality of firm's information environment. [Vafeas \(2005\)](#) explores that how audit committee influence the financial reporting quality and finds the significant relationship between audit committee

and firm's earning quality which confirms the application of agency theory. For instance, the earnings quality can be improved, if expert accountants and financial analysts sit in the audit committee then firm's audit quality and financial management practices will improve automatically. [El-Mahdy et al. \(2013\)](#) examine the relationship between technical expertise an audit committee possesses and independence of audit committee and ultimately on the information asymmetry in U.S market. They report the negative relationship between expertise of audit committee and information asymmetry. The audit committee independence is also found negatively associated with information asymmetry. [Baxter and Cotter \(2009\)](#) examine the relationship between audit committee and financial reporting quality and finds the negative relation between formation of audit committee and financial reporting quality. The result shows that formation of audit committee significantly creates impact on firm's information environment by increasing both the quality and amount of disclosures.

The literatures suggests that the presence of audit committee in a firm improves the information environment which motivates the informed arbitragers to gather more credible firm level information and incorporate more firm level information in share prices, which ultimately should increase the *SPI* and decrease stock price systematic volatility.

H5: Audit Committee Independence is negatively associated with stock price synchronicity.

H6: Audit Committee Meeting Frequency is negatively associated with stock price synchronicity.

H7: Audit Committee Size is negatively associated with stock price synchronicity.

2.9 Financial Constraints

In perfect capital markets, the irrelevance proposition of Modigliani and Miller suggests that any composition of firm's capital structure is irrelevant, and have no relationship with the value of the firm. It takes the analogy of an apple pie, which is that it does not create impact on apple value irrespective of any composition in

which it is distributed. With the same analogy, it does not create value for the firm irrespective of its composition of capital structure. This proposition assumes that the firm's internal source of financing and external source of financing is perfect substitute to each other. This analogy holds with the assumption that the firm's financing and investing decision are totally independent to each other, that's why firm's financing composition have no influence over the value of assets.

Though, in real world the capital markets are not perfectly efficient. The frictions, taxes and transaction costs, in the market and asymmetries of information between agents (managers) and shareholders (principal) make external source of capital more costly in comparison to internal source of capital. Due to information asymmetry, imperfect economic information available in financial markets significantly affects the investors' decision making process and deviates from optimal decisions. And due to less optimal decision making, the investment finance also shrinks from less favorable options to unavailability. This situation creates difficulties for firms to raise capital from external sources and restrain them to rely more on internal source, which increases the importance of internal source. At firm level, the firm's information asymmetry is integral for the firm in the context of financial constraints, as in case of information asymmetry it is difficult and costly for the firm to raise capital from external source. According to [Kaplan and Zingales \(1997\)](#), the firms are facing financial constraints if there is a wedge between internal and external finance costs. According to their definition almost all firms face some extent of financial constraints, which is further elaborated to transaction cost. And all firms bear some extent of transaction cost, but this definition categorizes firms based upon the cost they bear. As the firm will be more financially constraint if it faces high difference in cost of internally and externally generated financing, and vice versa. Generally, the firms face less financial constraints which possess more liquid assets and carry more net worth of assets.

The discussion about the financial constraints is started first time by [Fazzari et al. \(1988\)](#) which is known as FHP index. Their study considers the sample of 442 manufacturing firms ranging from 1970 to 1984 and conclude that the firm reporting high payout ratios and low cash flow sensitivity face low financial constraints

and suggests payout ratio as best proxy for judging the financially constraints firms. Another major contribution in this field is made by [Kaplan and Zingales \(1997\)](#), they challenge the finding of FHP index by mentioning that neither low dividend nor sensitivity of cash-flows explain the financial constraints. Rather, [Kaplan and Zingales \(1997\)](#) classify the firms on the basis of five variables; operating cash, cash in hand, payout ratio, price to book ratio and fraction of leverage in the capital structure to analyze the level of financial constraints. The firms that score high in this the KZ index are subject to face high financial constraints and vice versa.

[Kadapakkam et al. \(1998\)](#) also challenge the findings of [Fazzari et al. \(1988\)](#) by interpreting their evidence on the basis of firm size not on payout ratio. They explain that small firms are more sensitive towards the cash flows than the large firms because the smaller firms are subject to have less internal financing and high transaction cost for raising external financing. In addition, the small firms also face higher agency and information asymmetry problems while the larger firms have low external financing cost and disperse ownership structure which can reduce the agency conflict. In short, their finding shows that the firms with larger size are subject to less financial constraints than their counterpart small firms. Another important approach used for financial constraints is the usage of credit rating. The motivation behind the adoption of this approach is that the unrated firms are assumed to have limited or no access on the capital market ([Faulkender and Petersen, 2005](#)), because firms that face financial constraints have low quality of financial reporting ([Kurt, 2017](#)). When the quality of financial reporting will not be satisfactory, the financial institutions will be reluctant to offer the funds or may offer under special monitoring.

This claim can also be justified by the study of [Ding et al. \(2016\)](#) that the firms with better quality of earnings have more access on external financing at lower cost than the firms with low earnings quality. [Dhaliwal et al. \(2011\)](#) examine the impact of firm's access to capital markets on extent to which a firm discloses information in general public, and find that the firms having higher disclosures have better access towards external market for raising funds. These studies also support

the implications of Agency model of [Jensen and Meckling \(1976\)](#), Signaling Theory of [Myers and Majluf \(1984\)](#) and Information Asymmetry as according to these theories information disclosed by the firms remove the information wedge between managers and shareholders and positively contribute towards the fair valuation of the firms.

2.9.1 Financial Constraints and Stock Price Synchronicity

[Mansour \(2014\)](#) explores the relationship between financial constraints and information asymmetry by hypothesizing that information asymmetry between insiders and outsiders of a firm raises the wedge between firm's cost of internal and external financing, which ultimately imbalances the substitute of internal and external financing. He reports that cash flow sensitivity to investment significantly increases as the firm's information asymmetry increases, and this information asymmetry is created due to firm's restrictions to external financing opportunities. So the result shows that financially constrained firms generally have more information asymmetry and low financial reporting quality ([Kurt, 2017](#)). According to [Kaplan and Zingales \(1997\)](#) almost all firms face some extent of financial constraints which can be seen in wedge between their internal and external cost of financing. So it is imperative to study the firm's financial constraints level because it has direct link with the firm's information environment ([Kurt, 2017](#)).

[Dhaliwal et al. \(2011\)](#) report the impact of firm's level of financial constraints on firm's public financial disclosures and confirm that the financial constraints significantly impair the information environment of the firm and translate into high *SPS* or low *SPI*. So based upon the literature, the study expects that firm's financial constraints should have positive impact on *SPS*. The study measures the financial constraints from two most common measures used in the literature, one is KZ index and the other one is Interest Coverage ratio.

H8: KZ Index (proxy of Financial Constraints) is positively associated with stock price synchronicity.

H9: Interest Coverage (proxy of Financial Constraints) is negatively associated with stock price synchronicity.

2.10 Enterprise Risk Management

Enterprise Risk Management deals with the management of overall risk of a firm. It is considered as the latest name to the Business Risk. In addition to the business risk it is also named as integrated risk management, strategic risk management, holistic risk management, business risk management and corporate risk management [D-Arcy and Brogan \(2001\)](#) Enterprise Risk Management (ERM). The Casualty Actuarial Society (CAS) defines the ERM as:

The process by which organizations in all industries assess, control, exploit, finance and monitor risks from all sources for the purpose of increasing the organization's short and long term value to its stakeholders.

The financial risk deals with the fluctuations in the financial markets, interest rates liquidity, credit rate and exchange rate risks. The operational risk of a business covers the situations concerning the satisfaction of customers, product development, leadership, information technology and the management fraud. Strategic risk includes the aspects concerning process completion, technological innovation and development, environmental, political and regulatory complications. However ERM deals the overall risks of an organization collectively rather considering them independently.

The recent major financial collapses such as of Enron, Sunbeam, WorldCom and others demand basic developments in accounting and risk management practices in the organizations. The further subprime mortgage crisis has led to the awareness to establish the good financial risk management mechanism. In quantitative risk management techniques the focus is to measure and manage the specific risks like the financial, liquidity, credit and market risks. While the individual risks are generally not totally independent rather integrated with other aspects also ([Miller, 1992](#)). According to him it is important to see the integrated and holistic view of all the risks of an organization rather to see each risk independently, because every part of a business is linked with other parts. Recently the policy makers are also considering the corporate governance practices in the combination with the comprehensive risk management frameworks. At organizations mainly the risk management is put at top of the agenda to create the relevant structures.

Sarbanes-Oxley act is considered one of supporting actions in this regard. Different actions in organizations can also be taken supporting in this regard like the establishment of dedicated risk committee (RC) or assignment a particular corporate risk officer (CRO) who manages over all risks of an organization (Sabato, 2010).

2.10.1 Enterprise Risk Management and Stock Price Synchronicity

Quon et al. (2012) explore the relationship between ERM and firm performance in a sense that now, due to high volatility in business world, the traditional risk management practices are not sufficient to handle this increased volatility. This situation creates the need for integrated risk management approach such as ERM. And traditionally, ERM has been considered in the context of better corporate governance and internal control, and very little in the context of firm performance. Quon et al. (2012) find that the disclosure of ERM practices have no impact on firm performance. Gordon et al. (2009) also discuss the importance of holistic risk management system, ERM, due to paradigm shift in business world. There is a growing understanding to the argument that the execution of ERM practices is positively associated with firm performance. They claim that the impact of ERM on firm performance depends upon the match of ERM with five factors which are firm size, complexity, environmental uncertainty, board of directors' monitoring and industry competition. The results support the hypothesis and find the position association between ERM and firm performance in contingency with association of ERM with these five factors, and advise that the firms should pay attention in application of ERM practices in combination with contextual factors. McShane et al. (2011) report the insignificant association between firm's higher ERM rating provided by standard and poor and firm performance and in contrary to perception they find positive relationship between standard risk management practices and firm performance. Irrespective of mixed results of ERM implementation on firm value and performance, it is obvious to understand that risk management practices of any type, traditional or holistic, improve the information

environment of the firm. Due to its common perception, of improved information environment, the market participants also consider it as a positive step by the firm in the context of reducing the information asymmetry, and minimizing the agency conflict. As according to [Nocco and Stulz \(2006\)](#) the firm implementing ERM model creates value for its shareholders through enabling its senior management to measure and manage the risk and return tradeoff which is faced by the entire firm at all levels. So it is obvious to consider that ERM practices in a firm improve the information environment by decreasing the information asymmetry. This ultimately increases the investors' confidence and motivates the informed arbitragers to gather and analyze the firm level information which is essential to increase the *SPI*. So it is hypothesized that firms which are implementing the ERM practices should have more informed stock prices and low *SPS*.

H10: Corporate Risk Officer is negatively associated with stock price synchronicity.

H11: Dedicated Risk Committee is negatively associated with stock price synchronicity.

2.11 Audit Quality and Stock Price Synchronicity

The job of auditors is to make sure the reliability of financial reporting and other economic information which a firm provides to public investors. The high-quality audited reports should exhibit more credibility and transparency. The International Auditing and Assurance Standards Board (IAASB), provides the auditing standards globally in order to build the trust of public investors on the company financial reports. The audit quality is defined as the process which should include the rigorous audit by skeptic professionals in compliance with audit standards. [Becker et al. \(1998\)](#) explore the impact of audit quality (Big 6 auditors and their affiliates) on firm's earnings management practices (discretionary accruals). It is important to see this relationship as the common perception regarding audit quality is linked as a mechanism which challenges the management's bad accounting practices and ensures the reporting quality which discourages the overstatement

of earnings. The results confirm the hypothesis that the firm audited by the big 6 auditor and their affiliates report low discretionary accruals as compared to their counterpart firms audited by non-big 4 auditors, which confirm that the audit by the top audit firms and their affiliates enhances the firm's audit quality and financial reporting quality.

Francis and Yu (2009) explore the relationship between big four auditor's office size with audit quality with an assumption that the auditors possessing big offices should have greater in-house experience and opportunities for overseeing the audits process. They find the consistent results with their hypothesis that bigger audit offices contributes positively towards the quality of audit, and those auditors mostly issue the going concern audit reports. In addition, the clients of such auditors are less inclined towards aggressive earnings management behavior which confirms that audit quality is positively associated with more transparent, stable and credible financial reporting. Krishnan (2003) discusses that due to accrual based accounting the management can opt for aggressive accruals practices which significantly impair the *SPI* and that obviously the outside investors cannot control such aggressive practices by management. Auditing, in this regard, has significant role in alleviating the agency cost by restricting the management from opportunistic behavior. So Krishnan (2003) explores the association between audit quality and firm's opportunistic behavior towards reporting of accruals and find the positive relation between discretionary accruals and stock returns for the firms depicting high audit quality, measured by presence of top 6 audit firms. Furthermore, the behavior of discretionary accruals is more aligned with firm's future performance for firms with high audit quality. Findings depict that high audit quality is linked with more realistic discretionary accruals instead of aggressive accruals in response to opportunistic behavior of management. So, the audit quality play imperative role in improving the information environment and financial reporting quality by lowering the problem of information asymmetry.

Gul et al. (2010) explore the linkage of audit quality (Big 4 audit firms) with SPS, and find that the audit by the big 4 auditors lessen the SPS. This is because the audit quality improves the firm's information environment which encourages

the informed arbitragers to gather and analyze the firm level information which ultimately increases the *SPI*. So the firms which are audited by the big 4 auditors depict more firm level information rather the market wide information, which results into decline in *SPS*. So following this literature, it is expected that the stocks of firms having top, big four, auditors should reflect more informativeness and low *SPS*.

H12: Audit Quality is negatively associated with stock price synchronicity.

2.12 Firm Age and Stock Price Synchronicity

The age of a firm is generally linked with the maturity in firm's strategic decision making. As the firm gets older, it builds more experience and repute in every aspect and generally becomes able to raise more financing from capital market in order to avail the opportunities of good NPV projects. So as the firm becomes older, it should become more profitable due to availability of further growth opportunities and access to capital from public. However, in literature there are mixed results of firm age with its productivity and profitability. [Akben-Selcuk et al. \(2016\)](#) explores the association between firm age and profitability and finds the negative and convex relationship which means that younger firms gradually become less profitable but they become again profitable as they get older.

[Majumdar \(1997\)](#) investigates the impact of age of the firm on the profitability and productivity of the firm find the negative relationship between age of the firm and profitability and positive association between age of the firm and productivity. The result shows that older firms become more efficient but less profitable due to increased cost. [Loderer \(2010\)](#) also explores the association between age of the firm and performance and find that as the firms go older their profitability tends to decline. There are different possible explanations of this negative impact of age of the firm on profitability of the firm which are that the older firms become more rigid due to success factor in comparison to younger firms and less efficient in managing resources in comparison to industry peers due to significant increase in cost, slower growth rates, reduced research and development expenditures, older

and less efficient assets. Additionally, the results find that in older firms the corporate governance quality decreases gradually, board size becomes larger and the CEO compensation increases. The evidence in the literature negates the common perception of positive effect of age of the firm on firm performance and with other related aspects like governance quality. As the corporate governance quality is integral to reduce the firm's agency conflict and improves the information environment, so if firm age is high then it is expected to have the high *SPS*. So, the study expects the positive relationship between firm age and *SPS*.

H13: Firm Age is positively associated with stock price synchronicity.

2.13 Government Ownership and Stock Price Synchronicity

The government ownership in firm's ownership structure means that the state or government has significant control in the firm's strategic decisions, through full or partial ownership proportion in the firm. [Huang and Xiao \(2012\)](#) explore the impact of government ownership on firm performance and find that the government helps the firms to reduce its cost of capital by providing the facility of policy lending. The excess employment is found in government owned companies and they report the negative net effect of government ownership on firm performance. [Tran et al. \(2014\)](#) also assume that government ownership is negatively associated with the performance of the firm with a negative net effect as an implication of game theoretical model. They run the static and dynamic models to test the hypothesis and find the negative relationship between state ownership and firm profitability. Furthermore, they also find the adverse relationship between government ownership and labor productivity. [Borisova et al. \(2012\)](#) discuss the increased demand of government ownership in companies after the financial crisis of 2008, and explore the impact of government ownership on firm's corporate governance to find out the impact of this increased demand of government ownership in private companies. The findings describe that government ownership negatively influence the firm's corporate governance. In addition, the negative relationship is observed in civil

law countries while the relationship is positive in common law countries.

Sun and Tong (2003) explore the impact of government ownership on firm performance in the context of China as transitional economy. The common perception is that government ownership has, most of the time, adverse impact on firm performance. The findings describe that, in partially state-owned firms, the government ownership contributes positively towards the firm performance, and the relationship is found non-linear. In addition it is found that too much government ownership is also bad for the firms and same is the case in too little government ownership. Based upon the mixed evidence of government ownership, which is more tilted to adverse impact on firm performance, firm value and corporate governance, it is assumed to have adverse impact of government ownership on firm's corporate governance and information environment which is negatively linked with the stock's informativeness.

H14: Government Ownership is positively associated with stock price synchronicity.

2.14 World governance Indicators and Stock Price Synchronicity

World Governance Indicators (WGI) is provided by World Bank which capture the six dimensions of an economy including: VA, PS and AV, GE, RQ, ROL and COC. These indicators are developed through intensive surveys from the views of organizations, citizens, expert surveys, think tanks and non-governmental institutions (World Bank, 2016). These six indicators are just like the other formal economic indicators such as GDP, GNP and CPI, however WGI depicts the detailed picture regarding a country's other qualitative aspects like the effectiveness of government, rule of law and level of political instability. These are important from investors' point of view as investors feel more confident in a market where investors' property rights are protected through rule of law and where political stability is high. Investors see political stability from the dimension of stability in government policies and instability in political situation leads to instability in

government policies which is taken as risky for investors. So the investors avoid to enter in such markets where political instability is high. All the six dimensions are related to investor's considerations for their decision making, and the country's information environment. The better country governance indicators are directly linked with a country's information environment which means that if a country's governance situation is good then investors' property rights will be protected, manipulations by key players in financial markets will be less, regulatory institutions will be strong and free from influence, and companies will be enforced to disseminate the complete and credible disclosures. This situation improves the information environment significantly as the investors and arbitragers will feel confident and motivated to collect the firm-specific information and take decisions accordingly which improves the *SPI* and reduces *SPS* or market wide movement. [Morck et al. \(2000\)](#) dig out the role of economic development in the context of investors' property rights and political instability and argue that in poor economies investors' property rights are less protected and observe more political rumors. This condition makes the informed arbitrage less attractive, which ultimately discourages the investors and arbitragers to gather firm-specific information and rely more on market specific information which increases the *SPS* and decreases the *SPI*. [Eun et al. \(2015\)](#) take good government index developed by [Kaufmann et al. \(2009\)](#), which measures the effectiveness of the state and control of corruption. Good government index is taken by them with the same analogy of a country's information environment and investors' property rights protection, as increase in the value of index means better governance situation of a country which leads to more informative stock prices. [Dasgupta et al. \(2010\)](#) also take the good governance index developed by [Kaufmann et al. \(2004\)](#) in the same context of country's information environment. So based upon the literature, the study uses more detailed indicator, WGI, in order to measure a country's governance situation by hypothesizing that better country's governance situation significantly improves the information environment of a country and provides protection to its investors. This improved information environment of a country motivates its public investors and arbitragers to engage in more informed trade which should increase the *SPI*

and decrease the *SPS*.

H16: World Governance Indicators (WGI) are negatively associated with stock price synchronicity.

2.15 KOF Globalization Index

The study also explores the impact of KOF economic globalization index and *SPS*. The globalization of a country is an important indicator because it is directly linked with the economic growth of a country. The economic globalization deals with the level of trade which a country is doing in international market, foreign direct investment and portfolio investment which a country receives from foreign investors, income payments to foreign nationals and low trade restrictions. All these aspects are directly or indirectly related with the GDP of a country. According to [Eun et al. \(2015\)](#); [Jin and Myers \(2006\)](#); [Morck et al. \(2000\)](#) a country's economic development is positively linked with *SPI* because developed countries exhibit adequate security of investors' property rights, rule of law and institutional development. The economic development significantly motivates the arbitragers and public investors to gather and analyze the firm-specific information and take informed decisions which decrease the *SPS* ([Morck et al., 2000](#)). So the study expects the positive association between KOF globalization index and *SPI* or negative association between KOF globalization index and *SPS*.

H17: KOF Globalization Index is negatively associated with stock price synchronicity.

2.16 Culture and Stock Price Synchronicity

In addition to economic indicators, like per capita GDP, institutional development, rule of law, investors' property rights protection, the informal structures of a country also matters a lot. [North \(1990\)](#) argues that although formal rules are important however the informal structures like traditions, cultures and values of a society are deeply penetrated in a society and ultimately in the decision making

processes of individuals. In psychology and management sciences the impact of culture on individuals' behaviors has very well explored, and same like in behavioral finance impact of different biases and anomalies have been explored on stock price movements. Using the same analogy, the cultural dimensions can also have impact on the stock price co-movements. Eun et al. (2015) explore the impact of cultural dimensions that are relevant to investors' trading behaviors on *SPS*. First dimension is tightness vs looseness, which deals with the society's tolerance to accept the diversity from international cultures. In culturally tight countries more homogeneity is observed in individual behaviors which causes positive correlation between investors' buying and selling decisions in stock markets Gelfand et al. (2006). This positive correlation results into higher stock price co-movements, which increases *SPS*.

The second dimension taken by Eun et al. (2015) is individualism vs collectivism, as the tightness vs looseness deals with the external constraints while the individualism vs collectivism deals with the internal attributes of individuals. The investors in individualistic countries are like to be more confident in their information collection and analyzing ability and they are less concerned what others individuals and groups are thinking about underlying investment's prospects (Titman et al., 2010). While in collectivistic culture, individuals are more inclined to the groups' opinion than their own view, and likely to follow the general trading pattern. Thus in individualistic culture people are putting efforts to gather and analyze the firm-specific information by themselves rather to follow the herding behavior which ultimately increases the capitalization of firm level information in stock prices and so stock prices become more informative. Due to high correlation in trading practices in tight cultures, Eun et al. (2015) report high information asymmetry and more opaque information environment in these markets. Contrary to this, in individualistic cultures, the information environment is found more transparent which motivates individuals to gather and analyze the firm level information individually which increases the *SPI*. So, higher *SPS* is observed in tight cultures in comparison to loose cultures while low *SPS* is observed in individualistic cultures in comparison to collectivistic cultures (Eun et al., 2015).

The study takes three culture dimension, individualism vs collectivism, power distance index and uncertainty avoidance. As mentioned above, the individualism vs collectivism is anticipated to exhibit negative association with *SPS*. The power distance index is expected to have positive association with *SPS* because in high power distance index culture the people show acceptance with secrecy and concentration of information according to the power hierarchy (Hope, 2003). And due to concentration of power and information secrecy with power hierarchy, the public disclosures are expected to be less in high power distance index societies. This low level of public disclosures create the information asymmetry reduces the relative amount of information content in stock prices which leads to high stock price co-movement with market-wide variations. In high uncertainty avoidance society, managers and general public become uncomfortable with the uncertainty so they become conservative in dissemination of disclosures which are on their discretion (Jaggi and Low, 2000). This low level of disclosures also leads to the poor information environment in the high uncertainty index society which leads to increase in *SPS*. So this study expects the positive relationship between uncertainty avoidance and *SPS*.

H18: Individualism is negatively associated with stock price synchronicity.

H19: Power Distance Index is positively associated with stock price synchronicity.

H20: Uncertainty Avoidance is positively associated with stock price synchronicity.

2.17 Hypothesis

H1: Voluntary Disclosure is negatively associated with stock price synchronicity.

H2: Board Independence is negatively associated with stock price synchronicity

H3: Board Meeting Frequency is negatively associated with stock price synchronicity.

H4: Board Size is negatively associated with stock price synchronicity.

H5: Audit Committee Independence is negatively associated with stock price synchronicity.

H6: Audit Committee Meeting Frequency is negatively associated with stock price

synchronicity.

H7: Audit Committee Size is negatively associated with stock price synchronicity.

H8: KZ Index (proxy of Financial Constraints) is positively associated with stock price synchronicity.

H9: Interest Coverage (proxy of Financial Constraints) is negatively associated with stock price synchronicity.

H10: Audit Quality is negatively associated with stock price synchronicity.

H11: Corporate Risk Officer is negatively associated with stock price synchronicity.

H12: Dedicated Risk Committee is negatively associated with stock price synchronicity.

H13: Firm Age is positively associated with stock price synchronicity.

H14: Government Ownership is positively associated with stock price synchronicity.

H15: Stock price synchronicity is significantly different in Developed, Emerging and Developing markets.

H16: World Governance Indicators (WGI) are negatively associated with stock price synchronicity.

H17: KOF Globalization Index is negatively associated with stock price synchronicity.

H18: Individualism is negatively associated with stock price synchronicity.

H19: Power Distance Index is positively associated with stock price synchronicity.

H20: Uncertainty Avoidance is positively associated with stock price synchronicity.

Chapter 3

Research Methodology

3.1 Population and Sample

The study takes sample from 15 markets which are classified into three categories, developed, emerging and developing markets. Five markets are selected from each category, which are given below:

Developed Markets

United States

United Kingdom

Canada

Switzerland

France

Emerging Markets

Brazil

Russia

India

South Africa

Malaysia

Developing Markets

South Korea

Philippines

Pakistan

Indonesia

Mexico

The sample countries, from each category, have been selected based upon the level of GDP and availability of data in open databases. The selection of developed markets are from the list of G10 economies, as G10 economies are leading developed economies, while the selection of emerging markets are from the group of BRICS except China (due to unavailability of data in open databases) and the selection of emerging markets are from the list of Next-11 economies as these are the leading developing economies which are potential candidates for emerging group. The reason for selecting markets from these three groups is that according to [Eun et al. \(2015\)](#); [Jin and Myers \(2006\)](#); [Morck et al. \(2000\)](#), the stocks are more informative in developed countries in comparison to emerging countries because in developed markets investors' rights are protected, institutions are developed and rule of law prevails which motivate the individual investors and arbitragers to gather and process the firm-specific information and take their decisions accordingly. So the economic development and improved information environment build the investors' confidence and motivate them to take their decisions based on intrinsic factors of stocks rather the industry or market-wide factors. Based upon their discussion, the study investigates the *SPI* in the markets belonging three regions.

The stock prices are collected on weekly basis. The selection criteria of [Eun et al. \(2015\)](#); [Jin and Myers \(2006\)](#); [Morck et al. \(2000\)](#), is followed for the appropriate selection of sample. A stock is considered valid in the data set if it is traded at least 30 weeks in a particular year. And for a market to be valid in the data set, it must have 25 actively traded stocks in a year. So based upon the standard sample procedure defined in literature, 30 actively traded stocks are selected from each of 15 markets, which comprise 450 stocks. And from each market top 30 capitalized stocks are selected. Due to unavailability of databases like DataStream, Wold-Scope or Compustat, the study relies on open sources for firm-specific data which are Yahoo Finance, Google Finance, Investing.com, Morningstar, Financial Times and companies' annual reports, SEC filing, form 10K, and companies' websites.

This limitation restricts the study to take sample of 8 years from 2009 to 2016 (1st Jul, 2009–30th Jun, 2017).

3.2 Capital Asset Pricing Model and Stock Price Synchronicity

The CAPM is a stock pricing model which explains that there are two types of risks, one is systematic risk and other is unsystematic risk. The systematic risk is also known as market risk which means that it is caused by a system like the over-all market risk, inflation risk, exchange rate risk, interest rate risk, political risk and so on. Because of the systematic in nature, this risk cannot be reduced or diversified away by individual investors as it affects all stocks, but with varying nature due to nature of stocks, in a market. While the unsystematic risk, also called firm-specific or idiosyncratic risk can be reduced or eliminated by a well-diversified portfolio. This risk or volatility deals with the individual aspects of a firm like the problems related to firm's production, liquidity, operating efficiency, leverage, profitability and so on. Because of the firm-specific in nature, the unsystematic risk can be diversified away when an individual investor increases the number of negative correlated stocks in his portfolio.

While calculating the investors' expected returns, the most relevant concern by investors is the consideration of systematic risk rather the unsystematic risk. And CAPM is evolved to quantify the systematic risk through which fair value is determined of a particular stock. The formula of CAPM which explains the expected return by considering risk free rate of return, systematic risk measure, Beta, and market risk premium, is given below:

$$E(R_i) = R_f + \beta(R_m - R_f) \quad (3.1)$$

Where $E(R_i)$ is the expected return which investors expect on an individual stock, R_f is risk free rate of return which can be calculated by return on treasury bills, R_m is the average market rate of return which can be measured as return on

stock market index, and β is a systematic risk measure which measures the stock's co-movement with the market variation. It is measured as:

$$\beta_i = \frac{COV_{i,m}}{\sigma_m^2} \quad (3.2)$$

The β_i is multiplied with market risk premium ($R_m - R_f$) to adjust the average risk premium with respect to systematic volatility of an individual stock. β reflects that how much a stock market price goes up and down with respect to the stock market index movement. For example if the stock's systematic volatility is exactly equal to the market volatility then $\beta = 1$ which means that the stock's risk premium should be exactly same with the average market risk premium, and if stock's systematic volatility is more than the average market volatility then $\beta > 1$ which means that market risk premium should be adjusted upward with proportion to systematic volatility and vice versa. The systematic volatility is different for different nature of stocks, e.g. for cyclical stocks it will be near to 1 because cyclical stocks generally move with the economic cycle and for speculative stocks it will be higher because the speculative stocks are expected to have more volatility with comparison to market volatility.

The regression equation of the market model CAPM is as:

$$r_{i,t} = \alpha_i + \beta_i(r_{m,t}) + \varepsilon_{i,t} \quad (3.3)$$

Where $r_{i,t}$ is expected return on an individual stock by using market factor model, β_i is the coefficient of independent variable which is average market return $r_{m,t}$ while the $\varepsilon_{i,t}$ is error term or residual portion of stock is return not explained by the equity risk premium which is the systematic portion of risk premium. The following variance decomposition is possible from the above equation:

Total Variance = Systematic Variance + Unsystematic Variance

$$\sigma_{i,t}^2 = \beta_i^2 * \sigma_{m,t}^2 + \sigma^2 \varepsilon_{i,t} \quad (3.4)$$

Where $\beta_i^2 * \sigma_{m,t}^2$ is the systematic or market wide variation in security's returns, and $\sigma^2 \varepsilon_{i,t}$ is the idiosyncratic or firm specific return volatility.

The R^2 from above regression equation is:

$$R_{i,t}^2 = \frac{\sum_i R_{i,t}^2 * SST_{i,t}}{\sum_i * SST_{i,t}} \quad (3.5)$$

$$R^2 = \frac{\beta^2 * \sigma_m^2}{(\beta^2 * \sigma_m^2) * \sigma_e^2} \quad (3.6)$$

$$R^2 = \frac{ExplainedVariation}{ExplainedVariation + ResidualVariation} \quad (3.7)$$

Where, the explained variation according to market model is the systematic variation, while the residual variation is the unexplained portion which is firm-specific or idiosyncratic volatility. So, based upon the formula of R^2 , the securities reporting high values reflect high market wide or systematic variation, while the securities reporting low R^2 s reflect low market wide variation and high firm specific or idiosyncratic variation. [Morck et al. \(2013\)](#) explain that according to econometric principles, the model is fit when it gets high R^2 values and it becomes worse when R^2 values are very less. But this rule of thumb does not hold true in this case, as in this regression equation if R^2 is coming less then it means that the major part of the variation is firm-specific or idiosyncratic based, so it can be said that low R^2 values from asset pricing regressions reflect higher idiosyncratic volatility or low synchronicity with market wide variations. It can also be said as:

$$1 - R^2 = \frac{Firm - Specific - Variation}{Firm - Specific - Variation + Market - Specific - Variation} \quad (3.8)$$

Here $1 - R^2$ captures the fraction of firm level variation with respect to total variation. So R^2 from asset pricing regression is not merely the statistical measure of goodness of fit, rather it measures the synchronicity of an asset with market wide movement while $1 - R^2$ measures the firm-specific or idiosyncratic component in securities' returns.

[Roll \(1988\)](#) explains that the firm level information, in addition to market wide, is also significant in determining the stock returns. While the market model focuses

only on systematic not the un-systematic factors. So high R^2 values from these models mean better fit of explanatory variables which do not incorporate the firm specific factor. That's why Roll argued that low R^2 means that the stock prices are either reflecting the firm specific information or unrelated frenzy information. [Jin and Myers \(2006\)](#) argue that higher SPS in a particular market generate higher R^2 from asset pricing models. So it is said that the SPS measure the degree to which a stock return co-moves with the market based returns. Low R^2 reflects lower synchronicity level which means that stocks are incorporating the firm specific factors in addition to market wide factors.

According to [Eun et al. \(2015\)](#); [Jin and Myers \(2006\)](#); [Morck et al. \(2000\)](#) as the R^2 values range from 0 to 1 so logistic transformation is required to transform it into a continuous variable. So the SPS is calculated as:

$$SYNCHRONICITY = TransformedR^2 = \ln\left(\frac{R^2}{1 - R^2}\right) \quad (3.9)$$

The logistic transformation of R^2 eliminates its bounds from 0 to 1 and converts it into a real continuous variable with a better normal distribution. SYN is calculated for each firm-year observations in the sample. And the high values of synchronicity mean that the stock is highly correlated with market wide movement and less firm-specific or idiosyncratic information is being reflected.

[Morck et al. \(2000\)](#) is the first paper which introduces the methodology of SPS . They have classified the measure of SPS as an inverse to SPI , as when synchronicity is high it means that the main source of stock price movement is market wide factors rather the firm related internal factors. This is because, as mentioned above, the market model considers only the systematic factor in order to value a share and ignores the firm-specific factor. As according to portfolio theory unsystematic risk can be reduced or entirely eliminated by constructing a well-diversified portfolio. And the systematic risk cannot be reduced even if all stocks are included in a portfolio. So the coefficient of determination, R^2 , from market model regression explains only systematic volatility of a stock, having an implication that if R^2 values are coming smaller then according to [Roll \(1988\)](#) this can be due to either more informativeness or unrelated frenzy noise.

3.2.1 Other Proxies of Stock Price informativeness:

3.2.2 Idiosyncratic Volatility

The idiosyncratic return volatility or unsystematic risk is related with micro-economic and firm-specific factors with is not associated with industry and market-wide variation. So it should have zero or slight correlation with market risk. The idiosyncratic volatility is used as measure for *SPI* Morck et al. (2000); Durnev et al. (2003); Fernandes and Ferreira (2008); Sila et al. (2017). In Eq. (3.3) the mean value of residual or error term $e_{i,t}$ is zero and also unrelated with market return $r_{m,t}$, i.e.

$$E(e_{i,t}) = COV(r_{m,t}, e_{i,t}) = 0 \quad (3.10)$$

So in eq. (3.4) the return volatility of stock $i, \sigma_{i,t}$, can be divided into two components, systematic volatility and idiosyncratic volatility. And the idiosyncratic volatility can be extracted as total volatility minus systematic volatility:

$$\sigma_{ei,t}^2 = \sigma_{i,t}^2 - \beta_i^2 * \sigma_{m,t}^2 \quad (3.11)$$

As mentioned above that idiosyncratic volatility, $\sigma_{ei,t}^2$, is unrelated with systematic volatility, $\beta_i^2 * \sigma_{m,t}^2$, so idiosyncratic volatility or variance of error term from market model cannot be explained by systematic volatility. By dividing both sides with total variance, $\sigma_{i,t}^2$, the Eq. (3.10) can be rewritten as:

$$\frac{\sigma_{ei,t}^2}{\sigma_{i,t}^2} = 1 - \frac{\beta_i^2 * \sigma_{m,t}^2}{\sigma_{i,t}^2} \quad (3.12)$$

The relative systematic volatility to total volatility is the explanatory power of market model equation, as market model determines expected return based on systematic volatility only so it can be rewritten as:

$$\frac{\sigma_{ei,t}^2}{\sigma_{i,t}^2} = 1 - R^2 \quad (3.13)$$

Here the relative idiosyncratic volatility is equal to $1 - R^2$, which is consistent with analogy that market model explains the systematic volatility which is explained by

R^2 so the un-explained portion will be $1 - R^2$ which is a measure of idiosyncratic volatility. The idiosyncratic volatility can be used as a measure of *SPI*, as high level of *SPI* is attributed with high firm-specific return variation because in this case systematic factor is explaining smaller portion of variation [Durnev et al. \(2003\)](#); [Eun et al. \(2015\)](#); [Jin and Myers \(2006\)](#); [Morck et al. \(2000\)](#); [Sila et al. \(2017\)](#). According to [Sila et al. \(2017\)](#), the logistic transformation of idiosyncratic measure is:

$$\frac{\sigma_{ei,t}^2}{\sigma_{i,t}^2 - \sigma_{ei,t}^2} \quad (3.14)$$

3.2.3 Systematic Volatility

According to [Li et al. \(2014\)](#), systematic volatility is also considered for inverse measure of firm-specific stock return volatility *SPI* or direct alternative measure of *SPS*. The systematic volatility is added to check the robustness of synchronicity, so it is expected to yield results in similar direction of synchronicity. The systematic volatility can be extracted from eq. (4) as:

$$\text{SystematicVolatility} = \beta_i^2 * \sigma_{m,t}^2$$

3.3 Voluntary Disclosure

The agency issue and information asymmetry create hurdles in the proper functioning of capital markets which boils down on *SPI*. The firm's disclosure policy in this regard can play noteworthy role. In addition to the mandatory disclosures, some firms also disclose the information on voluntarily basis, such as the management's opinion and forecasts regarding company and industry's future outlook, supplementary schedule, press releases, conference calls, internet sites and so on ([Healy and Palepu, 2001](#)). To be more precise FASB has classified the voluntary disclosures into six categories, which deals with overall data regarding nature of business, analysis of business data, the forward looking or forecasts regarding different aspects of the firm, information related to management structure and shareholding composition, background of the firm and details about intangibles

which are not part of mandatory disclosures.

This is because it is less discretionary to disclose items like management forecast and like others. It is claimed that the objectivity of voluntary disclosures is not matter of concern as it is less likely that management use the voluntary disclosures to adjust the market's expectations regarding firm's fundamentals. So the self-constructed voluntary disclosures are expected to be reliable, stable and more objective.

However self-constructed score has disadvantage as it involves the researcher's judgment in the process of it construction. According to [Francis et al. \(2008\)](#), their voluntary disclosure scheme is more reliable as it involves less judgment. Their index contains twenty five (see in Appendix D, Table 5.25) items from four broad categories which deals with (i) information related to historical results containing seven items, (ii) other financial measures containing three items, (iii) non-financial measures containing eight items and (iv) projected information for company as a whole containing seven items. All items are binary, score 1 is given in case of positive answer and 0 in case of negative answer. For every company the disclosure score calculated as sum of all items scores and then divided by total items, higher the answer means higher the disclosure level of the company and vice versa. This study adapts their scale and shortlists twenty five items into ten items (see **Appendix D, Table 5.26**). The items are shortlisted based upon the similarities, as after calculating scores on sample firms and it is found that if a firm is reporting a single item of a group then it is maximum likelihood that it will be reporting other items of a same group. For example there are four items regarding disclosures of financial ratios, which are *ROA*, net profit margin, *AT*, and *ROE* respectively. As these ratios are given in the early portion of annual reports either in tabular form or in graphs form or sometimes in both. Instead of four items (section I, items no. a, b, c and d) the study shortlists them in one item (item no. a) which is provision of financial ratios or related information like return on assets, net profit margin and etc. The reason for this shortlisting is observed in sample firms that if a firm reports financial ratios then it is most likely that they report several ratios which cover remaining items also, and in other case a firm does not report a single

ratio. So, in sample study either a firm reports all four items, and gets score 1 for each of all four items, or it does not report any ratio and get score 0 for each of all four items. Based upon this observation, the study converts first four items into 1 items.

For item e from section I, instead of calculating number of quarters that firm discloses financial information, the study considers score 1 if a firm discloses its financial information like net income and sales and 0 otherwise. The study considers item f, as it is, and discards item g, as it is observed that all the firms are likely to report something regarding their corporate strategy which results into score 1 for all the companies so based upon the presence of this item in all the companies the study ignores this item. From section II instead of three items the study considers one item only. As the section II deals with the disclosure of other financial measures which are Free Cash Flows (FCF), economic profit or residual income (EP or RI), cost of capital and related items. It is observed that very few firms disclose free cash flows, and it is found very rare that firms report other financial measures, so majority of the firms either get maximum score 1 for disclosure of free cash flows and 0 for reporting nothing in this section. By evaluating this situation, the study shortlists the group of three items into one item which deals with disclosure of other financial measures like FCF, EP or cost of capital. The section III contains eight items dealing with non-financial measures like disclosure of number of employees, average compensation per employee, sales percentage over past few years, firm's market share, units sold and price per unit, growth in units sold and firm's expansion plans. Instead of eight items the study considers four items, as item a is taken as it is which deals with disclosure of number of employees, item b is ignored because in our sample not a single firm is found disclosing information related to average compensation per employee, item c is also ignored because it is least likely that firms disclose the information related to their sales growth in different products over few years, item d is taken as it is, the items e, f and g are about units sold, selling price per unit and growth in them which the study merges them into one item which is units sold or any production related information including its price or growth, while the last item h regarding firm's

expansion plans is taken as it is.

The section IV contains seven items which deal with projected information which firms disclose regarding their projection in market share, cash flows, capital expenditures, R&D, profit and sales figures, any other output forecasts and industry projections. The study groups these seven items into two items which are forecasted financial figures regarding market share, profit, sales, in the form of numbers, graphs, trends and charts and forecasted non-financial figures like discussion about different forecasts. Again the purpose of grouping is that most of the firms do not disclose regarding their forecasts with such minute details which results into 0 scores in majority of the items so the study groups these items into financial and non-financial forecasts in general rather to be more specific.

The main purpose of shortlisting the voluntary disclosure questionnaire is to make easier to differentiate between firms with good and poor voluntary disclosures. In the sample study it is found that with full disclosure questionnaire it is difficult to segregate between different firms as on average when scores are coming less than presence or absence of one important item does not make that differential impact, which can be resolved in the adjusted questionnaire.

Due to stable disclosure policy mentioned above, [Botosan \(1997\)](#) and [Francis et al. \(2008\)](#) have constructed the voluntary disclosure score for one particular year, as over the years the firm's disclosure policy remains stable which results into no change in score. The study constructs the voluntary disclosure score (**Appendix D, Table 5.26**) for the year 2016-17 from the annual reports and 10k reports. All items in disclosure score are binary in nature, for every firm score 1 is given to the item which firm discloses and 0 otherwise. At the end the answer of all ten questions are summed and then divided by ten to get the proportion of voluntary disclosure for each firm. Higher the score reflects higher level of voluntary disclosures and smaller score reflects low level of voluntary disclosure. The formula is given below:

3.4 Board Composition

The board composition can be reflected from three following proxies.

3.4.1 Board Independence (BINED)

The board independence is defined as proportion of independent directors (outsider other than executive) to total board of directors (Mak and Li, 2001). By following Cotter et al. (1997); Mak and Li (2001); Linck et al. (2008); Liu et al. (2015) total number of outside directors is divided by total number of board of directors is used as proxy board independence. This measure of board independence can be denoted as:

Board independence = Number of outsider directors / Total number of directors

3.4.2 Board Committee Meetings (BMEETING)

The most common technique to measure the board monitoring activity is board committee meeting frequency in one financial year. It is suggested that board should meet on a regular basis in order to perform the monitoring activity more effectively. So the board activity can be measured by the number of meetings held in a year, and the higher number is associated with better effectiveness. By following the studies of Brick and Chidambaran (2010); Chen et al. (2006); Vafeas (1999), this study uses the log of number of annual board meetings held in year as proxy to measure the board monitoring activity. And a positive relationship is expected between board monitoring activity and its effectiveness.

Board Committee Meetings = \ln (Annual Total Board Meetings)

3.4.3 Board Size (BSIZE)

The board size is usually related with firm size, as the larger organizations generally have more members on board. The board size has two-fold implication, first as the larger boards tend to have more resources and diverse talent so the

larger boards become more effective in comparison to smaller boards. Second, maintaining the larger boards requires additional cost such as compensation and coordination costs, and in addition to marginal costs the decision making can also become slower due to diverse opinion and risk averse behavior. So, the board size can have either positive or negative association with firm's information environment. The study defines board size as total number of directors including executive, non-executive and independent directors in the board (Coles et al., 2008; Klein, 2002; Linck et al., 2008; Nguyen et al., 2015). So, the log of total number of directors in the board is taken for measuring board size.

Board Size = log of Total number of directors

3.5 Audit Committee

3.5.1 Audit Committee Independence

The audit committee independence is defined as the proportion of non-executive independent members to total members. According to studies of Abbott et al. (2004); Skaife et al. (2006); Zhang et al. (2007), the number of outside (independent) directors in the audit committee is divided by total members of audit committee, and taken as proxy for measuring the independence of audit committee.

3.5.2 Audit Committee Meetings (ACMEETING)

The audit committee activity is also measured by its' number of meetings held in a year. As the audit committee is one of the most important committees, having a job, to oversee the firm's financial reporting and other economic disclosures, so its effectiveness is integral for firm's growth and transparency. According to Brick and Chidambaran (2010); Xie et al. (2003); Zhang et al. (2007), the study captures the audit committee monitoring activity by the log of annual meetings held

annually by the audit committee.

Audit Committee Meetings = \ln (Total audit committee meetings held in a year)

3.5.3 Audit Committee Size (ACSIZE)

The audit committee size is also viewed as the same analogy of board size. The log, of total number of members including executives and nonexecutives in the audit committee, is used as proxy for measuring the size of audit committee. This proxy is based on the studies of [Anderson et al. \(2004\)](#); [Baxter and Cotter \(2009\)](#); [Bedard et al. \(2004\)](#); [Xie et al. \(2003\)](#).

Audit Committee Size = \ln (Total number of audit committee members)

3.6 Financial Constraints

[Kaplan and Zingales \(1997\)](#) explain that firms which are facing financial constraints experience a wedge between their internal and external finance cost. And according to them, almost all firms face some extent of financial constraints. The literature suggests interest cover and KZ index as common proxies for measuring financial constraints ([Baños-Caballero et al., 2014](#)).

3.6.1 Interest Cover

Interest cover ratio is calculated by dividing earnings before interest and taxes with the interest expenses or financial charges. In essence, interest cover ratio guides about the capacity of firm to repay its debt, the firms with higher ratio of interest cover face lesser problem of repayment its debt than the firms with lower ratio ([Baños-Caballero et al., 2014](#); [Whited, 1992](#)).

The study of [Denis and Sibilkov \(2009\)](#) reveal that the firms which are classified as financially constraints on the basis of holdings of cash reserves exhibit low level of interest cover. In addition financially poor health of such firms restrain them

for maintaining optimal level of cash holding or cash reserves. (Baños-Caballero et al., 2014; Kaplan and Zingales, 1997) also offer the same interpretation that the firms having lower level of interest cover face financial constraints. So on the basis of literature, the study uses interest cover as proxy for financial constraints, as low interest cover ratio reflects high financial constraints (Baños-Caballero et al., 2014; Guariglia, 1999; Denis and Sibilkov, 2009; Kaplan and Zingales, 1997). The values of interest cover can go in extreme in two cases, first if a company has no debt in capital structure then its interest cover ratios go extremely high in hundreds or even in thousands, second if a company is in losses then its interest cover ratio go into minus. So according to the study of Kaplan and Zingales (1997) the study winsorizes values of interest cover by placing a limit at 0 as minimum and 100 as maximum. The ratio of interest coverage is given below:

$$\text{Interest Cover} = \frac{EBIT}{\text{Interest-Exp.}}$$

3.6.2 K-Z Index

Kaplan and Zingales (1997) sort firms as financially constraints if the cost of raising external finance exceed the cost of internal finance and vice versa. Kaplan and Zingales (1997) have constructed the KZ index on the basis of five variables; cash flows, payout ratio, Q-ratio, Leverage and Cash and Cash Equivalent, and all the variables are scaled by the total assets of the firms in particular year excluding the Q-ratio. The firms with higher score of KZ index are classified as financially constrained firms than the other firms with lower score of KZ index (Farre-Mensa and Ljungqvist, 2016). As per the Google Scholar Citations KZ index is the most used measure of financial constraints (Farre-Mensa and Ljungqvist, 2016). The returns of financially constraints firms are vulnerable during the period of financial crisis as they move together with market and industry, in addition the financial constraint has also negative association with the value of firm (Lamont et al., 2001). Kaplan and Zingales (1997) classify the firms on the basis of five variables; operating cash flow, cash in hand, payout ratio, price to book ratio and fraction of leverage in the capital structure. The firms that score high KZ index values are subject to financial constraints and vice versa.

Operating Cash Flows: Operating Cash Flows are computed by adding depreciation and amortization in the income before extraordinary items or comprehensive income. This is because the depreciation and amortization are non-cash expenses. The firm's operating cash flows are then scaled by the total assets.

Cash in Hand or Cash and Cash equivalents: Cash in hand includes cash at bank and other short-term securities which are easily convertible into cash. These short-term securities are mentioned in the head of cash. Cash is also scaled by total assets.

Dividend Payment: Dividend payment is the total amount of dividend including dividend on common stock and preference stock but excluding the dividend to minority shareholders. The total dividend is then scaled by the total assets.

Market-To-Book Ratio: Market-to-book ratio is computed by market value of equity per share divided by book value of equity per share. This ratio is not scaled by the total assets.

Leverage: To measure leverage, some studies take both long-term and short-term debt, while other take long-term debt only. Based upon the study of [Chen and Wang \(2012\)](#) this study takes the long term debt. The long-term debt is then scaled by total assets.

The KZ index is expressed as:

$$KZ = -1.002 \frac{CashFlow}{TotalAssets} + 0.283(MB) + 3.139 \frac{Debt}{TotalAssets} - 39.368 \frac{Dividend}{TotalAssets} - 1.315 \frac{Cash}{TotalAssets}$$

The coefficient values used with the index components mentioned above are constant values of KZ index and are commonly used while calculating KZ index.

3.7 Enterprise Risk Management (ERM)

Enterprise risk management is integrated risk management approach dealing with overall risk of the firm. ERM shows the awareness about risk management that transforms into better decision making at both operational and strategic levels ([Liebenberg and Hoyt, 2003](#); [Quon et al., 2012](#)). [Liebenberg and Hoyt \(2003\)](#)

argue that ERM plays its role in reducing of earning volatility of the firm. The study focuses on the preferences of firms on implementation of ERM practices and captures the firm's disclosures in two following aspects:

3.7.1 Dedicated Risk Committee

The literature considers the presence of Dedicated Risk Committee as the sign of good information environment, as the committee is assigned the responsibility of devising the monitoring mechanism for management of firm's holistic risk. It is expected that the presence of dedicated risk committee is signal for improved information environment (Aebi et al., 2012). Dedicated risk committee is captured through the dummy variable, as a firm is given a value 1 if it has established the committee and 0 otherwise (Aebi et al., 2012; Al-Hadi et al., 2016; Liebenberg and Hoyt, 2003).

3.7.2 Corporate Risk Officer (CRO)

CRO represents the appointment of special corporate risk officer by the firm, who is accountable for implementation and coordination of ERM framework (Liebenberg and Hoyt, 2003). CRO is supposed to identify the risk in the organization and devise a supportive mechanism for reducing the risk. Firms which are facing fragile risk management mechanism and instability in their share prices may get benefits from the appointment of CRO (Liebenberg and Hoyt, 2003). CRO is also captured with same dummy variable method like RC which is equal to 1 for firms that appoints CRO and 0 for the firm with no CRO (Aebi et al., 2012; Al-Hadi et al., 2016; Liebenberg and Hoyt, 2003).

3.8 Audit Quality

The audit quality is measured by a dummy variable as the value 1 indicates that the firm is audited by international big four audit firms or their associates in the home

country. And if a firm is audited by a big four international firm then it means that the firm's audit quality is good which should decrease the information asymmetry by improving the financial reporting quality and other financial disclosures of the firm (Becker et al., 1998; Francis and Yu, 2009; Gul et al., 2010; Krishnan, 2003).

3.9 Age of the Firm (Age)

Firm age is defined as the number of years since the firm has established, or listed in stock exchange or since the data of firm is available in databases like DataStream. The study follows (Farre-Mensa and Ljungqvist, 2016; Mak and Li, 2001) for measuring the age of firm as numbers of years since the existence of firm.

Firm age = Number of years since firm's existence

3.10 Government Ownership

The study measures the government ownership from the dummy variable as the value 1 is assigned to a firm if its major ownership (more than 50%) is held by the local government and 0 otherwise (Borisova et al., 2012; Gul et al., 2010; Huang and Xiao, 2012; Tran et al., 2014). According to these studies, government owned firms are less efficient, more opaque and less profitable.

3.11 World Governance Indicators

The world governance indicators are provided by World Bank which comprise six dimensions related to VA, GE, PS, COC, RQ and RL (World Bank, 2016). WGI is an alternate and comprehensive proxy of good governance index used by other studies Eun et al. (2015); Kaufmann et al. (2004); Fernandes and Ferreira (2008); Morck et al. (2000) . High index values of WGI indicate the good governance situation for each dimension.

3.12 KOF Globalization Index

KOF globalization index provides three dimensions which are economic globalization, political globalization and social globalization. The study takes the economic globalization only from KOF globalization index, as its rationale is taken from the studies of [Eun et al. \(2015\)](#); [Jin and Myers \(2006\)](#); [Morck et al. \(2000\)](#) which relate the economic development with *SPI* in a way that poor countries exhibit weak institutional development which discourages the informed arbitrage. The economic dimension of KOF globalization index covers the FDI, portfolio investment, income payments to foreign nationals and tax and other trade restrictions, which are directly associated with economic development. The high values of KOF economic globalization indicate a more globalized country which attracts higher amount of FDI, portfolio investment and has less trade restrictions.

3.13 Culture

The study explores three dimensions of culture provided by [Hofstede \(2001\)](#), which are individualism vs collectivism, power distance index and uncertainty avoidance. High values of individualism vs collectivism reflect a society having more individualistic orientation, while higher values of power distance index reflect a society which has acceptance to unequal distribution of power according to power hierarchy. The high values of uncertainty avoidance reflect a society having highly risk averse behavior.

3.14 Control Variables

Firm fundamentals are taken as control variables of the study, which is devised by several studies related to the underlying area ([Eun et al., 2015](#); [Jin and Myers, 2006](#); [Morck et al., 2000](#); [Hasan et al., 2014](#); [Piotroski and Roulstone, 2004](#); [Rajgopal and Venkatachalam, 2011](#); [Roll, 1988](#)). The firm fundamentals are as follows:

3.14.1 Firm Size

The pioneering study of Roll (1988) shows the positive association between stock price co-movement and size of the company mentioning that large firms capitalize more market level information than their counterpart small firms. Similarly, demonstrate that larger firms act as bench mark for the market so the *SPS* of such firms is higher. To measure the firm size, the natural log of total assets is used for proxy of firm size on the basis of study of (Hasan et al., 2014).

$$\text{Firm Size} = \ln(\text{Total Assets})$$

3.14.2 Market to Book Ratio

Market-To-Book ratio is an indicator for potential growth opportunities for a firm. The study defines MTB ratio as market value of equity per share to its book value of equity per share. The ratio is expected to be higher for the firms having potential of future growth which causes the reflection of more firm level information into stock prices (Hasan et al., 2014). By following Hasan et al. (2014) this study proxy MTB for controlling growth opportunities.

3.14.3 Leverage

Prior literature documents that financial leverage is important determinant of variation in the volatility of stock returns (Boubaker et al., 2014). Rajgopal and Venkatachalam (2011) show that the levered companies face high stock return volatility because such firms are subject to financial distress. So the study considers the financial leverage as control variable which is measured by long-term debt divided by total assets.

$$\text{Leverage} = \frac{\text{LongTermDebt}}{\text{TotalAssets}}$$

3.14.4 Efficiency and Performance: Return on Assets (ROA) and Assets Turnover (AT)

The study takes AT to measure the efficiency of firm and *ROA* to measure the firm performance. AT ratio is calculated as sales divided by total assets, while *ROA* ratio is calculated as net income divided by total assets. It is expected that firm's efficiency and performance should affect the *SPI*.

$$AssetsTurnOver = \frac{Sales}{TotalAssets}$$

$$ROA = \frac{NetIncome}{TotalAssets}$$

3.15 Empirical Model Specification

3.15.1 Normality Tests

In order to assess the normality of the data the distribution of data has been analyzed. It is assumed that data should follow random distribution. So, the Jarque-Bera test is considered to check the normality of data.

3.15.2 Augmented Dickey-Fuller

Unit root test has been applied in order to check the stationarity of the distributed sample. The stationarity of the data is checked at level and also at first difference. In case of non-stationarity, the particular variable is transformed by taking Natural Logarithm (ln).

3.15.3 Autocorrelation Test

The autocorrelation is likely to occur in time series data and when data is arranged chronologically. In such arrangement, error in first years may continue in the subsequent period. So, this study uses auto-regressive lags while running the regression.

3.15.4 Panel Data Pooled Regression

The data of present study is time series and cross section simultaneously in nature, so it is classified as panel data. The data of 450 individuals companies for a particular country have been collected from 2009 to 2016. The regression analysis is run by estimating pooled panel data regression. The cross-section weights have been assigned while estimating pooled panel data regression. Assigning of cross section weights estimate the GLS specification supposing the existence of heteroskedasticity in the data.

The study follows the estimation process used by [Gul et al. \(2010\)](#); [Morck et al. \(2000\)](#); [Fernandes and Ferreira \(2008\)](#). They estimated regression model by adding each dimension, with control variables, step-by-step to achieve the objective of model inclusiveness. In addition to this, a comprehensive model is also estimated.

3.15.5 Regression Equations

$$SPS_i = \beta_0 + \beta_1(V.D) \sum Control_i + \varepsilon_t \quad (I)$$

$$SPS_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t} \quad (II)$$

Where *SPS* is a dependent variable which measures the *SPS* for the firm *i* at time *t*, computed as: $SPS = \frac{R^2}{1-R^2}$. This measure is based upon the prior literature of *SPS*. V.D represents voluntary disclosure *BDSIZE* is total number of directors (executives and independent) in a firm board which is calculated by taking log of number of directors. *INED* is sum of number of independent (outsider) directors in the board and is scaled by ratio of independent directors to total directors in the board. *BDMEETING* is the number of meetings held by the board of directors annually which is an indication of board monitoring activity. CONTROL indicates set of all control variables used in this model. Control variables include; return on assets (*ROA*) calculated as Net Income divided by Total assets, Assets turnover is measured by dividing sales with total assets, Price-to-Book ratio is

measured by market value of equity per share to book value of equity per share.

$$SPS_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t} \quad (III)$$

ACSIZE represents the size of audit committee which is calculated by taking log of total number of directors in the audit committee; *ACINED* shows the independence of audit committee which is scaled by number of independent directors to total number of directors in audit committee board; *ACMEETING* is log of total number of meetings held by the audit committee board during the year, *BIG4* is a dummy variable and represents audit quality which is equal to one when the firm is audited by one of the Big 4 audit firms and zero otherwise.

$$SPS_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t} \quad (IV)$$

KZ Index represents the index made by (Kaplan and Zingales, 1997) which is used to measure the financial constraints. As discussed above, *KZ* use five ratios to compute financial constraints. High score on *KZ* index represents more financial constraints in comparison to the firms scoring low *KZ* index scores. Likewise, *INTCOVER* is another proxy for measuring financial constraints, this proxy is computed as operating income after addition of depreciation and amortization divided by interest expenses.

$$SPS_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t} \quad (V)$$

RC and *CRO* denote Dedicated Risk Committee and Corporate Risk Officer respectively. Both of the variables are used to measure the effectiveness of enterprise

risk management. RC is measured through dummy variable which is equal to 1 if the particular firm has risk committee and 0 for the firms with no risk committee, similarly CRO is also measured with the same method equal to 1 if the firm appoints risk officer and 0 for the firms with no risk officer.

$$\begin{aligned} SPS_{i,t} = & \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} \\ & + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \\ & \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \\ & \sum Control_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (VI)$$

GOVOWN indicates the presence of government ownership in the firm's ownership structure. The firm is assigned the value of 1 with government ownership and 0 for the non-state ownership. AGE shows the age of the firms since its existence. This variable is calculated by taking natural log of total number of years.

$$\begin{aligned} SPS_{i,t} = & \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} \\ & + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \\ & \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \beta_{14} WGI + \\ & \sum Control_{i,t} + \varepsilon_{i,t} \end{aligned}$$

WGI shows The Worldwide Governance Indicators (WGI), this index is calculated on the basis of six components; VA, PS, GE, RQ, RL, and COC. Each of the variables has been assigned a pertinent value of the basis of different components by the Forum for new World Governance.

$$\begin{aligned} SPS_{i,t} = & \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} \\ & + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \\ & \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \beta_{14} WGI + \\ & \beta_{15} KOFGI + \sum Control_{i,t} + \varepsilon_{i,t} \end{aligned}$$

KOFGI represents globalization index for measuring various aspects of economics, political change and societal issues. Each of the sample country is assigned the

particular value on the basis of above mentioned criteria.

$$SPS_{i,t} = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

Where *CULIND* reports the value of individualistic culture based on the Hofstede's study. Similarly, *CULPD* explains another dimension of culture which is power distance. The third dimension of culture is *ULUA* which denotes uncertainty avoidance.

$$SPS_{i,t} = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \sum Control_{i,t} + \varepsilon_{i,t}$$

*KOFGI*CULIND* shows the interaction of individualistic dimension of culture with *KOFGI*.

$$SPS_{i,t} = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \beta_6 KOFGI * CULPD + \sum Control_{i,t} + \varepsilon_{i,t}$$

*KOFGI*CULPD* denotes the interaction of power distance dimension of culture with *KOFGI*.

$$SPS_{i,t} = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \beta_6 KOFGI * CULPD + \beta_7 KOFGI * CULUA + \sum Control_{i,t} + \varepsilon_{i,t}$$

*KOFGI*CULUA* denotes the interaction of uncertainty avoidance dimension of culture with *KOFGI*.

3.16 Variables

SPS: Stock Price Synchronicity

V.D: Voluntary Disclosure

BDSIZE: Board Size

INED: Independent directors in the board

BDMEETINGS: Board annual meetings

ACSIZE: total number of directors in the audit committee

ACINED: Number of independent directors in the audit committee

ACMEETING: Total number of annual meetings held by the audit committee

BIG4: Dummy variable equal 1 for big 4 audit firms and 0 otherwise

KZINDEX: KZ index (measure of financial constraints) is computed as:

The KZ index is expressed as:

$$\begin{aligned} KZ = & -1.002 \frac{CashFlow}{TotalAssets} + 0.283(MB) + 3.139 \frac{Debt}{TotalAssets} - 39.368 \frac{Dividend}{TotalAssets} \\ & - 1.315 \frac{Cash}{TotalAssets} \end{aligned}$$

INTCOVER: Interest cover ratio

RC: Risk Committee

CRO: Corporate risk office

GOVOWN: Government ownership

AGE: Age of the firm since its foundation

WGI: World governance indicators

KOFGI: KOF Globalization Index

CULIND: Individualistic Culture

CULPD: Power distance culture

CULUA: Uncertainty avoidance culture

CONTROL: Set of control variables (ROA,

Assets turnover, Leverage, Debt to equity ratio, Book to market ratio, Size of the firm).

Chapter 4

Results

This chapter reports the empirical results, respective interpretations and analysis.

4.1 Data Analysis

The Table 4.2 indicates summary statistics of study variables. This analysis includes the sample of 150 firms, 30 each, from five developed markets; US, UK, Canada, France, and Switzerland from 2009 to 2016. SYN represents stock price synchronicity which is calculated through the market model (explained in eq. (1)). Logistic transformation of R^2 s has been made after the calculation of R^2 s by estimating (see Eq.2) which is based on the market model of (Morck et al., 2000). *BDIND* shows the number of independent and non-executive directors in the board which is scaled by total number of directors in the board (Liu et al., 2015). The *BDIND* captures the independence of the board, the higher ratio of independent (outside) directors in the board shows that board is more independent. *BOD-MEETING* is based on the study of (Brick and Chidambaran, 2010) which captures the monitoring mechanism of board. *BIND* proxy is from Nguyen et al. (2015) and captures the total number of board of directors in the board. *ACIND* is computed by number of outside (independent) directors in the committee which is scaled by the total number of directors in the audit committee (Zhang et al., 2007). *ACMEETING* is proxy of number of audit committee meetings held

during the year. *ACMEETING* proxy measures the monitoring mechanism of the board of audit committee. *ACSIZE* denotes the size of audit committee which is calculated by total number of directors in the audit committee (Bedard et al., 2004). *AQ* is proxy for the audit quality measured through the dummy variable and equal to 1 when the firm is audited from the big four audit firms or local audit firms in joint venture and zero otherwise (Gul et al., 2010). *CRO* captures the presence of corporate risk officer and *RC* is dedicated risk committee, both are the component variables of Enterprise Risk Management.

FC is financial constraint which is calculated through *KZ* index by using five accounting ratios. *KZ* is dummy variable of financial constraints which is computed by taking median value of *FC* by assigning 1 to the firms below the median (less constraint firms) and 0 to the firms falling above the median. *INTCOV* is interest cover ratio computed by dividing interest or financial cost by the operating income after adding the depreciation and amortization expenses. *AGE* is the sum of years from when a firm is in operation. *GOVOWN* is government ownership which is equal to 1 when the firm is owned by government and 0 otherwise. *AT* is assets turnover computed as sales divided by the average number of book value of total assets. *S* is size of firms which is natural log of change in total assets. *LEV* is debt to equity ratio which is long-term debt divided by the total equity. *ROA* is net income before extraordinary items divided by the book value of total assets. *PBR* price to book ratio which is proxy for firms growth opportunities computed by market price per share divided by the book value per share. *Sale* is annual sales of the firm and *CR* is current ratio calculated by current assets divided by current liabilities.

WGI represents the Word Governance Index (*WGI*) which is made of six components; 1) *AC* is Voice and Accountability; *COC*, is control of corruption; *GE* is government effectiveness; *PS* is political stability; *ROL* is rule of law; *RQ* is regulatory quality. *WGI* index is developed by the World Bank (Kaufmann et al., 2011), and each of the country is assigned the specific value on the basis of how effectively a country is incorporating the above mentioned components in its economic structure and each of the component of *WGI* is measured separately. *IND*

represents individualistic culture which is from the study of Hofstede (2001) and ratio of diversity of people how much they distinguish themselves from others by considering their individual values. Second measure of culture is power distance index which is also based on the study of Hofstede (2001) and measures the distribution of power or hierarchy of power in the countries. The third measure of culture is Uncertainty Avoidance which is denoted with UA, It shows the behavior of individual or society regarding tolerance and uncertainty.

KOFGI captures the various dimensions like; political, social and economics of globalization and is designed by KOF Swiss Economics Institute assigned values to each country by estimating the above mentioned components of *KOFGI* in the pertinent country. However, the study takes the economic globalization. N is number of sample firms used in this research.

TABLE 4.1: Statistical results of Unit root test

Variables	Stationarity Test	T-stat	Significant Level
Panel A			
ACMEETING	Levin, Lin Chu t*	-15.0825	0
ACSIZE	Levin, Lin Chu t*	-7.71981	0
AGE	Levin, Lin Chu t*	-29.597	0
AT	Levin, Lin Chu t*	-12.4596	0
BDIND	Levin, Lin Chu t*	-70.5434	0
BDMEET	Levin, Lin Chu t*	-15.3991	0
CR	Levin, Lin Chu t*	-22.2028	0
WGIAC	Levin, Lin Chu t*	-6.37089	0
IDIOVOL	Levin, Lin Chu t*	-277.52	0
INTCOV	Levin, Lin Chu t*	-174.369	0
LEV	Levin, Lin Chu t*	-20.1167	0
PBR	Levin, Lin Chu t*	-35.3458	0
ROA	Levin, Lin Chu t*	-16.382	0
S	Levin, Lin Chu t*	-17.2767	0
SALES	Levin, Lin Chu t*	-21.0769	0
SYN	Levin, Lin Chu t*	-27.6495	0
SYSVOL	Levin, Lin Chu t*	-14.6611	0
WGIROL	Levin, Lin Chu t*	-16.2783	0
Panel B			
ACIND	Levin, Lin Chu t*	-8.27783	0
BDSIZE	Levin, Lin Chu t*	-22.6376	0
FC	Levin, Lin Chu t*	-33.5637	0
WGICOC	Levin, Lin Chu t*	-46.9741	0
WGIGE	Levin, Lin Chu t*	-26.3494	0
WGIPS	Levin, Lin Chu t*	-11.5096	0
WGIRQ	Levin, Lin Chu t*	-11.5282	0

The variables reported under the head of Pane A are significant at "Level" and rest of the variables from Panel B are significant at "First Difference"

TABLE 4.2: Descriptive statistics for study variables from 2009-16 in developed countries

	Mean	Median	Max	Mini	S.D	Skew	Kurt
SYN	-2.199	-1.430	1.7403	-23.21	2.5368	-1.914	9.8326
SYSVOL	0.0003	0.0001	0.0102	1.79E-13	0.0005	6.4325	84.262
IDIOVOL	0.0013	0.0008	0.096512	1.03E-	0.0034	20.194	513.8405
BDIND	0.7949	0.8461	1.000	0.0769	0.2068	-0.702	2.7297
BDMEETING	8.1466	8.0000	29.00	1.000	3.0826	1.2321	7.3270
BDSIZE	10.765	11.000	19.000	1.000	2.8013	0.11719	2.716723
ACIND	0.9622	1.0000	1.000	0.2500	0.1215	-3.347	15.72082
ACMEETING	5.7527	5.0000	16.000	1.0000	2.5240	1.0039	4.131926
ACSIZE	4.1064	4.0000	9.000	2.000	1.2038	0.735	3.4396
AQ	0.9782	1.000	1.000	0.000	0.151706	-5.8158	40.91
CRO	0.0251	0.0000	1.000	0.000	0.2229	17.838	440.5162
RC	0.4124	0.0000	1.0000	0.000000	0.572	3.8157	50.626
FC	4.8061	0.3696	1165.363	-358.193	58.092	13.228	212.580
FCD	0.497904	0.000000	1.000	0.0000	0.5002	0.0083	1.000
INTCOV	23.60	9.020	100.000	0.00000	31.606	1.6311	4.2077
AGE	62.6412	40.000	351.00	1.000	55.56507	1.710416	7.1411
GOVOWN	0.025	0.000	1.000	0.000	0.159	5.959	36.51055

AT	0.807	0.6400	5.440	0.010	0.6478	2.6738	13.337
S	0.0793	0.0492	1.6568	-0.977	2285.955	13.453	197.5407
LEV	0.7481	0.380	87.080	-13.4	2.8027	24.829	757.9623
PBR	2.193	2.700	147.10	-1250	37.075	-32.3242	1092.853
ROA	6.134	5.510	100.620	-30.05	7.2104	1.8634	30.777
SALES	0.0540	0.8405	5.1740	-2.366	0.270414	5.9763	125.897
CR	1.984183	1.3800	56.980	0.0500	2.6336	10.991	188.319
WGIAC	91.814	92.01	99.526	81.770	4.9890	-0.25273	2.1192
WGICOC	92.621	93.269	97.630	85.710	3.5488	-0.264	1.9337
WGIGE	93.1334	92.417	99.519	87.677	3.5590	0.2904	1.811
WGIPS	73.763	66.824	98.578	44.285	16.387	0.2341	1.5966
WGIROL	93.329	93.896	98.557	88.461	2.7914	-0.033	1.8928
WGIRQ	92.31456	94.73684	98.557	81.7307	4.9579	-0.74463	2.0827
CULIND	79.839	80.000	91.00000	68.000	9.2375	-0.044	1.327
CULPD	43.1349	39.000	68.000	34.000	12.562	1.3941	3.1360
CULUA	54.496	48.000	86.000	35.000	17.275	0.8787	2.5342
KOFGI	79.163	79.410	82.99	71.580	4.1321	-0.948	2.5392

The Table 4.2 depicts the summary of descriptive statistics from 2009 to 2016. The average mean and median statistics of developed economies for SYN are -2.19 and 1.43 respectively. These statistics are consistent with other developed countries and comparable with synchronicity in the developing countries. [Piotroski and Roulstone \(2004\)](#) report mean and median SYN for US sample are -1.742 and -1.754 correspondingly, which are near to our study. Contra wise, mean and median for SYN in China sample are -0.232 and -0.151 ([Gul et al., 2010](#)), which are much higher than the SYN reported in the corresponding study. Similarly the study of [Chan, and Chan, \(2014\)](#) reports SYNC for US sample -2.512 and -2.47 mean and median respectively. These results are compatible with the hypothesis that developed economies have lower synchronicity than the emerging economies ([Morck et al., 2000](#); [Roll, 1988](#)).

Similarly the mean and median for IDIOVOL are 0.137 and 0.080 respectively for average sample of developed economies, which is closer with prior study of [Dasgupta et al. \(2010\)](#) who report 0.274 and 0.125 mean and median respectively, the study of [Hutton et al. \(2009\)](#) also reports mean value of 0.04 and median value of 0.02 of idiosyncratic volatility.

The Table 4.2 depicts that the average number of independent board of directors are 0.79 or 79 percent in the firms of developed markets with the standard deviation of 20%. These statistics show that ratio of independent directors is higher for developed markets and existing literature also provides almost similar number for independence of board for instance; [Chou et al. \(2013\)](#) find average number of independent directors 0.68 or 7.0 which are approximately similar with the corresponding study. The average number of board meetings held during the year is 8.14 with standard deviation of 3.08 which is in line with the study of [Brick and Chidambaran \(2010\)](#) who report that mean and median values of 7.26 and 7 respectively for sample of US data. Regarding the number of board size, the results state that average number of board of directors in the firm board are 10.7 or 11 and with standard deviation of 2.8. It means that on average the firms of developed countries carry out the 11 number of directors in the board, on the other hand available studies also demonstrates that 12 number of directors on average

(Vafeas, 2000).

The mean and median value of audit committee meetings is 5.7 and 5 correspondingly, which means that on average the number of meetings held by the audit committee is 5. The above table shows that average number of directors in the audit committee is 4.1 or 4 (mean and median) which means that the average number of audit committee size is 4 for DEVELOPED economies. Anderson et al. (2004) documented mean and median values of 4.5 and 4 for data of developed market which is closer to the values mentioned in the corresponding study.

The mean statistics of audit quality (measured with dummy variable) is 0.97 and median value is 1. These statistics show that 97% of the firms in developed economies are audited by the big four audit firm which ensures the quality of audit. CRO and RC both variables capture the presence of these variables which are measured with the dummy variable. It shows that only 2.5% firms have dedicated risk officer and 41% of the firms have dedicated risk committee in the developed markets. The average KZ value in this study is 0.49. It means that 49% firms are financially unconstrained in developed market on our sample. The mean value of 23.6 and median value of 9 show that the sample firms have 23.6 times capacity to cover their financial cost. The interest cover has been winsorized by setting 100 as upper limit and 0 as lower limit by following the study of (Kaplan and Zingales, 1997).

The results describe that average age of firm is 62 years. The variable of state ownership (GOVOWN) presents that only 2.5% of the firms are owned by the state in the sample size of top 30 firms from each of the sample countries which is low ratio but on the other hand the studies regarding state ownership in the emerging economies like china provide opposite results e.g., on average 31% of the firms owned by the state (Gul et al., 2010). On average assets turnover is 0.80.

World Governance Index (WGI) is made up of six components and each of the components is measured separately. Sample countries from developed score (mean) 92, 92.6, 93.1, 73.7, 93.3 and 92.3 for AC, COC, GE, PS, ROL and RQ respectively. The mean and median value of culture independence (CULIND) is 79.8 and 80 which are almost closer to the past study of Hope (2003) who reports 70.5, but

on the other hand [Eun et al. \(2015\)](#) mentioned mean value of 49.3 for sample of 47 countries. And the average value of individualism for the sample countries is exactly same with that of [Eun et al. \(2015\)](#). The mean score of power distance (CULPD) is 43.1 and median value is 39, which is again similar with mean average value of 45 identified by ([Hope, 2003](#)). The last dimension of culture used by the study is uncertainty avoidance (CULUA), the average behavior of CULUA for sample countries is 54.4 and median score of 48 which comply with the research work of ([Hope, 2003](#)) who indicated 56.6 for average behavior of 42 countries.

TABLE 4.3: Cross-sectional correlation statistics for study variable from 2009-16

	1	2	3	4	5	6	7	8	9	10	11	12
SYN	1	0.426	-0.132	0.319	-0.050	-0.270	0.370	0.120	0.096	0.019	-0.012	-0.131
SYSVOL		1.000	0.190	0.090	-0.007	-0.179	0.177	0.099	-0.025	-0.012	0.029	-0.070
IDIOVOL			1.000	-0.024	0.024	-0.058	-0.018	-0.026	-0.071	0.004	0.034	0.0369
BDIND				1.000	-0.096	-0.346	0.263	0.245	-0.051	0.152	0.079	-0.212
BDMEETING					1.000	0.118	-0.020	0.080	0.075	0.044	-0.153	0.170
BDSIZE						1.000	-0.326	0.126	0.380	-0.029	-0.056	0.271
ACIND							1.000	0.074	-0.080	-0.044	0.014	-0.037
ACMEETING								1.000	0.071	-0.025	0.105	0.054
ACSIZE									1.000	-0.051	-0.013	0.139
AQ										1.000	0.016	-0.079
CRO											1.000	0.155
RC												1.000
	13	14	15	16	17	18	19	20	21	22	23	24
SYN	0.022	0.050	0.094	-0.147	-0.104	0.027	-0.109	0.014	0.005	0.197	0.025	0.066
SYSVOL	-0.019	0.003	0.084	-0.093	-0.084	-0.058	-0.048	0.026	0.005	-0.001	-0.040	0.088
IDIOVOL	-0.015	-0.025	-0.033	-0.060	0.009	-0.058	-0.016	0.010	-0.004	-0.126	-0.021	0.023
BDIND	0.081	-0.045	0.108	-0.230	-0.059	-0.036	0.004	-0.067	0.030	0.100	-0.035	0.166

BDMEETING	-0.055	0.062	-0.088	0.031	0.078	0.011	-0.055	0.037	0.003	-0.048	0.028	-0.074
BDSIZE	-0.154	0.028	-0.188	0.243	0.170	-0.027	0.035	0.096	0.012	-0.132	-0.086	-0.201
ACIND	0.024	-0.019	0.061	-0.151	-0.387	0.048	-0.158	-0.023	0.000	0.137	0.061	0.086
ACMEETING	-0.119	-0.084	0.106	-0.202	0.014	-0.061	-0.055	-0.017	0.008	0.033	-0.011	0.049
ACSIZE	-0.133	0.008	-0.063	0.077	0.104	-0.110	-0.029	0.113	0.005	0.031	-0.069	-0.107
AQ	0.012	-0.067	-0.080	0.019	0.023	-0.111	0.011	0.017	-0.003	-0.016	-0.010	-0.012
CRO	-0.008	-0.060	0.048	-0.097	-0.018	-0.021	-0.009	-0.013	0.001	-0.059	-0.017	0.086
RC	-0.050	0.024	-0.074	0.188	0.030	0.087	-0.057	0.044	0.003	-0.002	-0.030	-0.006
FC	1	-0.109	0.072	-0.036	-0.013	0.064	-0.006	-0.008	0.190	0.109	0.001	0.085
FCD		1	0.0515	0.1572	0.038	0.031	0.013	-0.059	-0.064	0.092	-0.049	0.017
INTCOV			1	-0.1425	-0.055	-0.008	-0.025	-0.128	0.022	0.430	0.102	0.237
AGE				1	0.023	0.081	0.069	-0.015	0.012	0.004	-0.062	-0.126
GOVOWN					1	-0.058	-0.013	-0.003	0.004	-0.061	-0.010	-0.063
AT						1	-0.028	-0.027	0.012	0.148	0.050	-0.133
S							1	-0.003	0.002	0.000	-0.001	-0.027
LEV								1	0.016	-0.057	-0.014	-0.071
PBR									1	-0.025	0.011	0.024
ROA										1	0.145	0.081

SALES									1	0.0672
CR										1
	25	26	27	28	29	30	31	32	33	34
SYN	0.1646	0.2327	0.3865	0.2225	0.4125	0.4910	0.3126	-0.6608	-0.5964	-0.0009
SYSVOL	0.1088	0.0811	0.1691	0.1036	0.1656	0.2207	0.1367	-0.2822	-0.2623	-0.0005
IDIOVOL	0.0552	0.0267	0.0131	0.0633	-0.0001	-0.0042	-0.0394	0.0185	0.0261	0.0065
BDIND	0.1277	0.1354	0.4049	0.4557	0.2947	0.1813	-0.0386	-0.3904	-0.1604	-0.2992
BDMEETING	-0.0343	-0.0045	-0.0765	-0.0895	-0.0488	-0.0361	0.0165	0.0856	0.0277	0.0551
BDSIZE	-0.2539	-0.2625	-0.3969	-0.3268	-0.3770	-0.3614	-0.0462	0.4750	0.3265	-0.0386
ACIND	0.1869	0.2626	0.3812	0.2676	0.4223	0.5100	0.2998	-0.6139	-0.5671	-0.0152
ACMEETING	-0.4981	-0.4571	-0.2986	-0.2418	-0.2769	-0.1707	0.4516	-0.0133	-0.1626	-0.6056
ACSIZE	-0.0631	-0.0048	-0.0739	-0.1391	-0.0291	0.0713	0.1865	-0.0243	-0.1472	0.0481
AQ	0.0307	0.0306	0.0847	0.1462	0.0498	-0.0198	-0.0797	-0.0090	0.0553	-0.0999
CRO	0.0322	0.0269	0.0525	0.0671	0.0741	0.0586	0.0288	-0.0354	-0.0451	-0.0433
RC	-0.1118	-0.1248	-0.2011	-0.2091	-0.1642	-0.1177	0.0367	0.1942	0.0910	0.0373
FC	0.1079	0.1006	0.1246	0.1133	0.0940	0.0517	-0.1054	-0.0566	0.0191	0.0670
FCD	0.0560	0.0149	-0.0242	-0.0692	-0.0013	0.0024	-0.0650	0.0294	0.0387	0.1730
INTCOV	-0.2218	-0.2287	-0.0970	-0.1254	-0.0899	-0.0321	0.2302	-0.0815	-0.1287	-0.2630

AGE	0.0498	0.0117	-0.1116	-0.1291	-0.1307	-0.1612	-0.2462	0.2661	0.2767	0.2683
GOVOWN	-0.0177	-0.0482	-0.0886	-0.0479	-0.1173	-0.1714	-0.1701	0.2093	0.2296	0.0439
AT	0.0208	0.0099	0.0210	-0.0221	0.	0.0309	-0.0004	-0.0656	-0.0374	0.0605
S	-0.0579	-0.0669	-0.0965	-0.0770	-0.1096	-0.1317	-0.0763	0.1577	0.1453	0.0047
LEV	-0.0139	-0.0241	-0.0334	-0.0392	-0.0106	0.0043	0.0402	0.0019	-0.0257	0.0073
PBR	0.0071	-0.0033	0.0083	0.0224	-0.0119	-0.0190	-0.0204	0.0055	0.0206	-0.0255
ROA	-0.0734	-0.0701	0.0031	-0.0983	-0.0062	0.0855	0.1569	-0.1783	-0.1761	-0.0310
SALES	-0.0895	-0.0504	-0.0146	-0.0567	-0.0047	0.0556	0.1386	-0.0769	-0.1157	-0.0841
CR	-0.0802	-0.0868	0.0271	0.0380	0.0204	0.0260	0.1148	-0.1191	-0.1044	-0.1923
WGIAC	1	0.880	0.8216	0.7879	0.7824	0.5817	-0.5684	-0.4074	-0.0743	0.7328
WGICOC	1	0.8592	0.7663	0.8262	0.6593	-0.4474	-0.5133	-0.2118	0.7024	
WGIGE		1	0.8599	0.8916	0.7270	-0.3606	-0.6773	-0.3122	0.4422	
WGIPS			1	0.7682	0.4947	-0.4923	-0.4537	-0.0685	0.2466	
WGIROL				1	0.8340	-0.1755	-0.7233	-0.4603	0.4513	
WGIRQ					1	0.1951	-0.8451	-0.7411	0.4018	
CULIND						1	-0.380	-0.743	-0.494	
CULPD							1	0.8819	-0.1306	
CULUA								1	0.0289	

1

KOFGI

TABLE 4.4: Main impact of voluntary disclosure on stock price synchronicity, systematic volatility and idiosyncratic volatility in developed countries from 2009-16

	Model (1)	Model (2)	Model (3)
Panel A: Test Variables:			
C	-3.69 (0.000)***	0.00244 (0.000)***	-0.17292 (0.000)***
VD	-2.58856 (0.0017)***	-0.00257 (0.000)***	0.182692 (0.000)***
Emerging	1.040197 (0.0029)***	0.000522 (0.000)***	0.094149 (0.000)***
Developing	-0.89784 (0.004)***	-0.00051 (0.000)***	-0.00809 (0.0004)***
Panel B: Control Variables:			
AT	0.100504 (0.4783)	-2.77E-06 (0.6498)	0.00044 (0.1221)
LEV	0.206441 (0.0005)***	-5.31E-08 (0.9682)	-3.15E-07 (0.9691)
ROA	0.023876 (0.0169)*	0.001943 (0.000)***	0.139184 (0.000)***
S	3.32E-05 (0.4244)	-0.00025 (0.4984)	0.028375 (0.06)*
N	150	150	150
Adj. R2	0.11	0.54	0.85

Model 1, 2 and 3 denote stock price synchronicity, systematic volatility and idiosyncratic volatility

The Table 4.4 reports the impact of voluntary disclosure on *SPS*. The finding states that there exists a significant difference in behavior of voluntary disclosure among developed, Emerging and developing markets, and are consistent with the Hypothesis (H1), that higher level of voluntary disclosure reduces the *SPS*. The results of this study extend the study of [Jin and Myers \(2006\)](#) which concludes that the prices of opaque (measured with objective based voluntary disclosure) firms

are subject to move independently from their fundamentals or in other words, the lack of capitalization of firm level information leads to stock price co-movement. Another study of [Hutton et al. \(2009\)](#) presents the same findings that when a firm is doing more earning management which is a proxy for opaqueness, the stock returns of such firms are not affected by the firm level information because very less level of firm level information is available to be incorporated into the stock prices. The prices of opaque firms absorb more market level information than the firm level information which causes higher stock price co-movement or synchronicity. So, the study confirms that voluntary disclosures significantly decrease the *SPS* and systematic volatility and significantly increase the idiosyncratic volatility.

TABLE 4.5: Impact of board and audit committee composition and financial constraints on stock price synchronicity in sample of developed countries from 2009-16

	Model (4)	Model (5)	Model (6)
<i>Panel A: Board Comp.:</i>			
BDIND	-1.479693 (0.0036)**		
BDMEETING	0.246582 (0.004)**		
BDSIZE	-0.889515 (0.0034)**		
<i>Panel B: AC Comp.:</i>			
ACIND		3.924493 (0.000)***	
ACMEETING		-0.044135 (0.6712)	
ACSIZE		0.911276 (0.000)***	
<i>Panel C: Financial Const.:</i>			
KZ Index			0.579348 (0.000)***
INTCOV			-0.007087

			(0.000)***
Panel B: Control Var.:			
AT	0.377513 (0.026)**	0.308571 (0.0656)*	0.151031 (0.332)
S	2.60E-02 (0.43)	-1.88E-05 (6.40E-01)	-2.70E-05 (0.539)
LEV	-0.001639 (0.54)	-0.016233 (0.5392)	0.05279 (0.047)**
PBR	-0.000221 (0.614)	0.155253 (0.0924)*	0.148164 (0.049)**
ROA	0.019163 (0.000)***	0.023043 (0.0001)***	0.323752 (0.000)***
N	150	150	150
Adj. R2	0.424	0.486	0.665

The Model 4 (Eq.2, 3, 4) in the above Table shows the impact of board and audit committee composition and financial constraints on *SPS*. The results show that board independence has significant and negative impact on *SPS* ($\beta = -1.47$, $p < 0.05$), which shows that one percent increase in board independence leads to 1.47 percent decrease in *SPS*. The negative association between board independence and *SPS* is parallel with the theory and Hypothesis (*H2*) of the study. The study of [Ferreira et al. \(2011\)](#) evidences that the board independence is important determinant of capitalization of private information into the stock prices. In this regard, the study states that firm level governance quality plays a prominent role in impounding the firm-level information into the stock prices. Likewise, board meetings has also significant but positive impact on *SPS* ($\beta = 0.24$, $p < 0.05$), which means that one percent increase in board meeting frequency leads to 0.24 percent increase in the *SPS*. This result is contrary to the theory and hypothesis of this study. So, the Hypothesis (**H3**) is rejected. The positive association of board activity on *SPS* is in line with the study of [Vafeas \(1999\)](#) who documents that increase in board activity leads to poor performance which in return stimulates

the board to respond the poor performance in the form of enhancing the board activity (board meetings). Board size has statistically negative association with the *SPS* ($\beta = -0.88, p < 0.01$). The beta value of board size demonstrates that 1% increase in board size results in 0.88% decrease in *SPS*. The finding of board size is in accordance with the hypothesis, **H4**, and theory of board size which endorses another Hypothesis (**H4**) of this study. The studies of [Ferreira et al. \(2011\)](#); [Hou et al. \(2012\)](#) show that large board size decreases the *SPS*, which implies that the internal firm-specific governance is important for *SPI* [Ding et al. \(2013\)](#). The coefficient statistics of PBR, price-to-book ratio, which captures the firm's growth opportunities available to the firm reveals that the direction of PBR is negative on *SPS*, however this relationship is not significant ($-0.00, p > 0.05$), it means that there is no difference in the stock price co-movement of firms on the basis of PBR. Similarly, size and leverage of the firm also have no impact on the *SPS* of the firm, but the direction of the impact is negative ($\beta = -0.026, p > 0.05$) and ($\beta = -0.00, p > 0.05$) respectively, in line with the study of [Brockman and Yan \(2009\)](#); [Chan and Hameed \(2006\)](#); [Hasan et al. \(2014\)](#) who also find that size of firm is negative but insignificant for determining the *SPS*. The coefficient of *ROA* is significant ($\beta = 0.019, p < 0.01$) which means that the capitalization of market-level information is more for the firms with high level of *ROA* than their counterpart firms.

The impact of audit committee is investigated in association with *SPS* with analogy that audit committee is directly associated with firm's information environment. The first variable of audit committee in the Table 4.5, Model 5, shows the impact of audit committee on *SPS*. The result shows that audit committee independence (measured by proportion of independent outside members to total members) is significant but positively associated with *SPS* ($\beta = 3.924493, p < 0.05$) which is one percent increase in audit independence leads to 3.92% increase in *SPS*. This is contrary to Hypothesis, (H5), which is that independent audit committee improves the firm's information environment by improving the reliability of firm's financial disclosures. And this improved information environment of firm motivates the public investors and arbitragers to seek and analyze more firm level information which improves the *SPI* and reduces *SPS* [Skaife et al. \(2006\)](#); [Baxter](#)

(2007). However, the result is consistent with the study of, Klein (2002) which reports that maintaining more independent audit committee is costly for the firm which may result into inconsistency with common expectations. In addition he finds the insignificant relationship between audit committee independence and the proportion of debt in firm's capital structure, which is totally against the common perception that investors and creditors demand independent audit committees because independent audit committees ensure the unbiased and credible accounting information which is used for debt covenants. The possible implications of this finding is that firms may tailor the composition of their audit committees in accordance with their specific economic environment.

The second variable of audit committee is mentioned in the Table 4.5, Model 5, is audit committee meeting frequency. The number of audit committee meetings held in a year is considered in the context of committee activity. According to the literature, the board meetings should be held regularly in order to perform its job more effectively (Brick and Chidambaran, 2010; Chen et al., 2006). Consistent with the Hypothesis (H6), study finds the negative but insignificant association of audit committee meeting frequency and *SPS* ($\beta = -0.04414$, $p > 0.05$). However in the literature some studies report that audit committee meeting frequency is negatively associated with committee efficiency because higher meeting frequency can be due to significant problems in the firm (Abbott et al., 2003; Sharma et al., 2009; Zhang et al., 2007). The third variable of audit committee in the Table 4.5, Model 5, is audit committee size, and its association is investigated with *SPS*. The result finds the significant positive association between audit committee size and *SPS* ($\beta = 0.911276$, $p < 0.05$) which is that one percent increase in size of audit committee leads to 0.91% increase in *SPS*. The result is contrary with the Hypothesis (H7) that larger audit committees are better able to perform the job of overseeing firm's disclosures. The results are consistent with the findings of Guest (2009); Jensen (1993); Lipton and Lorsch (1992) in the context of over-all board size, as the larger board size carries high cost including coordination and compensation of members, so the same analogy can be applied here with audit committee size that the larger audit committees are associated with poor communication and

slower decision making which can reduce the audit committee effectiveness. The three control variables are significant in this model which are firm's operating efficiency (Assets turn-over 0.308571), profitability (return on assets 0.023043) and market worth (price-to-book ratio 0.155253). All the three variables have significant positive relationship with *SPS*.

The First proxy of financial constraint, *KZ* Index Dummy (most widely used technique), has been found significant but positive ($\beta = 0.579348$, $p < 0.01$) which shows that the *SPS* is higher for unconstrained firms in comparison to financially constrained firms. The finding rejects the Hypothesis (H8), of this study. This is inconsistent with supporting literature that the prices of firms with high level of price to investment sensitivity which are subject to financial constraints are more prone towards capitalization of firm-level information (idiosyncratic volatility). Contra wise to this most recent studies cast serious doubt on the efficiency of *KZ* index for measuring financial constraints, [Farre-Mensa and Ljungqvist \(2016\)](#) mention that the firms which are classified as financially constraint do not behave in such way that these are financially constraint and have no trouble in raising external debt when needed. Correspondingly, the study of [Hadlock and Pierce \(2010\)](#) also raises their concerns regarding validity of *KZ* index for measuring the constraint.

The analysis of Model 6 in Table 4.5, shows that the higher interest cover ratio reduces the *SPS* ($\beta = -0.007$, $p < 0.01$), it means that one unit increase in interest cover ratio causes the *SPS* to reduce by 0.7%. This result confirms the prediction in the Hypothesis (H9), of financial constraints measured by interest cover. This finding is in line with the study of [Denis and Sibilkov \(2009\)](#) which reveals that the firms which are classified as financially constraints on the basis of holdings of cash reserves exhibit low level of interest cover, they further explain that poor financial health of such firms restrain them for maintaining optimal level of cash holding or cash reserves.

TABLE 4.6: The effect of corporate audit quality, risk officer, risk committee, age and government ownership on stock price synchronicity in sample of developed countries from 2009-16

	Model (7)	Model (8)	Full Model
Panel A: Board Comp.:			
C			-1.86 (0.081)*
BDIND			-2.640813 (0.000)***
BDMEETING			-0.007821 (0.9402)
BDSIZE			-0.758915 (0.0015)***
Panel B: AC Comp.:			
ACIND			3.804069 (0.000)***
ACMEETING			0.058161 (0.6853)
ACSIZE			0.814338 (0.000)***
Panel C: Financial Const.:			
FCD			0.593262 (0.000)***
INTCOV			-0.008108 (0.000)***
Panel D: ERM:			
AQ	0.317335 (0.2168)		0.374679 (0.2168)
CRO	-0.45855 (0.0027)**		-0.496785 (0.0027)**
RC	-0.35515 (0.0286)**		-0.316906 (0.0286)**

Panel E: Age and Own.:

AGE		-0.00017	-0.00017
		(0.9119)	(0.9119)
GOVOWN		-0.73843	-0.738428

Panel D: Control Var.:

AT	0.1235	0.1258	0.1258
	(0.4575)	(0.4467)	(0.4467)
S	-3.11E-	-3.35E-	-3.35E-
	(0.4858)	(0.4546)	(0.4546)
LEV	0.0391	0.0317	0.0317
	(0.2283)	(0.3411)	(0.3411)
PBR	0.1177	0.1118	0.111
	(0.121)	(0.144)	0.144
ROA	0.3059	0.3018	0.3018
	(0.000)	(0.000)	(0.000)
Adj. R2	0.622	0.53	0.53
N	150	150	150

The results in the Model 7 in Table 4.6, report that the appointment of auditor from big 4 audit firms or local audit firms in joint venture with the big 4 audit firms has no impact on *SPS* ($\beta = 0.317$, $p > 0.1$). This result renders no support to the prediction in the Hypothesis (H10), that audit by the big 4 or by their associates reduces the *SPS*. The study invites possible explanation regarding this empirical finding that majority of the firms, almost 98%, are blue-chip companies of their respective market which have ample resources to hire big 4 or their associates. Hence, this study can't differentiate the synchronicity of firms on the basis of audit quality because only 2% of the firms are audited by big 4 which is very negligible portion.

The Model 7 in Table 4.6 also presents that *CRO* is significant and negatively associated with *SPS* ($\beta = -0.458$, $p > 0.001$), which confirms the Hypothesis (H11), that *CRO* has negative impact on *SPS*. The **CRO** is accountable for implementing

and overseeing of integrated risk management framework in the organization and is consistent with literature that appointment of dedicated risk officer mitigates the asymmetry of information about the present and future risk profile of the firm (Liebenberg and Hoyt, 2003). This finding supports our prediction of *CRO* hypothesis that appointment of *CRO* reduces the *SPS*. Other variable of enterprise risk management is dedicated risk committee which has also negative and significant impact on *SPS* ($\beta = -0.355$, $p > 0.05$). This result confirms the Hypothesis (H12), that presence of risk committee improves *SPI* which is also align with the theory that having dedicated risk committee is indication of best risk management practices and hence improved governance mechanism (Aebi et al., 2012).

The coefficient of age exhibits that it has negative association with *SPS*, however the relationship is insignificant ($\beta = -0.000$, $p > 0.1$), it means that synchronicity of firms cannot be differentiated on the basis of their age. So, the Hypothesis (H13) has not been accepted. However, Dasgupta et al. (2010) predicted the hypothesis that firm age has positive association with *SPS* on the grounds that when the firm becomes older which enable the people to get aware about such firm characteristics, ultimately causes stock price co-movement. On the other hand, they find negative relationship between age of the firm and *SPS*. The coefficient of government ownership articulates that it has negative relationship with *SPS*, though relationship is insignificant ($\beta = -0.738$, $p > 0.1$). The negative sign of coefficient is parallel with the study of Gul et al. (2010) who concludes that government ownership enhances the *SPS*. However, this study, offers no support to the Hypothesis (H14). The Model 10 in Table 4.8 investigates the association between culture (three dimensions) and *SPS* in 15 markets including 5 markets from each of developed, emerging and developing markets. The first dimension of culture, Individualism vs Collectivism is significant and negatively associated with *SPS* ($\beta = -0.01197$, $p < 0.01$), which indicates that one unit increase in a society's individualism leads to 1.11% decrease in *SPS*. The result is consistent with the study of Eun et al. (2015) that in individualistic society every individual is motivated to gather and process the information by oneself which increases the *SPI* and decreases *SPS*. The second dimension of culture, Power Distance Index is significant

TABLE 4.7: Cross country differences on the basis of Stock price synchronicity, systematic volatility and idiosyncratic volatility in sample of developed countries from 2009-16

Model (9)	SPS	SYST-VOL	IDIO-SYN
<i>Panel A: Test Variables:</i>			
C	-1.26666 (0.000)***	0.000425 (0.000)***	0.001092 (0.000)***
CDCAN	-0.80111 (0.000)***	2.23E-05 (0.658)	0.000914 (0.0065)***
CDFRA	-4.2721 (0.000)***	-0.0004 (0.000)***	0.000365 (0.034)**
CDSWI	0.216941 (0.2116)	7.48E-06 (0.8822)	0.000193 (0.6142)
CDUK	0.132307 (0.4461)	2.09E-05 (0.6786)	-8.54E-05 (0.1561)
N	150	150	150
Adj. R2	0.44	0.08	0.007

and negatively associated with *SPS* ($\beta = -0.01359$, $p < 0.01$) which shows that one unit increase in a society's power distance index leads to 1.35% decline in *SPS*. The result is inconsistent with the hypothesis that high power distance societies encourage the information concentration and secrecy at hierarchical levels and so low public financial disclosures are expected in high power distance societies (Hope, 2003). However, the result is consistent with the studies of Jaggi and Low (2000) and Zarzeski (1996) which also report the opposite sign of power distance index. The third dimension of culture, Uncertainty avoidance is also significant and negatively associated with *SPS* ($\beta = -0.01311$, $p < 0.01$) which states that one unit increase in a society's uncertainty avoidance index leads to 1.3% decline in *SPS*. The sign is also inconsistent with the hypothesis that managers in high uncertainty avoidance culture are uncomfortable with uncertainty and so become more secretive which reduces the public financial disclosures Hope (2003)). However, this result is also consistent with the study of Jaggi and Low (2000), as it also

reports opposite signs with uncertainty avoidance and power distance.

TABLE 4.8: Interactive effects of culture dimensions and KOF globalization index on stock price synchronicity from 2009-16

	Model (10)	Model (11)	Model(12)	Model (13)
A: Test Var.:				
C	1.505134 (0.0058)***	-0.68762 (0.3769)	-5.62282 (0.000)***	-6.0123 (0.000)***
CULIND	-0.011966 (0.0003)	0.071692 (0.0003)***	-0.01559 (0.0001)***	-0.00024 (0.9452)
CULPD	0.013590 (0.0003)***	-0.02517 (0.000)***	0.09317 (0.000)***	-0.00893 (0.0105)**
CULUA	-0.013114 (0.0001)***	-0.01378 (0.000)***	-0.01537 (0.000)****	0.107267 (0.000)***
KOFGI	-0.02441 (0.000)***	0.023502 (0.081)*	0.088101 (0.000)***	0.082913 (0.000)***
KOFGI*CULIND		-0.00116 (0.0001)***		
KOFGI*CULPD			-0.0016 (0.000)***	
KOFGI*CULUA				-0.0019 (0.000)***
B: Control:				
LEV	0.000246 (0.9446)	0.000322 (0.9274)	0.00011 (0.9752)	-3.11E-05 (0.993)
ROA	0.012706 (0.0121)**	0.012616 (0.0122)**	0.015414 (0.0021)***	0.011622 (0.0186)**
AT	-0.01242 (0.8238)	-0.01068 (0.8464)	-0.00867 (0.8734)	-0.01602 (0.7627)
S	-6.64E-05 (0.0898)*	-6.05E-05 (0.1178)	-5.60E-05 (0.1417)	-4.45E-05 (0.231)
N	450	450	450	450

Adj. R2	0.251	0.254	0.259	0.265
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The Table 4.8 also investigates the impact of a country's economic globalization with *SPS*. The measure of economic globalization index is KOF Globalization Index. The economic globalization considers the FDI, portfolio investment and other economic restrictions of a country. The capital flows to those countries where investor's property rights are protected and institutions are developed and such economic development increases the *SPI* in those countries and decreases *SPS* (Eun et al., 2015; Morck et al., 2000). Consistent with the theory, the study finds significant and negative association between globalization index and *SPS* ($\beta = -0.024409$, $p < 0.01$) which depicts that one unit increase in a country's economic globalization decreases *SPS* by 2.44%. The study also explores the interaction of globalization index with culture dimensions to investigate either cultural impact exists when an economy is globalized. The study finds the significant impact and same direction of all three culture dimensions in interaction with economic globalization on *SPS* (For Individualism $\beta = -0.001160$, $p < 0.01$, Power Distance $\beta = -0.001601$, $p < 0.01$, Uncertainty Avoidance $\beta = -0.001895$, $p < 0.01$). This indicates that in globalized economy, culture also significantly affects the *SPI* and *SPS*.

Table 4.9 reports the results of impact of six components of World Governance Indicators (WGI) on *SPS*. The coefficient of control of corruption states that it has negative impact on capitalization of market specific information rather than firm-specific information into the stock prices ($\beta = -0.738$, $p < 0.0001$), it means that 1 unit increase in control in corruption reduces in stock prices synchronicity by 0.73%. In addition to this, Rule of Law (WGIROL) which is another measure of world governance indicators is negatively associated with *SPS* ($\beta = -0.020$, $p < 0.0001$), which suggests that 1 unit increase in WGIROL results in 0.020% decline in *SPS*. The beta value of regulatory quality (WGIRQ) advocates that it has negative impact on *SPS* ($\beta = -0.033$, $p < 0.0001$), the result states that 1 unit increase in WGIRQ decreases the *SPS* by 0.033%. The results of WGI provide support to the hypothesis that various components of WGI improve the country's

TABLE 4.9: Main impact of world governance indicators on stock price Synchronicity, systematic volatility and idiosyncratic volatility from 2009-16

	Model (14)	Model (15)	Model(16)
Panel A: Test Variables:			
C	0.459	0.001894 (0.504) (0.000)***	0.007381 (0.000)***
WGIAC	0.299994 (0.0354)**	0.000173 (0.000)***	0.000491 (0.0099)
WGICOC	-0.73858 (0.000)***	-0.0002 (0.000)***	-0.00025 (0.0806)*
WGIGE	-0.27246 (0.2452)	-0.00045 (0.000)***	-0.00205 0(.000)***
WGIPS	0.287907 (0.0001)***	0.000118 (0.000)***	0.000388 (0.000)***
WGIROL	-0.0202 (0.0006)***	-1.56E-05 0.00E+00	-4.06E-05 (0.000)***
WGIRQ	-0.03371 (0.000)***	-7.70E-06 0.00E+00	1.51E-05 (0.000)***
N	450	450	450
Adj. R2	0.289	0.273	0.456

Model 14, 15 and 16 denotes stock price synchronicity, systematic volatility and idiosyncratic volatility

governance, information environment and investors' rights protection which motivate the investors to incorporate the firm-level information into the stock prices. This extends the explanation of [Eun et al. \(2015\)](#); [Fernandes and Ferreira \(2008\)](#); [Jin and Myers \(2006\)](#); [Morck et al. \(2000\)](#).

TABLE 4.10: Impact of board and audit committee composition and financial constraints on systematic volatility in sample of developed countries from 2009-16

	Model (17)	Model (18)	Model (19)
Panel A: Board Comp.:			
C	0		

	(0.000)***		
BDIND	2.82E-05		
	(0.62)		
BDMEETING	-5.02E-05		
	(0.000)***		
BDSIZE	-0.00023		
	(000.0)***		
<i>Panel B: AC Comp.:</i>			
ACIND		0.000221	
		(0.000)***	
ACMEETING		8.64E-05	
		(0.001)***	
ACSIZE		7.47E-05	
		(0.000)***	
<i>Panel C: Financial Cons.:</i>			
KZ Index			0.579348
			(0.000)***
INTCOV			-0.007087
			(0.000)***
<i>Panel B: Control Var.:</i>			
AT	-1.40E-05	-1.03E-05	-1.46E-05
	(0.025)**	(0.14)	(0.09)*
S	-6.83E-09	-3.22E-09	-4.56E-09
	(0.000)***	(0.003)**	(0.001)**
LEV	2.07E-07	-6.91E-06	-7.86E-06
	(0.038)**	(0.315)	(0.015)**
PBR	-8.71E-08	-8.74E-07	1.58E-05
	(0.021)**	(0.96)	(0.26)
ROA	2.31E-06	6.79E-07	2.54E-05
	(0.072)*	(0.56)	(0.02)**
N	150	150	150

Adj. R2	0.112	0.215	0.261
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The above table reports the main impact of corporate governance (Model 17) on systematic volatility which is a robust measure of synchronicity. The details about the methodology of systematic volatility have been discussed in the methodology section. This study employs the systematic volatility as robust measure of *SPS* because it has suggested by [Li et al. \(2014\)](#) as an alternate measure for *SPS*. The results of systematic volatility are also consistent with the market model of [Morck et al. \(2000\)](#). The only difference appears in the case of board independent (*BDINED*), which shows the insignificant relationship with the systematic volatility. Model 20 shows the main impact of audit committee independence, size and meetings on systematic volatility. The model 18 expresses the association between audit committee composition and systematic volatility in developed markets. The results of this model are not in line with hypothesis and theory of audit committee composition. In case of audit committee variables, systematic volatility and *SPS* provide the same results. However, model of [Morck et al. \(2000\)](#), *SPS*, presents the better results as compared to the systematic volatility. On average both measures have better explanatory power in case of board and audit committee composition. The Model 19 in Table 4.10 investigates the impact of financial constraints on systematic volatility. The results of interest coverage ratio (proxy for financial constraint) express consistent behavior in both cases when regressed with *SPS* and systematic volatility as well. On the other hand, statistics of *KZ* index are contrary to the theory of financial constraints same like the results when the same model is run with *SPS*. The concerns of various authors regarding *KZ* index have been discussed in the results of Table 4.5.

TABLE 4.11: Impact of ERM, government ownership and age of the firm on systematic volatility for 2009-16 in developed markets

	Model (20)	Model (21)	Full Model
Panel A: Board Comp.:			
C			0.000 (0.002)***

BDIND		-8.54E-05	(0.149)
BDMEETING		-1.00E-05	(0.4697)
BDSIZE		-0.000142	(0.0004)***

Panel B: AC Comp.:

ACIND		0.000168	(0.000)***
ACMEETING		6.10E-05	(0.0078)***
ACSIZE		3.07E-05	(0.0654)*

Panel C: Financial Constraints:

FCD		2.06E-05	(0.059)**
INTCOV		-5.83E-07	(0.0143)**

Panel D: ERM

AQ	9.82E	0.000	(0.002)***	(0.000)***
CRO	9.50E	1.37E-05	(0.436)	(0.2549)
RC	-3.81E-05	-4.18E-05	(0.000)***	(0.000)***

Panel D: Age and Gov.

AGE		-1.38E-07	(0.0051)***	-1.38E-07	(0.0051)***
GOVOWN		-2.78E-05	(0.2824)	-2.78E-05	(0.2824)

Panel B: Control Var.:

AT	-1.80E-05 (0.0348)**	-1.82E-05 (0.0274)**	-1.82E-05 (0.0274)**
S	-4.88E-09 (0.0012)***	-4.95E-09 (0.0016)***	-4.95E-09 (0.0016)***
LEV	-7.82E-06 (0.116)	-1.13E-05 (0.0318)**	-1.13E-05 (0.0318)**
PBR	1.15E-05 (0.4146)	9.93E-06 (0.5089)	9.93E-06 (0.5089)
ROA	2.31E-05 (0.028)**	2.54E-05 (0.194)	2.54E-05 (0.0194)**
N	150	150	150
Adj. R2	0.272	2.77E-01	2.77E-01

The Table 4.11 (Model 20) explores the association between enterprise risk management and systematic volatility by examining the impact of *CRO* and RC collectively on systematic volatility, which exhibits compatible results, with the results of *ERM* and *SPS*. The dedicated risk officer becomes insignificant however, the risk committee becomes significant and according to hypothesis. So, on the basis of this findings, (H12) is consistent with robust measure and this study strongly recommends that *ERM* is prominent determinant of *SPS* or systematic volatility. Next, this study (Model 21) estimates the association between age of the firm, government ownership and systematic volatility as expected in (H13 and H14). The coefficient of age is statistical significant which shows that age has significant effect on systematic volatility (=-1.38E-07, p<0.01), the age of firm is not significant when it is estimated with *SPS*, however the sign of the coefficient is stable in estimation of *SPS* and systematic volatility. The results show that age of the firm is negatively associated with systematic volatility which means that information environment of older firms is better than the information environment of younger firms. Notably, the government ownership, (H14), depicts no empirical association with systematic volatility in both *SPS* and systematic volatility.

TABLE 4.12: Impact of board and audit committee composition and financial constraints on idiosyncratic Volatility in sample of developed countries for 2009-16

	Model (22)	Model (23)	Model (24)
Panel A: Board Comp.:			
C	0.0019 (0.000)***		
BDIND	-0.00043 (0.0132)**		
BDMEETING	-4.67E-07 (0.9881)		
BDSIZE	-0.00033 (0.000)***		
Panel B: AC Comp.:			
ACIND		-0.00045 (0.0274)**	
ACMEETING		-2.45E-05 (0.7972)	
ACSIZE		-0.00029 (0.0036)***	
Panel C: Financial Cons.:			
FCD			-0.00014 (0.0001)***
INTCOV			3.80E-06 (0.000)***
INTCOV			-4.60E-07 (0.04)**
Panel D: Control Var.:			
AT	-0.00017 (0.000)***	-0.0001 (0.0013)***	-5.42E-06 (0.8591)
S	-8.06E-09 (0.000)***	-1.51E-08 (0.000)***	-1.35E-09 (0.6911)

LEV	-1.92E-06 (0.5334)	4.67E-05 (0.000)***	-9.54E-06 (0.683)
PBR	-1.07E-07 (0.000)***	-0.0002 (0.000)***	-5.67E-05 (0.0029)***
ROA	-2.62E-05 (0.000)***	-2.09E-05 (0.000)***	-3.38E-05 (0.1047)
N	150	150	150
Adj. R2	0.36	0.37	0.44

Model 22 in Table 4.12 exhibits the regression of main impact of board composition on idiosyncratic volatility. The results of regression analysis illustrate that idiosyncratic volatility is not explaining the results in line with theory. The positive association between *BDMEETINGS* and *SPS* can be justified with the help of study of [Vafeas \(1999\)](#) which illustrates that firms with poor performance may have high frequency of board meetings. Out of three variables of board composition, *BDMEETINGS* and *BDSIZE* are significant and negatively associated with the idiosyncratic volatility.

Model 23 in Table 4.12 shows the impact of audit committee composition on idiosyncratic volatility using the sample firms from 5 developed markets. The regression findings state that audit committee composition is negatively associated with idiosyncratic volatility contrary with the hypothesis of study and also with the theory of board of audit composition. Overall, the results of all proxies used for measuring incorporation of firm wide and market specific information into the stock prices are not compatible with the theory of audit committee.

The Panel C in Table 4.12 investigates the impact of financial constraints on idiosyncratic volatility. The sign of coefficient of KZ index is not in line with the theory which means that Hypothesis of KZ index is not supported. On the other hand the second proxy which is interest cover is highly significant ($\beta = 3.80E$, $p < 0.000$). It suggest that prices of the firms with high interest cover ratio have more idiosyncratic volatility than prices of firms with lower level of interest cover ratio. The proxy of interest cover ratio is consistent in all of three measures of

capitalization of firm-level and market level information. So, interest cover ratio is best proxy for measuring the financial constraints.

TABLE 4.13: The effect of corporate audit quality, risk officer, risk committee, age and government ownership on idiosyncratic volatility in sample of developed countries from 2009-16

	Model (25)	Model (26)	Full Model
<i>Panel A: Board Comp.:</i>			
C			-7.024 (0.000)***
BDIND			0.439651 (0.0037)***
BDMEETING			-0.144077 (0.002)***
BDSIZE			-0.091599 (0.0001)***
<i>Panel B: AC Comp.:</i>			
ACIND			0.042243 (0.6466)
ACMEETING			0.060981 (0.1786)
ACSIZE			0.013931 (0.6735)
<i>Panel C: Financial Cons.:</i>			
KZ			-0.169419 (0.000)***
INTCOV			0.001786 (0.1158)
<i>Panel D: ERM</i>			
AQ	0.124028 (0.4107)		0.078599 (0.4903)
CRO	-0.09928 (0.3586)		-0.50452 (0.000)***

RC	0.206273 (0.0202)**		0.242442 (0.000)***
<i>Panel D: Age and Gov.Own</i>			
AGE		-0.00351 (0.0721)*	-0.003508 (0.0721)*
GOVOWN		-1.29164 (0.029)**	-1.291637 (0.029)**
<i>Panel B: Control Var.:</i>			
AT	0.081183 (0.0075)***	-0.02986 -0.7549	-0.029864 -0.7549
S	-7.47E-06 -0.5656	-4.91E-06 -0.7013	-4.91E-06 -0.7013
LEV	0.025067 -0.332	0.087106 (0.0056)***	0.087106 (0.0056)***
PBR	-0.07328 -0.1037	0.018594 -0.6268	0.018594 -0.6268
ROA	-0.02526 -0.327	-0.01433 -0.5668	-0.014333 -0.5668
N	150	150	150
Adj. R2	0.65	0.75	0.75

Model 25 in Table 4.13 indicates the impact of AGE and *GOVOWN* on idiosyncratic volatility. The results illustrate that the coefficient values of both of the variables are in compliance with the hypothesis and theory. The coefficient statistics of age states that it has negative association with idiosyncratic volatility. It means that the idiosyncratic volatility of the old firms is less than the idiosyncratic volatility of the rest of firms.

Similarly, the variable of *GOVOWN* is negatively associated with incorporation of firm-level information into the stock prices which is consistent with the Hypothesis (H14). In all of the three robust measures of *SPS* idiosyncratic volatility is comprehensive proxy for the above mentioned variables.

4.2 Results of Stock Price Synchronicity in Emerging Markets

Table 5.11 (**Appendix B**) shows the effect of corporate governance on *SPS* by reporting beta coefficient and p statistics in emerging economies. The tested variables are mentioned in column 1. Consistent with Hypothesis (**H2**), this study finds that board independence is negatively related with *SPS* ($\beta = -0.487, p < 0.1$) which means that firms with independent boards are more informative. The findings can also be confirmed from the study of [Chen and Jaggi \(2000\)](#) that the higher proportion of independent directors in the board is positively linked with voluntary disclosure and voluntary disclosure enhances the *SPI* [Haggard et al. \(2008\)](#). The board meeting frequency is (*BDMEETING*) is positively associated with *SPS* ($\beta = 0.224, p < 0.05$). This finding is inconsistent with prediction of (**H3**) that board activity is negatively linked with *SPS*. Similarly with *BDMEETING*, board size is also positively associated with *SPS* ($\beta = 0.376, p < 0.0001$) which is consistent with the study of [Ahmed et al. \(2006\)](#) who check the impact of board size on earning informativeness and find that larger board decreases and smaller board enhances the earning informativeness respectively.

Table 5.11 (**Appendix B**) assesses the impact of audit committee on *SPS*. The significant and negative coefficient ($\beta = -0.535, p < 0.0000$) of *ACIND* in Model 3 indicates that presence of independent directors in audit committee alleviates the *SPI*. This finding is compatible with the prior literature that the independent audit committee improves the governance structure of firm and monitoring mechanism of financial reporting ([Abbott and Parker, 2000](#); [Bedard et al., 2004](#)) which ultimately decreases the *SPS* and also consist with the Hypothesis (*H5*). This variable is insignificant when this equation is estimated in developed countries. On the other hand the coefficient of *ACMEETING* is insignificant ($\beta = 0.040, p < 0.1$) and don't support the Hypothesis (**H6**). Model 2 also presents that *ACSIZE* is significantly negatively associated with *SPS* ($\beta = -0.271, p < 0.05$). The coefficient sign is in compliance with the prior literature ([Woidtke and Yeh, 2013](#)) that audit committee is positively associated with earning informativeness. Consistent

with literature, this study accepts the expected Hypothesis **(H7)** that *ACSIZE* has negative association with stock price co-movement. Contrary to the results of positive impact of audit committee on *SPS* reported in developed sample firms, the findings in sample firms of emerging countries are in accordance with the theory and Hypothesis **(H7)**.

The Panel C of Table 5.11 (**Appendix B**) reports the impact of financial constraint on *SPS*. For this purpose, two proxies *KZ* index and interest cover ratio have been used. In accordance with the expected Hypothesis **(H8)** that financial constraint is negatively related with *SPS*. The coefficient value of *KZ* is highly significant ($\beta = -0.176, p < 0.000$). However, the coefficient of *KZ* is positive in sample firms of developed economies which is contrary with the results in the sample firms of emerging economies. Similarly, second proxy of interest cover ratio is also negatively associated with *SPS* ($\beta = -0.002, p < 0.05$). [Ascioglu et al. \(2008\)](#) show that financially constraint firms are subject to asymmetry of information problem, because financially constraint firms face the wedge between raising finance in internal and external market. So, this study accepts both the Hypothesis *(H8)* and *(H9)*.

The Table 5.12 (**Appendix B**) accesses the impact of audit quality and enterprise risk management (*CRO and RC*) on *SPS*. The coefficient of *AQ* ($\beta = -0.432, p < 0.0001$) is consistent with the prior studies as it is negatively associated with incorporation of firm level information into stock prices. The sign of the *AQ* coefficient is compatible with the study of [Gul et al. \(2010\)](#) that Big four auditors are in better position to convey reliable firm level information into the stock the stock prices than their counter part audit firms which supports the Hypothesis **(H10)** ([Gul et al., 2010](#)). The Model 7 in Table 5.12 (**Appendix B**) reports the impact of *ERM* on *SPS* and states that presence of corporate risk officer is insignificant and risk committee is significant ($\beta = 0.235, p < 0.05$) but the sign is not in line with hypothesis and theory. So, on the basis of findings this study rejects the **(H11)** and **(H12)**. However, the results of *ERM* in developed markets are significant.

In Panel E of Table 5.15 (**Appendix B**) this research study investigates the

impact of age of the firm and government ownership on *SPS*. No significant association of age of the firm has been found with *SPS* ($\beta = -0.025$, $p < 0.1$) which is contrary with predicted of Hypothesis (H13). The coefficient of *GOVOWN* is insignificant ($\beta = 0.117$, $p < 0.1$) so, this study doesn't support the (H14) that government ownership leads to opaqueness of financial disclosure and affect the minority shareholders adversely (Shleifer and Vishny, 1994). The second plausible explanation of insignificant effect of government is because the majority of firms in the sample are privately owned which has been mentioned in the Table 4.6. The results of government ownership are stable in both the developed and emerging economies.

4.3 Results of Stock Price Synchronicity in Developing Markets

Model 4 in Table 5.15 (mentioned in Appendix B) shows that main impact of board composition on *SPS* in developing countries. The coefficient of *BDINED* is negatively linked with *SPS* ($\beta = -0.374$, $p > 0.0001$), consistent with Hypothesis (H2) and also consistent with results of developed countries and emerging economies. In general, the findings of board independent are consistent in for all firms of sample economies developed, emerging and developing countries. The beta value of *BDMEETING* is insignificant, which means that the sample firms can't be distinguished on the basis of *SPS*. *BDSIZE* is positively linked with stock price co-movement ($\beta = 0.412$, $p > 0.1$) means that *BDSIZE* is positively associated with *SPS*. The prior studies provide mixed evidence regarding effectiveness or optimal board size. However, the results of *BDSIZE* in this study are consistent in developing and emerging economies but are contrary in the developed economies. The model 5 in Table 5.15 (Appendix B) shows the impact of audit committee on *SPS* in developing countries. Consistent with the results of developed economies reported in Table 4.5 and contrary with the hypothesis, the study demonstrates that *ACIND* has positive impact on *SPS* ($\beta = 0.516$, $p > 0.000$). As expected, the coefficient of *ACMEETINGS* shows that *ACMEETING* is negatively associated

with *SPS* ($\beta = -0.124$, $p > 0.037$), infer that audit committee meetings frequency conveys the capitalization of firm level information into the stock prices more than the market-level information. And the study finds the positive coefficient value of *ACSIZE* ($\beta = 1.04$, $p > 0.000$), as the literature of audit committee composition provide mix evidence about the effectiveness of audit committee.

The Panel C of Table 5.15 (**Appendix B**) reports the finding regarding the impact of financial constraints on *SPS* by using *KZ* index and interest cover ratio as measures of financial constraints. Consistent with the results of developed countries, *KZ* index is positively correlated with stock price synchronicity which is contrary with the Hypothesis (**H8**) that *KZ* index as a proxy for financial constraints is negatively associated with the *SPS*. The justification for insignificant results of *KZ* index has been discussed with great details in Table 4.5. Overall, the coefficient of *KZ* index is consistent with developed and developing economies. The interest cover indicates the negative association with *SPS* ($\beta = -0.005$, $p > 0.000$), so the results in Panel C and Table 5.15 supports the Hypothesis *H9*.

Results from the Model 7 in Table 5.16 are reported in (**Appendix B**). The study finds the positive impact of *AQ* on *SPS* ($\beta = 0.292$, $p > 0.05$). Panel D in Table 5.16 (Appendix B) reveals the impact of *ERM* on *SPS*. *CRO* is positively related with *SPS* ($\beta = 0.271$, $p > 0.001$). Second proxy for *ERM* is presence of *RC*, which is negatively associated with *SPS* ($\beta = -0.485$, $p > 0.000$). The result confirms the study of [Aebi et al. \(2012\)](#) *RC* is a sign of better governance practices and devising the monitoring mechanism.

Inconsistent with the expectation in Hypothesis (**H13**), the impact of *AGE* of the firm is insignificant on *SPS* ($\beta = -0.0121$, $p > 0.1$), however the sign of coefficient is in compliance with the theory. The beta coefficient states that the impact of *GOV* on stock price synchronicity is significant and positive with *SPS* ($\beta = 0.527$, $p > 0.01$).

4.4 Results of Systematic Volatility in Emerging Markets

The Panel A and Table 5.17 (**Appendix C**) presents the impact of board composition on Systematic Volatility. The systematic volatility is robust measure of *SPS* in emerging markets. Details about composition of systematic volatility have been included in methodology section. The results of systematic volatility are almost in line with R^2 measure of *SPS*. The coefficient of *BDIND* is seems to be insignificant ($\beta = -0.018$, $p > 0.5$), however, the sign of coefficient is same like in *SPS*. The coefficient of *BDMEETING* shows that it leads to increase in systematic volatility ($\beta = 0.246$, $p > 0.5$). The finding of *BDMEETING* is consistent with finding of developed markets and inconsistent with results of developing economies where the sign of coefficient of *BDMEETING* is accordance with the predicted hypothesis. Similarly, the sign of *BDSIZE* is same in emerging and developing economies that the large board increases the *SPS* and systematic volatility as provided in the above table. However, the theory of board composition suggests mixed evidence regarding effectiveness of board or optimal board structure. In this regard, the study of [Ahmed et al. \(2006\)](#) shows that the larger board is adversely associated with the informativeness of earnings and vice versa for smaller board.

The Panel B in Table 5.17 (**Appendix C**) reports the possible effect of audit committee composition on systematic volatility which is a robust measure of synchronicity. The beta values of audit committee variables looks to be inconsistent with the expected Hypothesis (**H5, H6 and H7**). So, R^2 as measure of *SPS* provide better explanation consistent with the theory. This study also finds the inconsistent results of audit committee composition with *SPS*. So, this research comes to the conclusion that R^2 as measure of *SPS* is providing better results in developed and emerging economies.

Pane C in Table 5.17 (**Appendix C**) reports the impact of financial constraints on systematic volatility in emerging economies. The findings from the model recommend that both proxies *KZ* index and *INTCOV* are significant and negative ($\beta = -0.146$, $p < 0.1$) and ($\beta = -0.181$, $p < 0.000$) respectively, which is according to

the theory that financial constraints increase the *SPS* or low financial constraint firms exhibit low *SPS*. The outcomes of robust test which is systematic volatility are exactly with same with the findings of *SPS*.

In the table 5.18 (**Appendix C**) the coefficient value of *CRO* is significant and negative ($\beta = -0.535$, $p > 0.05$), which suggests that presence of *CRO* in the firm decreases the systematic volatility or increases the *SPI*. On the other hand, the coefficient of *RC* is also significant but positive ($\beta = 0.092$, $p > 0.1$), which is inconsistent with the theory. So, the explanatory power of *SPS* is providing better explanatory power in line with theory and hypothesis as well.

The Panel E of Table 5.18 (**Appendix C**) carries out the impact of *AGE* and *GOVOWN* on systematic volatility. The results indicate that there is no link between *AGE*, *GOVOWN* and systematic volatility ($\beta = -5.45E$, $p > 0.1$) and ($\beta = 4.75E$, $p > 0.1$) correspondingly.

4.5 Results of Systematic Volatility in Developing Markets

This study examines the impact of board composition on systematic volatility in developing countries in Table 5.19 (**Appendix C**). Overall, the Model 17 is consistent with its robust measure of *SPS* and monitoring role of Independence board of directors (Dahya and McConnell, 2007). The beta value for *BDIND* ($\beta = -0.285$, $p < 0.05$) shows that *BDIND* has significant and positive association with informativeness of stock prices and negative association with systematic volatility. Similarly, in line with the hypothesis and theory, it seems to be highly significant ($\beta = -0.032$, $p < 0.000$) that board meetings play prominent role in diminishing the systematic volatility. So, this study extends the implication of Adams and Ferreira (2007) that board meetings facilitate the directors for collection of information and directors also monitor the activities of the board. The negative sign of *BDSIZE* indicates that large board size helps in the capitalization of firm-level information into the stock prices ($\beta = -0.296$, $p < 0.01$). For the model of board composition, both systematic volatility and *SPS* are providing well explanations. The Model 18

in Table 5.19 (*Appendix C*) shows the impact of audit committee composition on systematic volatility. Similarly with Model of board composition, audit committee composition is also expressing the exact robust report with minor differences. So, this study may conclude that the results in both measures of *SPS R*² and systematic volatility are almost same in case of audit committee composition. The audit committee independence and size show that both of the variables cause the increase in systematic volatility ($\beta = 0.133$, $p < 0.01$) and ($\beta = 0.058$, $p < 0.01$), respectively. However, the coefficient *ACSIZE* is insignificant. It shows that the systematic volatility of the firms can't be differentiated on the basis of *ACSIZE*. The Panel C in Table 5.19 (**Appendix C**) demonstrates the impact of financial constraints on systematic volatility. The coefficient statistics of *KZ* index states that decrease in *KZ* index increases the systematic volatility by ($\beta = 0.427$, $p < 0.000$), it means that financial constraints enhance the systematic volatility. Likewise, the beta coefficient of interest cover indicates that it has negative association with systematic volatility ($\beta = -0.068$, $p < 0.05$). It suggests that the increase in interest cover diminishes the systematic volatility. So, this study recommends interest cover as important determinant of systematic volatility.

The results reported in Table 5.20 (**Appendix C**) states the impact of *ERM* on systematic volatility. The results are in line with the robust measure of systematic volatility mentioned in the Panel D, Table 5.20 (**Appendix C**). *AQ* is statistically significant but shows the positive association which is inconsistent with hypothesis and theoretical discussion that BIG4 auditors facilitate in maintaining transparent financial reporting environment. The results suggest the higher systematic volatility of firms which are audited by the big4 than their counterpart firms. In the same way, *CRO* is also positively associated with systematic volatility consistent with the findings when it is regressed with the *SPS* but incompatible with theory and expected Hypothesis (H11). However, sign of *CRO* in developed economies significant and comply with the hypothesis and theory.

The *RC* has coefficient value of ($\beta = -0.301$, $p < 0.01$) which states that presence of risk committee reduces the systematic volatility. The sign of coefficient is consistent with hypothesis and theory. So, this study accepts the Hypothesis (H12)

that the presence of risk committee enhances the *SPI*. The Table 5.20 (**Appendix C**) shows that impact of AGE of the firms on systematic volatility. The study finds the negative association between age of the firm and systematic volatility ($\beta = -0.002$, $p < 0.01$) which is consistent with the hypothesis (H13). Conversely, the coefficient of GOVOWN shows that it has positive but insignificant association with systematic volatility ($\beta = 0.304$, $p < 0.1$).

4.6 Results of Idiosyncratic Volatility in Emerging Markets

The Table 5.21 (**Appendix D**) presents the impact of board composition on idiosyncratic volatility which is robust measure of *SPS*. The details about the robust measure have been discussed in the methodology section in comprehensive manner. In Table 5.21 (**Appendix D**), this study discusses the results of idiosyncratic volatility. The findings of Panel A show that that out of the three measures, idiosyncratic volatility is explaining the results in better way in line with expected hypothesis and theory. The coefficient statistics of board independence, board meetings and board size indicate that variables of board composition improve the idiosyncratic volatility ($\beta = 0.000$, $p < 0.01$), ($\beta = 0.0001$, $p < 0.000$) and ($\beta = 0.0001$, $p < 0.1$) correspondingly. So, the findings prove the Hypothesis (**H2, H3 and H4**) on the basis of idiosyncratic volatility. The Table 5.21 (**in Appendix D**) also estimates the relationship between audit committee composition and idiosyncratic volatility. By looking at the results from the three measures of audit committee composition, the study mentions that again idiosyncratic volatility and R^2 are explaining the results more comprehensively than the systematic volatility. The coefficient values state that *ACIND* and *ACMEETING* enable the capitalization of firm level information into the stock prices which means that *ACIND* and *ACMEETING* improve the idiosyncratic volatility, however the *ACSIZE* is insignificant. Similarly, *ACIND* and *ACSIZE* are also negatively associated with *SPS*. The results presented in Panel B of Table 5.21 (in Appendix D) are align with Hypothesis (**H5 and H6**) and also with the notion that audit committee

independent and audit committee activity (frequency of meetings) improves the *SPI*.

The Table 5.21 (**in Appendix B**) reports the results of financial constraints on idiosyncratic volatility using sample firms from emerging economies. The findings from three measures show that the results of synchronicity and systematic volatility are consistent with the past studies of financial constraints and also with the hypothesis. However, the coefficient value of *KZ* (alternate proxy for financial constraints) states that it has opposite sign with the Hypothesis of financial constraints. However, the sign of coefficient of interest cover is significant and compatible with theory when regressed against the R^2 and systematic volatility. On the other hand the sign of coefficient of interest cover is insignificant with idiosyncratic volatility.

The sign of *AQ* is positive but the relationship is insignificant when it is regressed with the idiosyncratic volatility (**mentioned in Appendix D**). It means that *AQ* has no association with idiosyncratic volatility. In contrast, the coefficient value of *AQ* is consistent when it is regressed with synchronicity and systematic volatility and complies with the theory as well. So, this study suggests that R^2 and systematic volatility are best measure in this regard. The findings are consistent with the theory of [Hutton et al. \(2009\)](#) that *AQ* conveys firm-level information into the stock prices.

The Model 25 estimates in Table 5.22 (**Appendix D**) the impact of *ERM* (*CRO* and *RC*) on idiosyncratic volatility using sample of 150 firms from five emerging markets. Out of two variables of *ERM*, the coefficient of *CRO* is significant with systematic volatility and idiosyncratic volatility. It suggests the presence of *CRO* in the firms enhance the *SPI* or idiosyncratic volatility in line with Hypothesis (H11). However, the variable of *RC* is only consistent in the case of R^2 . So, this study concludes that for in case of *ERM*, all of the three measures provide mixed results.

The Model 26 in Table 5.22 (**reported in Appendix D**) tests the effect of age of the firms and government ownership on idiosyncratic volatility. The findings show that *AGE* and *GOVOWN* negatively associated with incorporation of firm-level

information (idiosyncratic volatility) into the stock prices consistent with the theory and Hypothesis (H13) and (H14). In case of systematic volatility and R^2 , both of IVs are insignificant. So, idiosyncratic volatility is comparatively best measure than rest of two measures.

4.7 Results of Idiosyncratic Volatility in Developing Markets

The Table 5.23 (**reported in Appendix D**) reports the regression results of impact of board of director composition on idiosyncratic volatility in developing countries. The findings reported in Appendix C indicates that idiosyncratic volatility and R^2 are providing mixed results, however the results of systematic volatility are consistent with the hypothesis and theory that *BDINED*, *BDMEETINGS* and *BDSIZE* improves the impoundment of firm-level information into the stock prices which endures the notion that board composition improves the information environment of the firm. The Model 23 in Table 5.23 (**given in Appendix D**) shows that all of three measures of capitalization firm and market specific information in prices exhibit mixed results. But, the variable of *ACMEETINGS* is significant and aligns with the predicted hypothesis that audit committee meetings negatively associated with systematic volatility and positively associated with idiosyncratic volatility which means that *ACMEETIN* enables the revelation of firm level information in prices.

The Model 24 which is based equation states the impact of financial constraints on idiosyncratic volatility. The coefficient statistics of *KZ* depicts that it has negative association with idiosyncratic volatility ($\beta = -0.082$, $p > 0.000$). It means that the prices of the firms which scores lower on *KZ* index have more idiosyncratic volatility than firms which scores higher on *KZ* index. But the coefficient of interest cover ratio is insignificant. However, overall the systematic volatility is explaining better results than rest of two proxies.

The Model 25 in Table 5.24 (**given in Appendix D**) describes the impact of *ERM* on idiosyncratic volatility. Two proxies have been used for measuring the

impact of *ERM*. The first variable of *ERM* is *CRO* which illustrates that it has no association with idiosyncratic volatility. The second variable of *ERM* which is *RC* shows that presence of risk committee impedes the capitalization of industry level information and conveys the firm level information in prices consistent with the hypothesis that *RC*. It implies that idiosyncratic volatility of the firms with *RC* is greater than the firms without *RC* consistent with Hypothesis (H12) and theory that presence of risk committee enhances the idiosyncratic volatility. However the variable of *AQ* is but insignificant in all of the three measures.

The Model 26 in Table 4.32 (**Appendix D**) shows the impact of age of the firms and government ownership on idiosyncratic volatility. The coefficient of age states that it increases in age of firm decreases the idiosyncratic volatility. However the sign is not compatible with the hypothesis. On the other hand, the results of *AGE* and *GOVOWN* are significant and also align with theory and Hypothesis (H13) and (H14) respectively when regressed against the systematic volatility. Overall, systematic volatility is explaining the results in more comprehensive way than rest of the measures.

Chapter 5

Discussion and Conclusion

5.1 Discussion of Stock Price Synchronicity

The literature reports low R^2 values from asset pricing models and suggests that the remaining part of volatility is either due to firm-specific factors or due to unrelated frenzy noise. [Morck et al. \(2000\)](#) report that a country's information environment is integral for stock price volatility, in a way that in high GDP economies the stock prices co-move market-wide factors in less synchronized manner in comparison to low GDP economies. This means that R^2 from asset pricing models should be less in developed economies in comparison to emerging and developing economies. The less synchronization with industry and market-wide factors is because in developed markets investors' property rights are protected, institutions are developed, and rule of law prevails. This causes the political rumors and other systematic factors as the main source stock price volatility. In addition, companies in poor economies are less diversified which associates stocks' variations mainly with industry and market-wide variations. The poor protection of investors' property rights weakens the information environment in a sense that arbitragers will be less confident in gathering and processing the firm-specific information which discourages the informed arbitrage and leads to market to inefficiency and less informativeness.

5.1.1 Board Composition

The study extends the studies of [Eun et al. \(2015\)](#); [Jin and Myers \(2006\)](#); [Morck et al. \(2000\)](#); [Roll \(1988\)](#) by considering both the micro (firm-specific) and macro (economy and market wide) factors to explain the stock price volatility. The Model 4 in Table 4.5 explores the Hypothesis, *H2*, *H3* and *H4* which deal with Board Independence, board meeting frequency and board size respectively. Model 4 investigates the association between corporate board features and *SPS* in developed markets which include United States, United Kingdom, Canada, France and Switzerland. It is important to study association of corporate board with stock price volatility because effective corporate board is integral to mitigate the principal-agent conflict by performing its main job of internal control. [Newell and Wilson \(2002\)](#) find that investors are willing to pay extra even 25% share premium for firms which have strong corporate governance mechanisms because for outside owners the corporate governance is integral to alleviate the agency conflict which decreases information asymmetry and improves firm's internal information environment. Strong corporate governance is also positively associated with increased financial disclosure and improved financial reporting quality, so strong corporate governance can be directly linked with improved *SPI* and low synchronicity with market wide factors ([Haß et al., 2014](#)). [Gul and Qiu \(2002\)](#) also find the negative impact of countries' level and firm level governance on firm's information asymmetry, which means that firm's information environment improves with strong country and firm level governance mechanisms so strong corporate governance should lead to increase in *SPI* and reduce synchronicity. In addition, [Veronica and Bachtiar \(2005\)](#) also report the positive impact of corporate governance on firm's information environment which leads to more informed stock prices.

The first variable of model 4 in Table 4.5 explores the impact of board independence with *SPS*. Consistent with the Hypothesis, *H2*, the board independence should decrease *SPS*, the study reports significant and negative impact of board independence on *SPS* in developed markets. This means that independent corporate board improves the firm's information environment which enhances the *SPI* and reduces synchronicity [Ferreira et al. \(2011\)](#). The result is also consistent with

the study of [Rosenstein and Wyatt \(1990\)](#) which finds the positive association between hiring of independent board of directors and positive trend in stock prices by investors. The study confirms that board independence is essentially required in order to achieve the objective of advisory and vigilance, which is ultimately translated into more informative stock prices and lower *SPS*.

The second variable of Model 4 explores the association of board meeting frequency with *SPS*. Contrary to the hypothesis, H_3 , that the board meeting frequency is positively related with board efficiency, the study finds the negative association between board meeting frequency and board efficiency. The hypothesis is developed according to common perception that board should meeting more frequently in order to address the firm's issues on time. [Lipton and Lorsch \(1992\)](#) find the positive association between board meeting frequency and firm performance and conclude that higher board meeting frequency indicates more active board which acts in the best interest of shareholders. However, our results are consistent with the study of [Chen et al. \(2006\)](#) which states that on one side high frequency of meeting reflect the board efficiency but on the other side higher frequency may also reflect that the company is moving from serious problems. [Vafeas \(1999\)](#) reports that there are costs and benefits with the meeting frequency. The costs are related with compensation fees and coordination expenses and benefits are in the form of having internal control. According to the mixed literature in board meeting frequency, the study finds the significant but positive association of board meeting frequency with *SPS*. The result emphasizes the opinion that higher number of board meeting frequency is associated with board inefficiency which results into higher *SPS* and low informativeness in developed markets.

The third variable of model 4 in Table 4.5 explores the association between board size with *SPS*. Consistent with the Hypothesis, H_4 , the board size is positively associated with board efficiency in a way that larger boards usually have more resources and expertise, which can be divided into more subcommittees, in comparison to smaller boards so the larger boards are better able to perform the job of monitoring and advisory. The investors perceive firms, with larger boards, as maintaining good and transparent information environment in comparison to the

firms with smaller boards (Upadhyay and Sriram, 2011). Nguyen et al. (2014) report positive association between board size and firm value which is consistent with the hypothesis that board size positively contributes in creating firm value. The studies of Ferreira et al. (2011); Chou et al. (2013) find the positive association between board size and *SPI* by confirming the view that a corporate board equipped with more skills and resources is more effective in building internal control which is ultimately translated into improved and transparent firm's information environment. So the study finds that board size has significant and negative association with *SPS* in developed markets in a sense that larger boards are better able to perform the job of internal control and improve the firm's information environment.

The Panel A in Table 5.11 and Table 5.15 explores the association between Board composition and *SPS* in emerging and developing countries. The results of first variable of Panel A show that with theory and Hypothesis (*H2*) the board independence reduces the *SPS* like in developed economies. Ferreira et al. (2011) evidence that board independence improves the informativeness of stock prices. This finding is in compliance with Grossman and Stiglitz (1980) who expect that enhancing the cost and benefit of collection of private information facilitates the informed trading and ultimately leads to informativeness of stock prices. The board independence play very important role in improving the information environment of the firm, namely, voluntary disclosure (Shen et al., 2010), voluntary audit (Zhang and Huang, 2010), inclusive financial disclosure (Chen and Jaggi, 2000) and information disclosure of internal control (Hongxing et al., 2009). All of the mentioned determinants improve the information environment of the firm which facilitates the capitalization of firm-level information into the stock prices. However, contrary to the above mentioned studies, the study of Eng and Mak (2003) concludes that board independence reduces the voluntary disclosure by the firms. Similarly, another study of Raheja (2005) shows that more independent directors demand high monitoring cost so, this is costly for the outside directors to gather relevant information. The variable 2 of Panel A is board meetings which represents monitoring activity of the board (Brick and Chidambaran, 2010). The theory of board

activity indicates that it has positive association with the firm performance (Brick and Chidambaran, 2010). As far as the results of the current study is concerned, board monitoring activity is negatively associated with systematic volatility which is robust proxy for *SPS* in developing markets and positively associated with *SPS* in emerging markets as shown in Table 5.19 and Table 5.11 respectively. The negative impact of board monitoring can be traced from Adams and Ferreira (2007) who show that board meetings is source for collection of information, and for making decisions and monitoring the management. On the other hand, the plausible explanation regarding positive association between board monitoring and *SPS* can also be evident from the studies of Vafeas (1999) and Adams (2003) that incremental monitoring by the board is an indication that firm is performing poorly which requires by the board to increase the meeting frequency in order to discuss the potential prospects of the firm. However, when board meeting in emerging economies is regressed against the idiosyncratic volatility which is inverse proxy of synchronicity, the results are in line with the theory of board monitoring activity. So, the present study accepts the hypothesis of monitoring activity in emerging economies on the basis of idiosyncratic volatility as measure for capitalization of firm-level information and reject the Hypothesis (*H3*) on the basis synchronicity and systematic volatility as proxies for incorporation of market level-information into the stock prices. Similarly, Hypothesis (*H3*) is endorsed true in developing market on the basis of systematic volatility and not supported on the basis of synchronicity and idiosyncratic volatility.

The third variable of board composition is *BDSIZE*. The theory of board size provides mix evidence about the effectiveness of the size of the board. Like other variables of board composition, the Hypothesis, (*H4*), of board size posits that board size is negatively linked with the *SPS*. The findings of the study states that board size is positively associated with *SPS* which is inconsistent with the hypothesis in emerging markets and also in developing markets reported in Table 5.11 and Table 5.15. However, the coefficients of board size are in line with theory and hypothesis when regressed with idiosyncratic volatility in emerging

markets and with systematic volatility in developing economies. By using the referred results the findings confirm the findings of [Ding et al. \(2013\)](#); [Ferreira et al. \(2011\)](#); [Chou et al. \(2013\)](#) which identify that the size of the board is prominent determinant of *SPI*. This reflects that firm governance mechanism plays very central role in transparency of firm environment. However, as mentioned above that some robust proxies are not supporting the negative association between board size and *SPS*, the prior literature also supports the inverse relationship like, the study of [Ferreira et al. \(2011\)](#) explains that *SPI* is adversely linked with the larger board. Similarly, the study of [Ahmed et al. \(2006\)](#) check the impact of board size on earning informativeness and concludes that the larger board decreases the informativeness of earning. Additionally, [Jensen \(1993\)](#) argues that there must be maximum seven members in the board otherwise it causes miscommunication among the board members. Likewise, Board meetings have also significant but positive impact on synchronicity. So, the hypothesis is rejected. The positive results of board activity on *SPS* are significant and particularly in line with [Vafeas \(1999\)](#) who documents that increase in board activity leads to poor performance which in return stimulate the board to respond the poor performance in the shape of enhancing the board activity (board meetings). The findings of board size are accordance with the hypothesis and theory of board size which endorse another hypothesis of this study. The study of [Ferreira et al. \(2011\)](#); [Chou et al. \(2013\)](#) show that large board size mitigates the *SPS*, which implies that the firm-specific governance is crucial for *SPI* ([Ding et al., 2013](#)).

5.1.2 Audit Committee Composition

The Model 5 in Table 4.5 investigates the Hypothesis, *H5*, *H6* and *H7* dealing with Audit Committee Independence, audit committee meeting frequency and audit committee size respectively in developed equity markets. The association between audit committee and *SPS* is important to explore because audit committee is one of the most important committees, composed of competent financially skilled people, having primary job to oversee the firm's financial disclosures which

is the main source of information for investors. In United States and other markets, it is mandatory for the firms to maintain their internal audit committees in order to regulate their internal information environment. [Varici \(2013\)](#) finds that the presence of audit committees is considered as positive signal by the investors that firm is serious in reducing the information asymmetry problem. [Vafeas \(2005\)](#) reports that audit committee significantly improves the firm's financial reporting quality and earnings quality. [El-Mahdy et al. \(2013\)](#) find that audit committee independence and its technical expertise significantly reduce the firm's information asymmetry. [Baxter \(2007\)](#) also reports the positive association between formation of audit committees and financial reporting quality.

The first variable of Model 2 in Table 4.5 explores the association between Audit Committee Independence and *SPS*. Contrary with the hypothesis, *H5*, the audit committee independence is positively associated with *SPS*. The hypothesis is established based upon the common analogy that independent audit committee, comprised of majority outside directors, has positive association with firm information environment ([Krivogorsky, 2006](#)). However, the study reports the positive association between audit committee independence and *SPS* which is contrary to the hypothesis that audit committee independence should be negatively associated with *SPS* or positive associated with *SPI*. The result is consistent with the study of [Klein \(2002\)](#) which reports that to maintain high level of independence in corporate board is not free of cost, rather it requires high amount of cost which may lead to inconsistent expectations. He explores the association of proportion of debt financing in firm's capital structure in the presence of independent audit committee with a hypothesis that independent audit committees are taken positively by debt providers in a sense that they will be having credible accounting information, to be used in debt covenants, in the presence of independent audit committees. However, [Klein \(2002\)](#) does not find the significant relationship between audit committee independence and proportion of debt financing which may have the possible explanation that firms can also alter the composition of their audit committees in favor of the specific economic environment.

The second variable of model 5 in Table 4.5, explores the association between

Audit Committee Meeting frequency and *SPS*. The audit committee meeting frequency is considered a proxy for committee efficiency. It is considered that if a committee meets in regular basis then it means that the committee is active and doing its job or monitoring more vigilantly [Sharma et al. \(2009\)](#); [Xie et al. \(2003\)](#). ([Xie et al., 2003](#)) report the positive association between audit committee meeting frequency and financial reporting quality. However, the study finds negative but insignificant association with *SPS*. In the literature different studies also report the negative association of audit committee meeting frequency with audit committee efficiency ([Abbott et al., 2003](#); [Zhang et al., 2007](#)). So based upon the mixed results in literature, the study reports insignificant relationship between audit committee meeting frequency and *SPS* which shows that frequency of audit committee meetings has no role in affecting the *SPI*.

The third variable of Model 6 in Table 4.5 explores the association between audit committee size and *SPS*. The larger audit committees are considered as having more resources and technical skills so larger audit committees should be able to perform well in doing their job of regulating financial information which should significantly reduce the information asymmetry ([Anderson et al., 2004](#)). However the study finds the significant but positive association between audit committee size and *SPS* which shows that audit committee size is negatively associated with *SPI*. This result can be consistent with the study of [Klein \(2002\)](#) who mentions that firms may intervene in the audit committee composition in accordance with firm's economic environment. The result can also be consistent with the studies of [Guest \(2009\)](#); [Jensen \(1993\)](#); [Lipton and Lorsch \(1992\)](#) which are related to overall board size. These studies report that to maintain larger number of board members requires high amount of cost in order to coordinate and compensate the members and it can slow down the process of decision making as well. The same analogy can be applied with audit committee size as well because the audit committee is a specialized committee of that corporate board, which is that larger audit committee can be victim of slow decision making and poor performance which can reduce the audit committee efficiency. So in developed markets, the audit committee size is positively associated with *SPS* and negatively associated with *SPI* which means

that smaller committees in comparison to larger committee are more effective in decision making in order to reduce information asymmetry and improve firm's information environment.

The Panel B in Table 5.11 and Table 5.15 explains the impact of audit committee composition on *SPS*. The first variable of audit committee composition is audit committee independence. The audit committee independence is Hypothesized (*H5*) as negatively linked with *SPS*.

The results reported in Table 5.11 show that audit committee independence is negatively associated with *SPS* in emerging markets but positively associated with *SPS* in developing markets (reported in Table 5.15) which is against the Hypothesis (*H5*). However, the same hypothesis comes true in emerging markets. Audit committee independence is also pivotal for overseeing the financial reporting mechanism and enhances the better corporate governance practices (Abbott and Parker, 2000; Carcello and Neal, 2000; Klein, 2002). Klein (2002) investigates the impact of audit committee independence and earning management and found that earnings management is negatively linked with audit committee independent. Gul et al. (2010) uses earning management as proxy for quality of financial reporting and checked its association with *SPS* in China, they conclude that quality of financial reporting is negatively related with *SPS*. By following this rationale, this study conjectures that audit committee independence improves the information content of stock prices and reduces *SPS*. On the other hand the positive association between audit committee independence and *SPS* can be evident from numerous studies. Chen et al. (2015) argue that independent directors can ensure the effective monitoring only in presence of informationally rich environment. It means that when the environment is not transparent then the presence of independent directors is useless. So, one may argue that opaque environment may impede the incorporation of private information into the sock prices. Opaqueness of information environment in developing countries can also be traced from various studies. For example Morck et al. (2000) identify that low income countries have poor investor's protection laws and political uncertainty. This situation overall contributes towards the information environment of the firms. As mentioned

above that rich information is important for proper functioning of independent directors. So, the study conjectures this plausible explanation that because of absence of rich information environment in developing countries this study didn't find the negative association between audit committee independence and *SPS*. Similarly, Han et al. (2014) find that unfortunately independent directors remain failed in diminishing of problem of information asymmetry in South Korea because the information withheld by the managers may not be detected by the outside directors. South Korea is considered as developing country in this study. So, the mentioned study also shows that the information environment of developing countries is not rich. The findings of this study can also be confirmed from Fama and Jensen (1983); Klein (1998) who argue that expansion of board by appointing outside directors and firm's preference for outside directors over inside directors may cost to the firm. So, maintaining completely independent audit committee may be costly for the firms (Klein, 2002). Furthermore, Romano (2005), makes the survey from already published literature by checking the impact of audit committee independence on earning management and comes to know that the relationship of audit committee and earning management is adverse in 6 studies and no significance exists in other 10 studies. So, the Hypothesis (*H5*) is supported in emerging economies and not supported in developing economies.

The second variable of audit committee composition is audit committee meeting which is an indicator of board monitoring activity. In this regard the Hypothesis (*H6*) predicts negative relationship between audit committee meetings and *SPS*. About monitoring role of audit committee, Karamanou and Vafeas (2005) link the meeting frequency of audit committee with accomplishment of goals and argue that higher meeting frequency facilitates in accomplishing the potentials goals. Li et al. (2012) further expands that frequent meetings conducted by the audit committee provide opportunities to its members to discuss and evaluates the financial reporting issues and practices. However, the coefficient of audit committee meeting states that it has positive association with *SPS* in emerging countries reported in Table 5.16 and negative association with *SPS* in developing countries (mentioned in Table 5.15). So, the findings are in line with Hypothesis in developing

countries and contrary in emerging economies. Xie et al. (2003) show that audit committee meeting frequency is negatively correlated with discretionary accruals. Another study of Xie et al. (2003) demonstrates that meeting frequency of audit committee improves the earnings quality of the firms. Similarly, another study of Karamanou and Vafeas (2005) shows that meetings frequency is positively linked with earnings forecast.

The third variable of audit committee composition is audit committee size which is expected to be negatively correlated with *SPS* in Hypothesis (*H7*). The results reported in Table 5.11 state that board size is negatively associated with *SPS* in emerging markets which is in line with the hypothesis and theory and positively associated with *SPS* in developing countries. The negative correlation between audit committee size improves the informativeness of earnings (Woitdtke and Yeh, 2013). Consistent with these results the study accepts the expected Hypothesis (*H6*) that *ACSIZE* has negative association with stock price co-movement. Contrary to the results of positive impact of audit committee on *SPS* which is against the predicted hypothesis in developing countries. Karamanou and Vafeas (2005) find that audit committee size enhances the accuracy of earning prediction consistent with the analogy that that corporate governance play the role of vehicle that transmits information from management to shareholders. Similarly, Cormier et al. (2010) demonstrate that larger audit committee encourages the voluntary disclosure which in return reduces the problem of information asymmetry. Furthermore, Pagano, Schwartz, Wagner, and Marinelli (2002) link the quality of audit committee with corporate board, and find that the policy makers and researchers consider audit committee as indication for quality of financial reporting. So, the high quality of financial reporting is adversely linked with the *SPS*. On the basis of empirical evidence, this study accepts the Hypothesis (*H6*) in emerging countries and the same hypothesis is not supported in developing countries.

5.1.3 Financial Constraints

The Model 6 in table 4.5 investigate the hypothesis, *H8 and H9*, dealing with two proxies of financial constraints which are KZ index and Interest Coverage ratio in

developed equity markets. It is important to study the association of financial constraints with *SPS* because imperfect financial markets, frictions in transactions and information asymmetry between principal and agent make the external source of financing unattractive which can restrain firms to lose profitable projects. [Kaplan and Zingales \(1997\)](#) report that almost all firms are facing some extent of financial constraints as they face a wedge between internal and external cost of financing. The financial constraints have direct link with a firm's information environment as [Kurt \(2017\)](#) reports that the firms which face financial constraints report low quality of financial reporting and higher asymmetric information environment. And with this reduced quality of financial reporting, the financial institutions become reluctant to offer capital to the firm easily. [Dhaliwal et al. \(2011\)](#); [Mansour \(2014\)](#) also report the negative association between firm's public financial disclosures and financial constraints which confirms that financially constrained firms have low quality of financial reporting, low level of public disclosures and high level of information asymmetry which ultimately reduce the *SPI* and increase stock price co-movement with industry and market-wide variations. The discussion of financial constraints is initially started by [Fazzari et al. \(1988\)](#) by constructing a financial constraints index named as FHP index. However, major critique on FHP is done by [Kaplan and Zingales \(1997\)](#) propose their own index named as KZ index, which is the most commonly used index in literature ([Farre-Mensa and Ljungqvist, 2016](#)). Based upon its most common usage, the study uses it also in association with *SPI*. The study also considers the interest coverage ratio as another, rather simple, proxy of financial constraints. The rationale for using this ratio is that it captures the interest paying capacity of a firm, and it is found that the firms which are facing financial constraints have low interest coverage ratios ([Baños-Caballero et al., 2014](#); [Whited, 1992](#)). The first variable of Model 6 explores the association between KZ index and *SPS*. Due to extreme variation the index is converted into dummy variable as the firms reporting low index values (unconstrained firms) from the median are given value 1 and otherwise 0. So the value 1 of KZ index dummy variable is associated with unconstrained firms and 0 is associated with constrained firms. According to the Hypothesis, *H8*, low values

of KZ index should have positive association with *SPS*, meaning that relatively less financially constrained firms should have improved information environment and low information asymmetry and so should reflect low *SPS*. However, contrary to the hypothesis, *H8*, the study reports significant but opposite association of KZ index with *SPS*, as the positive sign shows that the firms which are financially unconstrained have higher *SPS* in comparison to constrained firms. This means that firms which are reporting low KZ index (unconstrained firms) have higher stock price co-movement with market variations instead of firm-specific variation in comparison to the firms which are reporting higher values of KZ index. This is not the only study which reports the inconsistent result of KZ index values, the studies of [Farre-Mensa and Ljungqvist \(2016\)](#) and [Hadlock and Pierce \(2010\)](#) cast the serious doubts on the applicability of KZ index. They report that the firms which are classified as financially constrained do not behave in the direction consistent with the theory of having financial constraints as these firms do not have trouble and restrictions to raise external capital which emphasize that KZ index does not distinguish the firms correctly between constrained and unconstrained firms. So in consistent to these studies, the study also considers the doubt on generalizability of KZ index.

The study uses another technique to measure the financial constraints, which is the second variable of Model 6 in Table 4.5. It investigates the association between interest coverage ratio and *SPS*. The hypothesis, *H9*, assumes that the firms which are financially constrained report low interest coverage ratios because the firms reporting low interest coverage face troubles in fulfilling the finance cost. [Baños-Caballero et al. \(2014\)](#) and [Kaplan and Zingales \(1997\)](#) explain that the firms reporting low interest coverage ratios face financial constraints. [Denis and Sibilkov \(2009\)](#) find that the firms which are declared as financially constrained firms, based upon their cash holding levels, also have low interest coverage capacity. So the study takes interest coverage ratio as a simple proxy of firm's financial constraints level and its negative association is expected with *SPS*. As the firms which are having good interest coverage capacity, face less financial constraints and so should report low *SPS* due to improved information environment and low

information asymmetry. The study finds the significant and negative association between interest coverage ratio and *SPS* which is compatible with the hypothesis, *H9* that interest coverage ratio should have negative association with stock price co-movement. The study confirms that interest coverage ratio is a simple but better proxy to measure the level of firm's financial constraints in comparison to KZ index. So according to the result firm's financial constraint level is an important determinant for *SPI* in a way that if a firm is facing financial constraints then its information environment gets weakened and asymmetry of information increases (Kurt, 2017). Then this weak information environment discourages the informed arbitrageurs to gather and analyze the firm-specific information which ultimately decreases the *SPI* and market-wide volatility becomes major source of stock price volatility.

The Panel C of Table 5.11 and 5.15 reports the impact of financial constraint on *SPS* in emerging and developing countries. For this purpose, two proxies, KZ index and interest cover ratio have been used. In accordance with the expected Hypothesis (*H8*) that financial constraint is negatively related with *SPS*. However, the coefficient of KZ is positive in sample firms of developed economies which is contrary with the results in the sample firms of emerging economies. Similarly, second proxy of interest cover ratio is also negatively associated with *SPS*. Ascioğlu et al. (2008) show that financially constrained firms are subject to asymmetry of information problem, because financially constrained firms face the wedge between raising finance in internal and external market. So, this study endorses Hypothesis (*H8*) of financial constraints on basis of interest cover ratio.

5.1.4 Enterprise Risk Management

The Model 7 in Table 4.6 investigates the Hypothesis, *H11* and *H12*, dealing with two variables related to enterprise risk management named as Corporate Risk Officer, and Dedicated Risk Committee respectively in developed equity markets. It is important to study enterprise risk management practices in association with *SPI* because it deals with the over-all risk of the firm which is most important for firm's information environment (D-Arcy and Brogan, 2001). ERM sees all risks,

mainly the related to firm's interaction with financial markets, interest rate risk, liquidity risk, exchange rate risk and credit risk, collectively rather individually. The reasons to see all the risks collectively because majority of risks are not totally independent rather integrated with each other (Miller, 1992). The ERM practices have become in high demand particularly after the financial collapses like Enron, Sunbeam and etc. Quon et al. (2012) report that due to high fluctuations in business world, now traditional risk management approach is not suitable rather integrated risk management is required. McShane et al. (2011) investigate the impact of higher rating of ERM by Standard & Poor on firm performance and find the positive impact of ERM rating on firm's overall performance. Nocco and Stulz (2006) report that the practices of ERM by the firm significantly creates the value for the shareholders as in enables the firm's senior management to manage the risk and return trade-off faced by the firm at all levels. So based upon the literature of ERM, the study explores the association of ERM with *SPI* as integrated risk management approach should improve the firm's information environment and decrease the information asymmetry. In line with the argument, the study explores *ERM* with *SPS* by hypothesizing that ERM practices should decrease stock price synchronicity and improve *SPI*.

The first variable of Model 7 explores the association between presence of corporate risk officer and *SPS*, by hypothesizing that presence of *CRO* improves the firm's information environment so it should decrease the *SPS*. In consistent with the Hypothesis, *H11*, the study finds the significant and negative association between presence of corporate risk officer and *SPS*. The result confirms that presence of corporate risk officer significantly improves the firm's information environment and reduces the information asymmetry by implementing the integrated risk management practices. The presence of *CRO* is directly associated with firm's information environment because the *CRO* is accountable to implement and oversee the integrated risk management framework in overall all aspects of the firm (Liebenberg and Hoyt, 2003). The result is consistent with the studies mentioned above that implementation of enterprise risk management practices plays important role in mitigating firm's overall risks and in improving firm's information environment

and in reducing asymmetry of information (Nocco and Stulz, 2006; Quon et al., 2012). So the study concludes that the presence of corporate risk officer, a proxy of enterprise risk management, is integral for firm's information environment which significantly improves the *SPI* and reduces the *SPS* in developed markets.

The second variable of Model 7 explores the association between dedicated risk committee and *SPS*, by hypothesizing that presence of dedicated risk committee significantly improves the firm's information environment by reducing information asymmetry so it should decrease the *SPS*. When a firm's information environment improves then arbitragers and public investors take it positively and they get motivated to gather and analyze more firm-specific information and take decisions accordingly. In consistent with the hypothesis, the study finds the significant and negative association between dedicated risk committee and *SPS*. The result confirms that presence of dedicated risk committee significantly improves the firm's information environment and better governance mechanism (Aebi et al., 2012; Nocco and Stulz, 2006; Quon et al., 2012). So the study concludes that presence of dedicated risk committee significantly improves the firm's information environment which motivates the investors to gather, analyze and incorporate more firm level information which enhances the *SPI* and reduces the *SPS*.

The Panel D in Table 5.12 and 5.16 posits the relationship between enterprise risk management (*CRO and RC*) and *SPS* in emerging and developing countries. The study expects that presence of *CRO* and *RC* both are negatively correlated in *SPS* which is mentioned in the hypothesis (*H10 and H11*).

Dobler (2008); Subramaniam et al. (2009) show that presence of risk committee is indication for insurance of reliable communication and overseas the risk management process and practices by the firms. Dedicated risk committee is symbol for best risk management practices and hence it improves the governance structure of the firm (Aebi et al., 2012). Al-Hadi et al. (2016) investigate the impact of risk committee of management disclosure related to risk and find that presence of risk committee is positively related to risk disclosure. Furthermore, they argue that the mature firms are more inclined towards the risk relevant disclosures than the younger firms. So, one may conclude that presence of risk committee has central

role in corporate governance or improves the information environment of the firm by encouraging firms to disclose more risk related information. The disclosures facilitate in conveying the information about the governance and performance of the firm by reducing asymmetry of information and agency conflict between insider and outsiders (Healy and Palepu, 2001). The finding confirms the Hypothesis (H11) that *RC* improves the *SPI* in developing countries. Like *RC*, *CRO* is responsible for execution and looking after the implementation of *ERM* structure, which is in line with prior studies that appointment of *CRO* causes reduction in asymmetry of information about the firm risk profile (Liebenberg and Hoyt, 2003). *CRO* possesses adequate communication expertise which are necessary for promoting the *ERM* to board of directors and to outsiders about the inherent risk of the firm. This finding supports our prediction of *CRO* hypothesis (H10) that appointment of *CRO* reduces the *SPS* in emerging markets but hypothesis is not supported in developing markets.

5.1.5 Audit Quality, Firm Age and Government Ownership

The one variable of model 8 explores the association between audit quality and *SPS* by Hypothesizing, H10, that audit quality should decrease the *SPS*. Audit quality is defined as a process which includes the rigorous audit practices by audit professionals in compliance with auditing standards. It is important to investigate the relationship between audit quality and *SPS* because audit quality is associated with a mechanism which challenges the management's bad accounting practices and makes sure the quality of its financial reporting (Becker et al., 1998; Francis and Yu, 2009). Contrary to the hypothesis the study finds the insignificant association between audit quality and *SPS*. The possible explanation for this positive result can be as mostly the firms, almost 98%, in the sample are blue-chips in their respective market which makes it obvious that they have ample resources to hire big 4 auditors or their associates in local market. So the study reports insignificant association between audit quality and *SPS* in developed markets.

The second variable of Model 8 explores the association between Firm Age and

SPS by Hypothesizing, *H13*, that age of the firm should be positively associated with *SPS*. The age of the firms is generally viewed as firm's maturity in its strategic decision making (Akben-Selcuk et al., 2016). Majumdar (1997) reports the positive association between firm age and firm's productivity but negative association with firm profitability. Loderer (2010) report the negative association between firm age and its profitability by mentioning that firm's profitability declines as a firm gets old. This happens mainly due to firm's rigidity in its decisions because of its success factor and due to inefficiency in managing resources in comparison to peer young firms in the industry. However in consistent with the hypothesis the study finds the negative but insignificant association between firm age and *SPS* in developed equity markets. As there are mixed results in the literature regarding firm age and firm efficiency so it is also consistent to have insignificant relationship between firm age and *SPI*.

The third variable of Model 8 explores the association between government ownership and *SPS* by Hypothesizing, *H14*, that government ownership is positive associated with *SPS*. This means that government ownership has negative impact on firm's information environment and governance structure of the firm (Borisova et al., 2012; Sun and Tong, 2003). State owned firms are considered as more opaque in comparison to non-state owned firms. Sun and Tong (2003) report that too much government ownership has adverse impact on firm's performance. However, the study finds the insignificant relationship between government ownership and *SPS* in developed equity markets. This means that in developed equity markets the *SPS* is indifferent in government owned and non-government owned firms. So the study concludes that government ownership does not create impact on *SPI*. The Panel E in Table 5.12 and 5.16 investigates the impact of age of the firm and government ownership on *SPS*. No significant association of age of the firm has been found for *SPS* in both emerging and developing countries which is contrary with predicted hypothesis (*H13*) that firm age has positive association with *SPS* on the grounds that when the firm becomes older, the people may get aware about such firm characteristics, which ultimately causes stock price co-movement (Dasgupta et al., 2010). Similarly, the coefficient of GOVOWN is insignificant, this

study doesn't support the expected Hypothesis (*H14*) that government ownership leads to opaqueness of financial disclosure and affect the minority shareholders adversely (Shleifer and Vishny, 1994), which impede the reflection of firm-level inform into the stock prices. Second plausible explanation of insignificant effect of government is because the majority of firm in the sample firms are privately owned. The results of government ownership are stable in both in developed and emerging economies as well.

5.1.6 World Governance Indicators

The Model 14 explores the association between world governance indicators and *SPS* by Hypothesizing, *H16*, that country's good governance should be negatively associated with *SPS* in all 15 markets comprising of 5 markets in each category of developed, emerging and developing markets. The WGI are just like other economic indicators such as GDP, CPI and others, which are developed by World Bank by capturing the six dimensions of a country's different dimensions related to rule of law, regulatory quality, political stability and so on. It is important to study the impact of country's governance situation on *SPI* because country's governance is directly related with a country's overall information environment. If a country's information environment is positive and rule of law exists then it motivates the investors and informed arbitragers to make more informative investment decisions which increase the *SPI* and improve market efficiency ultimately (Dasgupta et al., 2010; Eun et al., 2015; Jin and Myers, 2006; Morck et al., 2000). Dasgupta et al. (2010); Eun et al. (2015) consider the good governance index developed by Kaufmann et al. (2004) to measure the country's governance situation and information environment. However, the study uses the WGI developed by World Bank to explore the impact of a country's governance system and information environment on *SPS*. Consistent with the theory, the study finds the significant and negative association between control of corruption and *SPS*. Rule of law and regulatory quality are also negatively associated with *SPS*. The results confirm the hypothesis that governance system of a country significantly affects the *SPI* in a way that good governance system improves the *SPI* and market efficiency.

The results are consistent with the studies of [Eun et al. \(2015\)](#); [Dasgupta et al. \(2010\)](#); [Jin and Myers \(2006\)](#) and [Morck et al. \(2000\)](#) that good governance system, investors' property rights protection and institutional development improve the *SPI*. As the rule of law, control of corruption and regulatory quality ensure the investors' property rights protection, institutional development and good governance system of a country which motivate the investors to take more informative investment decisions and improve the *SPI* ultimately.

5.1.7 KOF Economic Globalization Index

In addition to a country governance system, the study also explores the impact of a country's economic globalization level and *SPS*, in model 6, by Hypothesizing, *H17*, that a country's economic globalization should be negatively associated with *SPS*. The KOF economic globalization index covers the aspect like a country's trade, FDI, Portfolio Investment, income payments to foreign nationals, import barriers, taxes and other restrictions on trade. So the KOF economic globalization captures the level of globalization and friendly interaction with the world, and this is an important parameter for a country's growth. The economic globalization of a country allows the foreigners to bring their capital participate in domestic market for better returns, so the study hypothesizes that the more globalized economy should exhibit more tolerance and better information environment ([Eun et al., 2015](#)). The results confirm the hypothesis that there is negative association between KOF globalization index and *SPS*, which confirms that a country's economic globalization is an important determinant of *SPI*. The stock prices become more informative in globalized economy because the globalization brings positive information environment due to economic development and cultural diversity. So the study concludes that the economies which are open to international world, have friendly policies for business community, less trade restrictions and having more FDI exhibit more *SPI* and less *SPS*.

5.1.8 Culture

The Model 10, explores the association of country's culture with *SPS* by hypothesizing, *H18*, *H19* and *H20*, that culture has significant impact on *SPI* in all 15 markets which comprise developed, emerging and developing markets. Just like the formal indicators of a country such as GDP, FDI, CPI, governance indicators and globalization the informal structure of a country is equally very important as it has impact on individual behaviors which vary from society to society. (North, 1990) reports that in addition to formal rules of a country, the informal structures like traditions, customs and culture are also very critical for a country's information environment. It is important to see the impact of culture on *SPI* because culture has impact on individual and institutional behaviors (Eun et al., 2015). The Hypothesis, *H18*, explores the association of individualism with *SPS* with an expectation that individualistic culture has negative impact on *SPS*. Individualistic culture is important to explore on *SPI* because in individualistic society people prefer to process information by themselves rather to follow the herds or to rely on other people. If people prefer to process information by themselves rather to follow the other's opinion, then they try to gather and analyze the firm-specific information as much as possible and take decisions based upon fundamentals of a stock. This lets them to take more informative decisions which should increase *SPI*. Consistent with the hypothesis, the study reports significant and negative impact of individualistic culture on *SPS*. The result is consistent with the study of Eun et al. (2015) who also report the negative association between individualistic culture and *SPS*. So the study confirms that individualistic culture motivate people to process information by themselves which significantly improves the country's information environment and *SPI* in comparison to collectivistic culture.

The Hypothesis, *H19*, explores the association between another dimension of culture, Power Distance Index, and *SPS*, with an expectation that power distance index is negatively associated with *SPS*. In high power distance index societies, secrecy and information concentration is encouraged and accepted at all levels of hierarchy. Hope (2003) reports that due to information concentration in high power distance index societies, low level of public disclosures are expected so it is

expected to have low *SPS*. Contrary to the hypothesis, the study finds the negative association between power distance index and *SPS*. However, the result is consistent with the studies of Jaggi and Low (2000); Zarzeski (1996) who also find the opposite sign of power distance index in their studies. Jaggi and Low (2000) hypothesized that the power distance index is negatively associated with voluntary disclosures of firms, however on average, in different data groups, they found significant but positive relation which means that the voluntary disclosures are high in high power distance index societies. So, based upon the same analogy, the study concludes that the high power distance index societies are less information asymmetric and so report low level of *SPS*. The Hypothesis, *H20*, explores the association between uncertainty avoidance and *SPS* by hypothesizing that there should be positive association between uncertainty avoidance and *SPS*. The positive association is expected because in uncertainty avoidance society the individuals feel uncomfortable with ambiguity and uncertainty so they become more secretive which can reduce the disclosure levels (Jaggi and Low, 2000). However, the result reports the negative association between uncertainty avoidance and *SPS* which is contrary to the hypothesis that uncertainty avoidance should be positively associated with *SPS*. The result is consistent with the finding of Jaggi and Low (2000); Zarzeski (1996), as they also report the opposite sign of uncertainty avoidance with public level disclosures. So the study concludes that uncertainty avoidance is negatively associated with *SPS* which means that high uncertainty avoidance is positively linked with *SPI*. The study also runs the interaction terms of cultural dimensions with KOF globalization index in a view that a country's globalization level affects its culture because globalization invites foreigners and international investment. When foreigners from different cultures come in the domestic country then the domestic culture weakens or gets affected from different other international cultures (Eun et al., 2015). In interaction terms of KOF globalization index and all three culture proxies individually, the study finds all three proxies of culture significant and in the same direction as mentioned above. So the study concludes that the culture dimensions are significant and in the same direction when an economy is also globalized.

5.1.9 Voluntary Disclosure

The Hypothesis, *H1*, explores the association between voluntary disclosure and *SPS* by hypothesizing that voluntary disclosure of a firms should be negatively associated with *SPS*. It is important to explore the voluntary disclosures because it is directly associated with a firm's information environment. The agency problem and information asymmetry create hurdles in capital market functioning and create negative impact on *SPI*. In this regard, the firm's information disclosure policy plays significant role in a way that improved disclosures improve the firm's information environment which encourages the investors to gather more firm-specific information and take informative decisions. The firms disclose two types of disclosures, one is related to mandatory information required by IFRS or GAAP and the other one is voluntary information which company discloses from its own choice in order to guide investors to take better informed decisions.

The voluntary disclosures are related to management's opinion and discussion regarding firm's current situation and future prospects, supplementary schedule, press releases, conference calls and so on (Healy and Palepu, 2001). According to Dasgupta et al. (2010) the firm's voluntary disclosure is one of the important sources of information based upon which investors estimate the future prospects of the company and fundamental value of its share. And a firm is called as opaque firm if it is not providing sufficient amount of disclosures. Jin and Myers (2006) explore the association between firm's opaqueness and *SPI* and report that when a firm is more opaque then it is easier for the managers to capture more cash flows as due to opaqueness the cash flows cannot be estimated accurately by investors. They find that opaque firms report high level of *SPS*. So it is important to explore the association between firm level opaqueness measured by voluntary disclosures and *SPS*. Consistent with the hypothesis, *H1*, the study finds the negative association between level of voluntary disclosures and *SPS*, in all 15 markets (developed, emerging and developing markets), which shows that voluntary disclosures significantly improve the firm's information environment and motivates the investors to take the informed decisions. The result is consistent with the studies of Healy et al. (1999); Heflin et al. (2005) that voluntary disclosures reduce the information

asymmetry of the firm and improve the firms' information environment. The result is also consistent with the study of [Brown and Hillegeist \(2007\)](#), which reports that financial disclosure quality improves the informational efficiency of capital markets which supports the uninformed public investors to take more informed decisions. So according to the study of [Jin and Myers \(2006\)](#) the study concludes that voluntary disclosures significantly reduce the level of firm opaqueness and decrease stock price co-movement with market-wide variation which ultimately improves the *SPI* and reduces *SPS*.

5.2 CONCLUSION

The literature confirms that stock prices reflect both the macro (systematic or country-wide) and micro (firm-specific) information, more specifically the variables related to the country level and firm level information environment. The study attempts to incorporate the suggestions by several studies by exploring both the macro and micro level factors, which have not been explored yet with *SPI*, which are crucial for country level and firm level information environment and ultimately for *SPI*. The study is conducted by taking sample from 15 markets comprising with 5 markets each from developed, emerging and developing markets, for the period of 8 years, from 2009-2016, in order to capture the macro and micro level effect more comprehensively. In addition, the study uses two alternate measures of *SPS* which are systematic volatility and idiosyncratic volatility as robustness measures. These robustness measures are according to the recommendation of ([Li et al., 2014](#)).

To explore the firm level information environment the study extends the study of [Jin and Myers \(2006\)](#) which explores the impact of firm opaqueness on *SPS* and report the positive association between them. The firm level opaqueness is important to study in association with *SPI* because opaqueness significantly increases the information asymmetry and leads to poor information environment, and in this regard firm's voluntary disclosures are important to resolve the opaqueness issue ([Brown and Hillegeist, 2007](#); [Dasgupta et al., 2010](#)). [Jin and Myers \(2006\)](#)

have used the measure of opaqueness which is survey based and more subjective in nature however, the study uses self-constructed voluntary disclosure index which is more comprehensive and objective based measure (Botosan, 1997; Francis et al., 2008; Healy and Palepu, 2001). According to the theory and hypothesis, the study finds significant and consistent results with all measures of informativeness as negative association with *SPS* and systematic volatility and positive association with idiosyncratic volatility in all developed, emerging and developing markets. So, the study confirms that firm opaqueness, leading to poor information environment, is crucial for *SPI* in a way that opaque firms exhibit low *SPI* and co-move more with market and industry-wide variation. The results also confirm that in developed markets voluntary disclosures are higher in comparison to emerging and developing markets.

To explore further variables related to firm's information environment the study explores the association of corporate board and audit committee composition in association with *SPS*, systematic volatility and idiosyncratic volatility as it receives little attention by researchers. It is important to explore the impact of corporate board and audit committee composition in association with *SPI* because these are integral for firm's information environment and information asymmetry.

(Newell and Wilson, 2002) report that in a survey it is found that investors are willing to pay extra premium, even 25%, for the stocks of the firms which have strong corporate boards and internal control as it adds credibility to the stocks of the firms have good information environment. So the firm's good corporate governance is positively considered as important factor for reducing information asymmetry and improving information environment (Gul and Qiu, 2002; Haß et al., 2014; Veronica and Bachtiar, 2005). The audit committees is also considered important for firm's information environment as it improves the financial reporting quality and other financial disclosures which significantly reduces the information asymmetry (Baxter, 2007; El-Mahdy et al., 2013; Varici, 2013). So the study explores the association of board composition and audit committee composition with *SPS*, systematic volatility and idiosyncratic volatility. Consistent with the literature the

study overall finds the significant association between board composition and audit committee composition in different models such as in all developed, emerging and developing markets the board independence is found significant and negatively associated with *SPS* which confirms that independent corporate board is important in determining the firm's information environment and so independent board increases the *SPI* (Ferreira et al., 2011). However, with systematic volatility and idiosyncratic volatility it receives the partial confirmation. The audit committee independence is found significant with *SPS* only in emerging markets and positively associated in developed and developing markets. And it's positive and significant association is found in all markets with systematic volatility. These results are also consistent with the literature that according to Klein (2002), that to maintain the independent audit committee is very costly which may lead the firms to alter their audit committees according to their specific environment which can lead to audit committee inefficiency. The results regarding meeting activity or frequency of board and audit committee have also received mixed support such as in developed and emerging markets the board meeting frequency is positive associated with *SPS*, this confirms the interpretation that high meeting frequency means that there are some performance issues which requires the board to meet more frequently (Vafeas, 1999). In most of the cases the audit committee meeting frequency shows the results in alliance with the hypothesis as in developing markets it shows the consistent results according with the theory as it reflects the negative association with *SPS* and systematic volatility and positive association with idiosyncratic volatility.

The board size and audit committee size have mixed results as in the developed markets the board size is negatively associated with *SPS* and systematic volatility. However board size is positively associated with *SPS* in emerging and developing markets so the study reports the mixed results regarding association of board size and *SPS*. In most of the models the audit committee size is positively associated with *SPS* and systematic volatility and negatively associated with idiosyncratic volatility. So the study concludes that the audit committee size is negatively associated with *SPI*. The results can be associated with the finding of different studies

that larger board sizes and audit committees can become less efficient due to weak coordination, higher costs and delayed decision making (Jensen, 1993; Lipton and Lorsch, 1992; Guest, 2009).

The study, first time, explores the impact of firm's financial constraints with *SPS*, systematic volatility and idiosyncratic volatility. The study takes the inspiration to explore the firm's financial constraints from the study of Kurt (2017) which states that the association of firm's financial constraints with non-operational decisions like financial reporting has been missing in the literature and their study fills that gap. So taking analogy from this, the study explores the association of firm's financial constraints and *SPI*, as the financial constraints are crucial for firm's information environment in a way that financially constrained firms have poor information environment (Kaplan and Zingales, 1997; Mansour, 2014). The study finds the consistent sign of KZ index with *SPS* and systematic volatility only in emerging markets and in rest of the markets with rest of the proxies the study finds the opposite sign. The study validates the findings of Farre-Mensa and Ljungqvist (2016); Hadlock and Pierce (2010) which raise the concerns regarding the authenticity of most usable financial constraint technique which is KZ index. However, the study confirms the hypothesis from another proxy of financial constraints which is interest cover as it shows the consistent results with majority of the models and in all markets. So the study confirms that the firms which are financially constrained exhibit low *SPI*. The study also, first time, explores the impact of enterprise risk management in association with *SPI*, because ERM is most demanded risk management approach in current era (D-Arcy and Brogan, 2001; Miller, 1992; Quon et al., 2012). Due to dynamic and fluctuating business environment, the traditional risk management approach becomes less suitable which creates the need to bring the integrated risk management approach in order to mitigate the risks and improve the firm's information environment (Aebi et al., 2012; Al-Hadi et al., 2016; Hoyt and Liebenberg, 2011; Nocco and Stulz, 2006; Quon et al., 2012). In most of the models, with little variations, the study finds the consistent results of *RC* and less consistent results of *CRO* with *SPI* which overall confirms that ERM or integrated risk management approach significantly

improves the firm's information environment and ultimately improves the *SPI*. In addition to ERM the study also explores the audit quality in association with *SPI* and finds that audit quality is negatively associated with *SPS* and systematic volatility in emerging markets which confirms that audit quality significantly improves the firm's information environment and *SPI* in emerging markets and remains insignificant in other markets. One of the possible explanation for insignificant relationship is that as the majority of the sample is included in the blue chips in their respective market making it obvious that the blue chip firms have sufficient resources to hire big 4 auditors.

The study takes two further firm-specific variables related to firm's information environment which are firm age and government ownership. According to the hypothesis the idiosyncratic volatility is negatively associated with firm age in all markets which confirms that as a firm gets older its efficiency decreases as it becomes rigid in its decision making process which ultimately increases the firm's information asymmetry (Majumdar, 1997; Loderer, 2010). While in most of the models with other proxies firm age has remained insignificant so it can be concluded that idiosyncratic volatility is better proxy to explain the impact of firm age. The same type of results are found in the case of government ownership in which developing market exhibits the significant and positive association of government ownership with *SPS* and systematic volatility, while developed and emerging markets exhibit negative association with idiosyncratic volatility. This confirms that state-owned firms are more opaque, carry high costs and are less efficient in managing the resources (Borisova et al., 2012; Huang and Xiao, 2012; Tran et al., 2014). So the study confirms that state-owned enterprises exhibit low *SPI* Gul et al. (2010).

In addition to the variables related to firm level information environment, according to Eun et al. (2015); Dasgupta et al. (2010); Fernandes and Ferreira (2008); Morck et al. (2000); Li et al. (2004) the study considers the variables which are related to country level information environment. These studies report the positive association of investors' property rights protection, institutional development and good governance with *SPI*, because these economic factors improve the country

level information environment which makes the informed arbitrage more attractive (De Long et al., 1990). And if the informed arbitrage becomes unattractive then the stock prices reflect more market-wide variation and noise. According to the studies mentioned above, the study, first time, explores the six dimensions of World Governance Indicators, WGI, and KOF economic globalization index as formal economic indicators and three dimensions of culture as informal country level indicators. As according to Eun et al. (2015); North (1990), informal norms, traditions and cultures are equally important to formal economic indicators. The WGI, containing six dimensions, are developed by World Bank and are more detailed and comprehensive. The study finds that control of corruption is negatively association with *SPS* or positively associated with *SPI*. In addition to control of corruption, the rule of law and regulatory quality are also positively associated with *SPI*. As control of corruption, rule of law and regulatory quality are directly related with institutional development, government effectiveness, and investors' property rights protection which are integral for a country's information environment. So the study concludes that control of corruption, rule of law, and regulatory quality improve the *SPI* as these are essential indicators to support the informed trade in a market which is integral for *SPI*. In addition, the study also considers the KOF economic globalization index to measure the country's environment to attract the foreigners in the form of FDI, indirect investment and reduced trade barriers. According to the hypothesis that KOF economic globalization index should improve the *SPI* in a respective market, the study confirms that economic globalization significantly increases the *SPI*. So the economic globalization of a country is found crucial for a country's information environment and *SPI* ultimately. In addition to the formal country level factors, the study extends the study of Eun et al. (2015) by adding two new dimensions of culture. According to the hypothesis, the study finds the positive association between individualism and *SPI* which confirms that in individualistic culture, people are inclined to gather and process firm-specific information by themselves which increases the reflection of information content in share prices. On the other hand the study finds the opposite direction of other two culture dimensions which are power distance index

and uncertainty avoidance. In high power distance index culture people accept the hierarchy of power and become more secretive which should decrease the *SPI*. And in the high uncertainty avoidance society, managers are more inclined to avoid the uncertainty and ambiguity so they opt for less public disclosures. However, contrary to the hypothesis regarding power distance index and uncertainty avoidance the study finds the positive association with *SPI*. This result can be traced with the finding of Zarzeski (1996); Jaggi and Low (2000) who also report the opposite signs for power distance index and uncertainty avoidance. So the study finds that power distance index and uncertainty avoidance are positively associated with *SPI*.

Overall, the study concludes that the stock prices reflect the aspects related to both the firm level and country level information environment, in a way that improved firm level and country level information environment significantly improve the *SPI*. And consistence with Morck et al. (2000); Jin and Myers (2006); Eun et al. (2015) the firm level and country level information environment is better in developed markets in comparison to emerging and

5.3 Implications of the Study

The study confirms the findings of researches mentioned in the literature and suggests new dimensions which are important to be explored in the domain of stock price informativeness. The study has implications for individual investors, institutional investors, financial analysts, policy makers and regulators and management of the firms. Results of the study show that stock prices reflect both the systematic variation and firm-specific variation. And in systematic variation the factors can be classified in formal and informal aspects. All the aspects related to information environment either at firm level or at country level are crucial for stock price informativeness.

It is important to understand by management and regulators that the opaque firms are less informative as the mains source of volatility of these firms is the

market-wide movement or the political instability. So the regulators and management of the firms should put efforts in making the firms more transparent in order to achieve informativeness and ultimately the market efficiency. As reported above in details that the investors prefer those firms which have strong corporate governance structures and independent audit committees so the study also suggests that the policy makers and management of the firms should emphasize on the internal control mechanism as the investors consider those firms having less information asymmetry. In addition to internal control, it is important finding for all type of investors that the firms, which are facing financial constraints, reflect poor information environment which reduces their stock price informativeness.

In the current dynamic information era, it is important to know that the traditional risk management approach is becoming obsolete as the dynamic world demands the integrated risk management approach named as enterprise risk management. It is important suggestion for investors, policy makers and management of the firms that the enterprise risk management is crucial for firm's information environment, so ERM practices should be emphasized to achieve more informative stocks. The management of the firms and investors need to know that as the firms become older, these become less efficient, more information asymmetric and less informative. So this implication should be taken care by the management. And the same to be considered by regulators, policy makers and investors that the government owned firms are generally less efficient and so become less informative. The regulators and policy makers need to know that the country's formal and informal factors, which affect the country's information environment, can significantly affect their capital market efficiency and stock price informativeness. As the rule of law, control of corruption and regulatory quality of a country significantly affect the stock price informativeness and stock market efficiency in a way that these improve the country's information environment and make the informed arbitrage more attractive. In addition, the economic globalization of a country significantly improves the stock price informativeness so the policy makers should open their borders and establish conducive environment for foreigners in order to achieve better stock market efficiency. The policy makers also need to

know the insight about the informal structures of their societies as these also affect the stock price informativeness and stock market efficiency because the informal structures and constraints significantly affect the attitudes, behaviors and decision making processes of investors as the study finds that the societies which are more individualistic in nature have more informative and efficient stock markets. So the management of the firms, regulators and policy makers need to understand and improve these factors in order to make the stock prices more informative and overall stock markets more efficient.

5.4 Directions for Future Research

The study suggests to explore further domains which are crucial for both the firm's information environment and country's information environment. The study takes very precise sample of 30 stocks from each market which covers primarily the blue-chips, so it is suggested to extend the sample to get the better insight. The study opens the avenues to extend with alternate and more robust measures of stock price synchronicity, financial reporting quality, board and audit committee composition, financial constraints, enterprise risk management, audit quality, economic development and informal cultural dimensions. And further dimensions can be added like the cultural diversity in corporate board and audit committee, corporate governance index, comparison of Shariah compliance and non-Shariah compliance stocks, corporate social responsibility, institutional and economic development, new informal and cultural dimensions and so on.

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Appendix-A

List of Sample Companies in Developed Markets

No	US Companies	No	UK Companies
1	CA Inc	1	GKN Plc
2	BioMarin Pharma	2	Diageo Beverage Co
3	Biogen Biotechnology	3	Antofagasta Plc
4	Dollar Tree Discount	4	Associated British Foods
5	Activision Blizzard	5	Babcock Inc
6	Apple Technology.	6	BHP Billiton Ltd.
7	Amgen Biotechnology	7	British American Tobacco
8	Applied Materials	8	Bunzl Outsourcing
9	Autodesk Software	9	Centrica Electric Services
10	Automatic Data Processing	10	Compass Group Co.
11	Celgene Biotechnology	11	Dixons Retail
12	Cerner Co.	12	Imperial Brands Tobacco
13	Check Point Software Tec.	13	InterContinental Hotel
14	Cintas Fire protection	14	ITV Plc
15	Cisco Systems Networking	15	Johnson Matthey Chemical
16	Citrix Systems Software Co.	16	Kingfisher Plc
17	Cognizant Corporation	17	Micro Focus Software Co.
18	Comcast Telecommunications	18	Paddy Power Co.
19	Electronic Arts Video Game Co.	19	Pearson Plc.
20	Franco-Nevada Company	20	Randgold Resources Mining

21	Adobe Systems Computer	21	AstraZeneca Pharma
22	Akamai Technologies	22	BAE Systems Aerospace
23	Alexion Pharmaceuticals Pharma	23	BP Plc.
24	Amazon.com	24	GlaxoSmithKline
25	eBay E-commerce Co.	25	Barratt Developments Co.
26	Analog Devices	26	BT Group
27	Expedia Engineering Co	27	Burberry Group
28	BT Group Telecom	28	EasyJet Airline Co.
29	Charter Communications Tele- com	29	The Berkeley Co
30	Costco Retail Co.	30	Ashtead Group Plc.

No	Canada Companies	No	Switzerland Companies
1	Agnico Eagle Mines Ltd.	1	ABB Ltd
2	Agrium Agriculture Co.	2	The Adecco Group
3	Encana Natural Gas Co.	3	Richemont Company
4	Kinross Gold Corp	4	Geberit Group
5	Valeant Pharmaceuticals	5	ImpleniaConstruction Co.
6	Wheaton Corp.	6	Emmi AG
7	Advantage Oil & Gas Ltd.	7	Nestl S.A.
8	Air Canada	8	Novartis Ag
9	Bombardier Inc.	9	Roche Holding Ag
10	B2Gold Corporation	10	SGS SA
11	Alimentation Couche-Tard	11	Sika Ag
12	TransCanada Corporation	12	Swisscom Ag
13	First Quantum Minerals	13	Clariant Chemicals Co.
14	Gildan Activewear Inc.	14	LafargeHolcim ltd
15	Goldcorp Inc.	15	Komax Holding Co.
16	Barrick Gold Corp.	16	Pargesa Holding S.A.
17	The Canadian National Railway	17	OC Oerlikon

18	Canadian Natural Resources	18	The Schindler Group
19	Canadian Pacific Railway	19	Vifor Pharma
20	Canadian Tire Corporation	20	Barry Callebaut
21	Cameco Corporation	21	Bossard Holding AG
22	Eldorado Gold Corp	22	The Swatch Group AG
23	Crescent Point Energy Corp.	23	Givaudan SA
24	Bell Canada	24	Allreal Holding
25	Enbridge Inc	25	Aryzta AG
26	Fortis Inc.	26	Belimo Holding AG
27	George Weston Ltd.	27	Bucher Industries AG
28	Inter Pipeline	28	Cosmo Pharmaceuticals
29	Husky Energy Inc.	29	Dormakaba Holding AG
30	Algonquin Power Corp.	30	Flughafen Zrich AG

No	France Companies
1	Accor S.A.
2	Air Liquide S.A.
3	Airbus Aeronautics Co.
4	Bouygues Telecom
5	Capgemini SE
6	Carrefour S.A.
7	La Compagnie
8	Essilor International S.A.
9	Danone Food Co.
10	Kering S.A.
11	L'Oral S.A.
12	Nokia Telecommunications Co.
13	Orange S.A.
14	Pernod Ricard
15	Groupe Renault

16	Safran S.A.
17	Sanofi S.A.
18	Schneider Electric SE
19	Sodexo
20	Total S.A.
21	Valeo S.A.
22	Veolia Environnement S.A.
23	Vinci S.A.
24	Vivendi S.A.
25	Alstom
26	Arkema Chemicals Co.
27	Bureau Veritas S. A.
28	Dassault Systemes
29	Eiffage S.A.
30	Groupe Pierre & Vacances

List of Sample Companies in Emerging Markets

No	Indian Companies	No	Russian Companies
1	Asian Paints Ltd	1	Aeroflot
2	Bharat Electronics Limited	2	JSC Irkut Corporation
3	Bharat Forge Ltd	3	Gazprom PAO
4	Bharat Petroleum Corp.	4	Inter RAO Group
5	Bharti Airtel Limited	5	PJSC Lukoil Oil Company
6	Bosch Ltd.	6	Novatek
7	Cipla Limited	7	Norilsk
8	Grasim Industries Limited	8	PIK Group
9	HCL Technologies Limited	9	Rostelecom
10	Hero Motocorp Ltd.	10	RusHydro
11	Hindustan Unilever Limited	11	Sistema

12	Infosys Limited	12	Irkutskenergo
13	ITC Ltd	13	OGK-2
14	Larsen & Toubro Limited	14	M.video
15	Lupin Limited	15	PJSC Polyus
16	Biocon Limited	16	PJSC Uralkali
17	Oil & Natural Gas Corp. Ltd	17	Mosenergo PAO
18	The Power Grid Corp.	18	LSR Group
19	Reliance Industries Limited	19	Dixy Group PAO
20	Sun Pharmaceutical Industries	20	Acron Group
21	Tata Consultancy Limited	21	Severstal
22	Tata Steel Limited	22	Tatneft PJSC
23	UltraTech Cement Ltd	23	Magnit
24	Wipro Limited	24	MTS Systems
25	Zee Entertainment Limited	25	Novolipetsk Steel
26	Adani Group	26	FGUC
27	Ambuja Cements Limited	27	Surgutneftegas
28	Aurobindo Pharma Limited	28	Rosneft Oil Company
29	Hindalco Industries Ltd.	29	Mechel
30	Exide Industries	30	Sollers JSC

No	Brazilian Companies	No	South Africa Companies
1	JBS S.A.	1	The ADvTECH Group
2	BR Malls Participacoes	2	African Oxygen Limited
3	CCR SA	3	African Rainbow Minerals
4	CEMIG	4	Allied Electronics
5	Copel Electricity Co	5	AngloGold Ashanti
6	CPFL Energia	6	Aspen Pharmacare Holdings
7	Embraer S.A.	7	BHP Billiton Ltd.
8	Gafisa S.A.	8	The Bidvest Group Ltd.
9	Gerdau	9	Assore Limited

10	Itasa	10	Growthpoint Properties
11	Lojas Americanas	11	Impala Platinum Limited
12	Natura & Co	12	Kumba Iron Ore
13	Petrleo Brasileiro	13	Exxaro Resources
14	Sabesp	14	Mondi Plc
15	Cosan Conglomerate Co	15	Mondi Group
16	Equatorial Energia	16	MTN Group
17	Telefnica Brasil	17	Naspers
18	Tractebel	18	Netcare Group
19	Vale S.A.	19	Remgro Limited
20	WEG Industries	20	Massmart Holding
21	Braskem	21	Compagnie Financire
22	Ambew	22	Steinhoff International
23	Companhia Siderrgica	23	Sasol Limited
24	Duratex	24	Tiger Brands Limited
25	Hypera Pharma	25	Woolworths Supermarkets
26	Gol Linhas Areas	26	ShopRite Supermarkets
27	Marfrig	27	Mr Price Group
28	Grendene	28	Truworths Clothing Company
29	Oi Telecommunications	29	Imperial Holdings Limited
30	Raia Drogasil SA	30	Vodacom Group Limited

No	Malaysian Companies
1	Axiata Group Berhad
2	Digi.Com Berhad
3	The Genting Group
4	Hap Seng Land
5	IOI Corporation Berhad
6	Kuala Lumpur Kepong Berhad
7	MISC Berhad

8	Petronas Dagangan Berhad
9	PPB Group Berhad
10	Sime Darby Berhad
11	Tenaga Nasional Berhad
12	Telekom Malaysia Berhad
13	Padini Holdings Berhad
14	Parkson Holdings Berhad
15	Berjaya Sports Toto
16	S P Setia Berhad
17	Gamuda Berhad
18	British American Tobacco Plc
19	AirAsia Berhad
20	QL Resources Bhd
21	Malaysia Building
22	MMC Corporation Berhad
23	Top Glove Corporation Berhad
24	The UMW Holdings Berhad
25	Lafarge Malaysia
26	TIME dotCom Berhad
27	Kossan Rubber Industries Bhd
28	Carlsberg Brewery Malaysia Berhad
29	Dutch Lady Milk Industries Berhad
30	KPJ Healthcare Berhad

List of Sample Companies in Developing Markets

No	South Korean Companies	No	Philippines Companies
1	Samsung Electronics Co.	1	Alliance Global
2	SK Hynix Inc	2	Ayala Land, Inc
3	Hyundai Motor Company	3	DMCI Holdings Inc
4	POSCO Steelmaking Company	4	JG Summit Holdings, Inc
5	Korea Electric Power Corp.	5	Megaworld Corporation
6	LG Chemical Ltd	6	Petron Corporation
7	LG Electronics Inc.	7	PLDT Inc.
8	LG Display	8	Energy Development Corp.
9	Hyundai Mobis	9	Robinsons Land Corp.
10	LG Electronics Inc.	10	Semirara Mining and Power
11	S-Oil Corporation	11	SM Prime Holdings, Inc.
12	KT&G Corporation	12	Universal Robina Co.
13	KT Corporation	13	Jollibee Foods Corporation
14	Hyundai Steel Co.	14	Ayala Corporation
15	Hyundai Heavy Industries	15	First Gen Corporation
16	Hyundai Glovis Co.	16	Globe Telecom, Inc
17	AmorePacific Corporation	17	Int. Container Terminal
18	Daelim Industrial Co.	18	San Miguel Corporation
19	Lotte Shopping Co	19	A Brown Company, Inc
20	LG Household & Health Care	20	Agrinurture, Inc.
21	Doosan Heavy Industries	21	Manila Electric Co
22	Amorepacific Corporation	22	Apex Mining Co., Inc.
23	Posco Daewoo Corporation	23	Aboitiz Equity Ventures, Inc.
24	CJ Corporation	24	Philippine Estates Corp
25	Coway Co., Ltd	25	Philodrill Corporation
26	SK Telecom Co., Ltd	26	Oriental Petroleum
27	SK Innovation	27	Boulevard Holdings, Inc
28	Samsung SDI Co.	28	ATN Holdings, Inc.

29	OCI Company Ltd	29	Alsons Consolidated Inc.
30	Kangwon Land, Inc	30	Aboitiz Power Corporation

No	Pakistan Companies	No	Indonesian Companies
1	OGDCL	1	Ace Hardware Indonesia
2	Pakistan Petroleum Limited	2	PT Adaro Energy Tbk
3	Pakistan Telecommunication	3	PT Adhi Karya
4	Pakistan State Oil	4	PT AKR Corporindo Tbk
5	Nestl Pakistan	5	PT Alam Sutera Realty Tbk
6	Pakistan Tobacco Company	6	PP London Sumatra
7	Lucky Cement Limited	7	PT Perdana Gapuraprima Tbk
8	Philip Morris (Pakistan)	8	Astra Graphia Tbk PT
9	Mari Petroleum Company	9	Astra International
10	Engro Corporation Limited	10	PT Barito Pacific Tbk
11	Pakistan Oilfields Limited	11	Nusantara Infrastructure Tbk
12	Colgate Palmolive (Pakistan)	12	PT Bumi Serpong Damai Tbk
13	Indus Motor Company	13	PT Surya Semesta Internusa
14	Fauji Fertilizer Company	14	PT Ciputra Development Tbk
15	Hub Power Company	15	PT Delta Dunia Makmur Tbk
16	Bestway Cement Limited	16	PT Elnusa, Tbk
17	Ghandhara Industries Limited	17	PT Energi Mega Persada Tbk
18	I.C.I. Pakistan	18	PT Gajah Tunggal Tbk
19	Sui Northern Gas Pipelines	19	PT Global Mediacom Tbk
20	D.G. Khan Cement Company	20	PT Jasa Marga
21	Abbot Laboratories (Pakistan)	21	PT. Indah Kiat Pulp
22	Pak Suzuki Motor Company	22	PT. Indika Energy Tbk
23	Honda Atlas Cars (Pakistan)	23	PT Japfa Comfeed Indonesia
24	K-Electric Limited	24	PT Nusa Konstruksi
25	Dawood Hercules Corporation	25	PT KMI Wire and Cable Tbk
26	GlaxoSmithKline (Pakistan)	26	PT Lippo Karawaci Tbk

27	Millat Tractors Limited	27	PT Medco Energi Int. Tbk
28	Kot Addu Power Company	28	PT Media Nusantara Citra
29	Attock Cement (Pakistan)	29	PT Modernland Realty Tbk
30	Fauji Cement Company	30	PT Multipolar Tbk

No	Mexico Companies
1	Alfa S.A.B. de C.V.
2	Alsea, S.A.B. de C.V.
3	Amrica Mvil
4	Grupo Bimbo, S.A.B.
5	CEMEX S.A.B. de C.V.
6	Compaa Minera Autln, S.A.B.
7	Grupo Herdi
8	Bio Pappel SAB de CV
9	Fomento Economico Mexicano,
10	Grupo Mxico
11	Grupo Televisa, S.A.B.
12	Kimberly-Clark de Mxico
13	Mexichem
14	Walmart de Mxico y Centroamrica
15	Arca Continental, S.A.B. de C.V.
16	Grupo Simec SAB de CV
17	Coca-Cola FEMSA, S.A.B.
18	Gruma, S.A.B. de C.V.
19	Industrias Peoles, S.A.B.
20	Megacable Holdings S. A. B.
21	Genomma Lab Internacional SAB
22	PINFRA SAB
23	Grupo Aeroportuario del Pacifico,
24	Grupo Aeroportuario Centro Norte,

25	Cydsa, S.A.B. de
26	Consortio ARA, S. A. B.
27	Grupo Lamosa, S.A.B.
28	El Puerto de Liverpool S.A.B.
29	Grupo Industrial Saltillo, S.A.B.
30	Axtel S.A.B.

Appendix-B

$$SYNCH_i = \beta_0 + \beta_1(V.D) \sum Control_i + \varepsilon_t$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} +$$

$$\beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \beta_{14} WGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \beta_{14} WGI + \beta_{15} KOFGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \beta_6 KOFGI * CULPD + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYNCH_{i,t} = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \beta_6 KOFGI * CULPD + \beta_7 KOFGI * CULUA + \sum Control_{i,t} + \varepsilon_{i,t}$$

TABLE 5.10: Descriptive statistics for study variables from 2009-16 in emerging countries

	M	Median	Max	Mini	S.D	Obs
SYN	-1.458	-1.174	1.216	-20.387	1.582	1157
SYSTVOL	0.000	0.000	0.011	4.87E	0.000	1157
IDIOVOL	0.001	0.001	0.259	5.11E	0.009	1157
BDIND	0.491	0.5	1.8	0.090	0.181	1157
BDMEETING	9.572	7	101	2	8.458	1157
BDSIZE	10.667	10	25	5	3.247	1157
ACIND	0.879	1	1.333	0	0.196	1157
ACMEETING	6.102	5	56	2	3.175	1157
ACSIZE	3.770	4	55	1	1.782	1157
AQ	0.875	1	1	0	0.330	1157
CRO	0.061	0	1	0	0.240	1157
RC	0.722	1	9	0	0.816	1157
FC	-1.643	0.184	130.097	-2168.72	64.4318	1157
FCD	0.1953	0	1	0	0.396	1157
INTCOV	23.433	8.6	100	0	32.051	1157

TABLE 5.11: Impact of board composition and audit committee composition and financial constraints on stock price synchronicity in sample of emerging countries from 2009-16

	Model (4)	Model (5)	Model (6)
<i>Panel A: Board Comp.:</i>			
C	-2.499		
	(0.000)***		
BDIND	-0.487796		
	(0.0757)*		
BDMEETING	0.22461		
	(0.0257)**		
BDSIZE	0.376967		
	(0.0002)***		

Panel B: AC Comp.:

ACIND	-0.53518
	(0.000)***
ACMEETING	0.0402577
	(0.8035)
ACSIZE	-0.2713
	(0.0191)**

Panel C: Financial Cons.:

KZ	-0.17632
	(0.000)***
INTCOV	-0.00234
	(0.0312)**

Panel D: Control Var.:

AT	-0.107115	-0.11583	-0.108
	(0.1627)	(0.2835)	(0.3151)
S	0.114657	0.091286	0.06121
	(0.0002)***	(0.0898)*	(0.2291)
LEV	0.080544	0.09339	0.080745
	(0.0005)***	(0.0003)***	(0.0018)
PBR	-0.126524	-0.10296	-0.09676
	(0.0055)***	(0.0934)*	(0.1134)
ROA	0.09125	0.08351	0.098895
	(0.0985)*	(0.131)*	(0.072)*
N	250	250	250
Adj. R2	0.36	0.465	0.465

TABLE 5.12: The effect of corporate audit quality, risk officer, risk committee, age and government ownership on stock price synchronicity in the sample of emerging countries from 2009-16

	Model (7)	Model (8)	Full Model
<i>Panel A: Board Comp.:</i>			
C			-1.82357 (0.0027)***
BDIND			-0.46374 (0.0553)**
BDMEETING			0.142089 (0.0593)**
BDSIZE			0.397608 (0.0039)***
<i>Panel B: AC Comp.</i>			
ACIND			-0.34781 (0.0111)**
ACMEETING			0.004938 (0.9761)
ACSIZE			-0.12509 (0.4707)
<i>Panel C: Financial Cons.</i>			
KZ			-0.24183 (0.000)***
INTCOV			-0.00321 (0.014)**
<i>Panel D: ERM</i>			
AQ	-0.432002 (0.0003)***		-0.40549 (0.0004)***
CRO	0.048216 (0.7736)		0.024262 (0.8789)
RC	0.23535 (0.0011)**		0.250649 (0.0005)***

Panel E: Age and Gov. Own

AGE		-0.02524	-0.02524
		(0.7651)	(0.7651)
GOVOWN		0.117506	0.117506
		(0.5146)	(0.5146)

Panel F: Control Var.:

AT	-0.085795	-0.08701	-0.08701
	(0.3545)	(0.2687)	(0.2687)
S	0.077534	0.068439	0.068439
	(0.1514)	(0.2447)	(0.2447)
LEV	0.097597	0.095214	0.095214
	(0.000)***	(0.0001)***	(0.0001)***
PBR	-0.12682	-0.12271	-0.12271
	(0.0149)**	(0.0152)**	(0.0152)**
ROA	0.116573	0.112122	0.112122
	(0.0057)***	(0.0052)***	(0.0052)***
N	150	150	150
Adj. R2	0.382	0.441	0.441

TABLE 5.15: Impact of board composition, audit committee composition and financial constraints on stock price synchronicity in sample of developing countries from 2009-16

	Model (4)	Model (5)	Model (6)
Panel A: Board Comp.:			
C	-2.33562		
	(0.000)***		
BDIND	-0.37485		
	(0.0001)***		
BDMEETING	-0.01391		
	(0.4541)		
BDSIZE	0.412455		

(0.0672)*

Panel B: AC Comp.:

ACIND	0.516428
	(0.000)***
ACMEETING	-0.1242
	(0.0371)**
ACSIZE	1.041022
	(0.000)***

Panel C: Financial Cons.:

KZ	0.35739
	(0.000)***
INTCOV	-0.005354
	(0.0005)***

Panel D: Control Var.:

AT	-0.07494	-0.06195	-0.051343
	(0.0738)*	(0.1042)	(0.2592)
S	0.099509	0.029397	0.104153
	(0.3175)	(0.676)	(0.2061)
LEV	-0.02396	-0.02854	-0.028205
	(0.0003)***	(0.0035)***	(0.009)***
PBR	-0.00226	-0.00899	-0.004044
	(0.6477)	(0.5902)	(0.7838)
ROA	-0.02931	-0.03079	-0.027238
	(0.000)***	(0.000)***	(0.000)***
N	150	150	150
Adj. R2	0.216	0.264	0.28

TABLE 5.13: Cross country differences on basis of Stock price synchronicity, systematic volatility and idiosyncratic volatility from 2009-2016 in emerging markets

Model (9)	Synch	Syst. Vol	Idio. Vol
Panel: Test Variables			
C	-1.17466 (0.000)***	0.000356 (0.000)***	0.001023 (0.000)***
CDBRA	0.0547 (0.8209)	0.000174 (0.0114)**	0.000573 (0.0266)**
CDMAL	-0.43794 (0.0063)***	-0.000224 (0.000)***	-0.000281 (0.0072)***
CDRUSS	0.15485 (0.7074)	0.000378 (0.0024)***	0.00066 (0.0157)**
CDSA	-0.17787 (0.2685)	-3.37E-05 (0.3382)	1.89E-05 (0.9194)
N	150	150	150
Adj. R2	0.22	0.247	0.233

TABLE 5.16: The effect of corporate audit quality, risk officer, risk committee, age and government ownership on stock price synchronicity in sample of developing countries for 2009-16

	Model (7)	Model (8)	Full Model
Panel A: Board Comp.:			
C			-2.885201 (0.000)***
BDIND			-0.143817 (0.4301)
BDMEETING			-0.025567 (0.0901)*
BDSIZE			0.226372 (0.1667)
Panel B: AC Comp.:			

ACIND		0.331857	(0.0007)***
ACMEETING		-0.197414	(0.0003)***
ACSIZE		0.834921	(0.000)***

Panel C: Financial Cons.:

KZ		0.298775	(0.0003)***
INTCOV		-0.004477	(0.0002)***

Panel D: ERM: AQ

	0.292317	0.23338	
	(0.0031)**	(0.0303)*	
CRO	0.271261	0.269226	
	(0.0007)***	(0.0001)***	
RC	-0.48589	-0.425841	
	(0.000)***	(0.0002)***	

Panel E: Age and Own:

AGE		-0.01212	-0.012123
		(0.8035)	(0.8035)
GOVOWN		0.527275	0.527275
		(0.0085)**	(0.0085)**

Panel D: Control Var:

AT	-0.07029	-0.07725	-0.077254
	(0.1694)	(0.1151)	(0.1151)
S	0.112695	0.113581	0.113581
	(0.1605)	(0.269)	(0.269)
LEV	-0.02994	-0.02972	-0.029723
	(0.0106)**	(0.0209)**	(0.0209)**
PBR	-0.01329	-0.01011	-0.010113
	(0.3156)	(0.4065)	(0.4065)

ROA	-0.02647	-0.02723	-0.027225
	(0.000)***	(0.000)***	(0.000)***
N	150	150	150
Adj. R2	0.287	0.315	0.315

TABLE 5.14: Cross country differences on basis of Stock price synchronicity, systematic volatility and idiosyncratic volatility in developing countries from 2009-16

Model (9)	Synch	Syst. Vol	Idio. Vol
Panel: Test Variables			
C	-1.79438 (0.000)***	-9.87299 (0.000)***	-6.519902 (0.000)***
CDINDO	-0.18798 (0.3679)	1.365237 (0.1295)	0.559684 (0.0664)*
CDMEX	0.410261 (0.022)**	1.40206 (0.0363)**	-0.637271 (0.0019)***
CDPAK	0.484099 (0.0056)***	2.171236 (0.0004)***	-0.016284 (0.9551)
CDPHIL	0.408835 (0.0333)**	1.69895 (0.0007)***	-0.373586 (0.1152)
N	150	150	150
Adj. R2	0.203	0.243	0.504

Appendix-C

$$SYSTVOL_i = \beta_0 + \beta_1(V.D) \sum Control_i + \varepsilon_t$$

$$SYSTVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} +$$

$$\beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \beta_{14} WGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \beta_{14} WGI + \beta_{15} KOFGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \beta_6 KOFGI * CULPD + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$SYSTVOL_i = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \beta_6 KOFGI * CULPD + \beta_7 KOFGI * CULUA + \sum Control_{i,t} + \varepsilon_{i,t}$$

TABLE 5.17: Impact of board composition, audit committee composition and financial constraints on systematic volatility in sample of emerging countries from 2009-16

	Model (17)	Model (18)	Model (19)
<i>Panel A: Board Comp.:</i>			
C	-9.58752 (0.000)***		
BDIND	-0.01817 (0.9041)		
BDMEETING	0.24623 (0.0402)***		
BDSIZE	0.468937 (0.0461)**		
<i>Panel B: AC Comp.:</i>			
ACIND		0.40063 (0.0243)**	
ACMEETING		0.007908 (0.3082)	
ACSIZE		0.026719 (0.000)**	
<i>Panel C: Financial Cons.:</i>			
KZ			-0.146222 (0.0792)*
INTCOV			-0.181566 (0.0004)***
<i>Panel D: Control Var.:</i>			
AT	-0.13547 (0.0688)*	-0.13682 (0.0632)*	-0.116425 (0.1157)
S	0.069443 (0.3298)	0.075414 (0.3857)	-0.047907 (0.5833)
LEV	0.100356 (0.0089)***	0.048741 (0.2203)	-0.042337 (0.2986)

PBR	-0.28104 (0.000)***	-0.24281 (0.000)***	-0.281223 (0.000)***
ROA	0.05989 (0.3406)	0.018578 (0.7619)	0.066304 (0.0898)*
N	150	150	150
Adj. R2	0.252	0.295	0.262

TABLE 5.18: The effect of corporate audit quality, risk officer, risk committee, age and government ownership on systematic volatility in sample of emerging countries from 2009-2016

	Model (20)	Model (21)	Full Model
<i>Panel A: Board Comp.:</i>			
C			0.000282 0.024
BDIND			-5.88E-06 0.8259
BDMEETING			8.01E-05 0.0278
BDSIZE			6.49E-05 0.1623
<i>Panel B: AC Comp.:</i>			
ACIND			0.000102 0.1633
ACMEETING			8.30E-06 0.0154
ACSIZE			1.91E-05 0.00E+00
<i>Panel C: Financial Cons.:</i>			
KZ			-4.30E-05 0.092
INTCOV			-6.11E-05

0.00E+00

Panel D: ERM:

AQ	-0.2996		-4.83E-05
	0.0001		0.00E+00
CRO	-0.5354		-9.20E-05
	0.0312		0.0021
RC	0.092737		1.92E-05
	0.33		0.05

Panel E: Age and Gov.**Own.:**

AGE		-5.45E-07	-5.45E-07
		0.3013	0.3013
GOVOWN		4.75E-05	4.75E-05
		0.211	0.211

Panel D: Control Var.:

AT	-0.136	-3.64E-05	-3.64E-05
	0.0583	0.2251	0.2251
S	-0.06349	1.14E-05	1.14E-05
	0.3399	0.7758	0.7758
LEV	-0.05058	-9.37E-06	-9.37E-06
	0.1208	0.4632	0.4632
PBR	-0.29081	-7.86E-05	-7.86E-05
	0	0.00E+00	0.00E+00
ROA	0.065934	9.93E-06	9.93E-06
0.027	0.5919	0.5919	
N	150	150	150
Adj. R2	0.317	0.267	0.267

TABLE 5.19: Impact of board composition, audit committee composition and financial constraints on systematic volatility in sample of developing countries from 2009-2016

	Model (17)	Model (18)	Model (19)
<i>Panel A: Board Comp.:</i>			
C	-7.47734 (0.000)***		
BDIND	-0.28593 (0.0483)**		
BDMEETING	-0.03204 (0.000)***		
BDSIZE	-0.29642 (0.002)***		
<i>Panel B: AC Comp.:</i>			
ACIND		0.133447 (0.024)**	
ACMEETING		-0.06005 (0.0259)**	
ACSIZE		0.05849 (0.2284)	
<i>Panel C: Financial Cons.:</i>			
KZ			0.427984 (0.000)***
INTCOV			-0.068792 (0.0195)**
<i>Panel D: Control Var.:</i>			
AT	-0.11893 (0.000)***	-0.1134 (0.0001)***	-0.100439
S	0.047666 (0.2952)	0.055809 (0.4233)	0.058426 (0.2732)
LEV	-0.02838 (0.0307)**	-0.02931 (0.0163)**	-0.026182 (0.2191)

PBR	-0.00068 (0.6843)	0.001648 (0.6802)	0.005267 (0.3398)
ROA	-0.00303 (0.5636)	-0.00522 (0.4041)	0.000994 (0.8937)
N	150	150	150
Adj. R2	0.063	0.075	0.106

TABLE 5.20: The effect of corporate audit quality, risk officer, risk committee, age and government ownership on systematic volatility in sample of developing countries from 2009-16

	Model (20)	Model (21)	Full Model
<i>Panel A: Board Comp.:</i>			
C			-7.828466 (0.000)***
BDIND			-0.067722 (0.2695)
BDMEETING			-0.012444 (0.2388)
BDSIZE			-0.182615 (0.0689)*
<i>Panel B: AC Comp.:</i>			
ACIND			-0.093165 (0.2217)
ACMEETING			-0.060897 (0.018)**
ACSIZE			-0.004885 (0.8935)
<i>Panel C: Financial Cons.:</i>			
KZ			0.31664 (0.000)***
INTCOV			-0.042115

(0.0153)**

Panel D: ERM:

AQ	0.202129 (0.0031)***	0.190172 (0.000)***
CRO	0.335233 (0.000)***	0.195187 (0.000)***
RC	-0.30197 (0.0033)***	-0.342749 (0.008)***

Panel E: Age and Own:

AGE		-0.00241 (0.0055)***	-0.002413 (0.0055)***
GOVOWN		0.304342 (0.0263)**	0.304342 (0.0263)**

Panel D: Control Var.:

AT	-0.12276 (0.000)***	-0.12357 (0.000)***	-0.123571 (0.000)***
S	0.117706 (0.0043)***	0.065595 (0.0983)*	0.065595 (0.0983)*
LEV	-0.02878 (0.1656)	-0.02682 (0.2698)	-0.026817 (0.2698)
PBR	-0.00451 (0.3447)	-0.00697 (0.3557)	-0.006972 (0.3557)
ROA	0.000194 (0.9797)	-0.0017 (0.8381)	-0.001701 (0.8381)
N	150	150	150
Adj. R2	0.114	0.132	0.132

Appendix-D

$$IDIOVOL_i = \beta_0 + \beta_1(V.D) \sum Control_i + \varepsilon_t$$

$$IDIOVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIG4_{i,t} +$$

$$\beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \beta_{14} WGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 BDSIZE_{i,t} + \beta_2 INED_{i,t} + \beta_3 BDMEETING_{i,t} + \beta_4 ACSIZE_{i,t} + \beta_5 ACINED_{i,t} + \beta_6 ACMEETING_{i,t} + \beta_7 BIGA_{i,t} + \beta_8 KZINDEX_{i,t} + \beta_9 INTCOVER_{i,t} + \beta_{10} RC_{i,t} + \beta_{11} CRO_{i,t} + \beta_{12} GOVOWN_{i,t} + \beta_{13} AGE_{i,t} + \beta_{14} WGI + \beta_{15} KOFGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \beta_6 KOFGI * CULPD + \sum Control_{i,t} + \varepsilon_{i,t}$$

$$IDIOVOL_i = \beta_0 + \beta_1 CULIND + \beta_2 CULPD + \beta_3 CULUA + \beta_4 KOFGI + \beta_5 KOFGI * CULIND + \beta_6 KOFGI * CULPD + \beta_7 KOFGI * CULUA + \sum Control_{i,t} + \varepsilon_{i,t}$$

TABLE 5.21: Impact of board composition, audit committee composition and financial constraints on idiosyncratic volatility in sample of emerging countries from 2009-16

	Model (22)	Model (23)	Model (24)
Panel A: Board Comp.:			
C	0.000548 (0.0543)**		
BDIND	0.00068 (0.0012)***		
1			
BDMEETING	0.000193 (0.0001)***		
BDSIZE	0.000134 (0.0617)*		
Panel B: AC Comp.:			
ACIND		0.00062 (0.0473)**	
ACMEETING		0.000645 (0.000)***	
ACSIZE		-8.77E-05 (0.752)	
Panel C: Financial Cons.:			
KZ			-0.000109 (0.0248)**
INTCOV			-3.85E-05 (0.5427)
Panel B: Control:			
AT	0.000177 (0.064)*	0.000234 (0.0001)***	0.000238 (0.0014)***
S	-3.10E-05 (0.3835)	1.38E-05 (0.9133)	2.78E-05 (0.825)
LEV	-5.56E-05 (0.1366)	-0.00012 (0.0014)***	-6.32E-05 (0.1577)

PBR	4.30E-06 (0.9566)	-2.44E-05 (0.4974)	-5.00E-05 (0.3662)
ROA	-0.00016 (0.0005)***	-0.000179 (0.000)***	-0.000109 (0.0017)***
N	150	150	150
Adj. R2	0.338	0.263	0.257

TABLE 5.22: The effect of corporate audit quality, risk officer, risk committee, age and government ownership on idiosyncratic volatility in sample of emerging countries from 2009-16

	Model (25)	Model (26)	Full Model
<i>Panel A: Board Comp.:</i>			
C			0.002266 (0.000)***
BDIND			0.000242 (0.3112)
BDMEETING			-0.000173 (0.0185)**
BDSIZE			0.000383 (0.0029)***
<i>Panel B: AC Comp.:</i>			
ACIND			-0.000112 (0.1458)
ACMEETING			8.43E-05 (0.1515)
ACSIZE			-0.000203 (0.0566)**
<i>Panel C: Financial Cons.:</i>			
KZ			-0.000306 (0.000)***
INTCOV			1.21E-06

(0.0142)**

Panel D: ERM:

AQ	0.000135		-1.39E-05
	(0.1265)		(0.8805)
CRO	0.000292		0.00018
	(0.0017)***		(0.0261)**
RC	-0.00042		-0.000423
	(0.0002)***		(0.0001)***

Panel D: ERM:

AQ		0.202129	0.190172
		(0.0031)***	(0.000)***
CRO		0.335233	0.195187
		(0.000)***	(0.000)***
RC		-0.30197	-0.342749
		(0.0033)***	(0.008)***

Panel E: Age and Own.:

AGE	-0.000209		-0.000209
	(0.000)***		(0.000)***
GOVOWN	-0.000634		-0.000634
	(0.000)***		(0.000)***

Panel D: Control Var.:

AT	0.000179	0.000253	0.000253
	(0.000)***	(0.000)***	(0.000)***
S	-0.0001	-0.000132	-0.000132
	(0.1032)	(0.0226)**	(0.0226)**
LEV	-3.64E-05	-2.94E-05	-2.94E-05
	(0.000)***	(0.026)**	(0.026)**
PBR	-0.00025	-0.000304	-0.000304
	(0.000)***	(0.000)***	(0.000)***
ROA	-0.00014	-0.000177	-0.000177
	(0.0015)***	(0.0009)***	(0.0009)***

N	150	150	150
Adj. R2	0.434	0.478	0.478

TABLE 5.23: Impact of board composition, audit committee composition and financial constraints on idiosyncratic volatility in sample of emerging countries from 2009-16

	Model (22)	Model (23)	Model (24)
<i>Panel A: Board Composition:</i>			
C	-5.6742 (0.000)***		
BDIND	-0.19339 (0.0002)***		
BDMEETING	0.080625 (0.2043)		
BDSIZE	-0.49045 (0.000)***		
<i>Panel B: AC Comp.:</i>			
ACIND		0.050191 (0.4952)	
ACMEETING		0.078277 (0.096)*	
ACSIZE		-0.04796 (0.0181)**	
<i>Panel C: Financial Cons.:</i>			
KZ			-0.082679 (0.0003)***
INTCOV			-0.000785 (0.5083)
<i>Panel B: Control Var.:</i>			
AT	0.067611	0.043079	0.046868

	(0.2608)	(0.534)	(0.4968)
S	0.13588	0.129962	0.122449
	(0.0669)*	(0.0878)*	(0.095)*
LEV	-0.00973	0.007722	0.003676
	(0.7076)	(0.7658)	(0.8791)
PBR	-0.2418	-0.25278	-0.260636
	(0.000)***	(0.000)***	(0.000)***
ROA	-0.00688	-0.0061	-0.004745
	(0.0533)**	(0.174)	(0.2618)
N	150	150	150
Adj. R2	0.49	0.518	0.519

TABLE 5.24: The effect of corporate audit quality, risk officer, risk committee, age and government ownership on idiosyncratic volatility in sample of developing countries from 2009-16

	Model (25)	Model (26)	Full Model
<i>Panel A: Board Comp.:</i>			
C			-5.588234 (0.000)***
BDIND			-0.120141 (0.0238)**
BDMEETING			0.131305 (0.0142)**
BDSIZE			-0.514335 (0.000)***
<i>Panel B: AC Comp.:</i>			
ACIND			0.010709 (0.9043)
ACMEETING			0.07235 (0.2205)
ACSIZE			-0.041154

			(0.0876)*
<i>Panel C: Financial Cons.:</i>			
KZ			-0.084996
			(0.001)***
INTCOV			-0.000494
			(0.6679)
<i>Panel D: ERM:</i>			
AQ	-0.02957		-0.016209
	(0.7911)		(0.8861)
CRO	-0.03159		-0.030071
	(0.9118)		(0.9189)
RC	0.143454		0.135763
	(0.0001)***		(0.0003)***
<i>Panel E: Age and Own.:</i>			
AGE		-0.00249	-0.002489
		(0.0125)**	(0.0125)**
GOVOWN		0.083801	0.083801
		(0.5061)	(0.5061)
<i>Panel D: Control Var.:</i>			
AT	0.040273	0.046219	0.046219
	(0.5159)	(0.44)	(0.44)
S	0.114085	0.113911	0.113911
	(0.1009)	(0.1086)	(0.1086)
LEV	0.000936	-0.00179	-0.001794
	(0.9669)	(0.9438)	(0.9438)
PBR	-0.28081	-0.29313	-0.293131
	(0.000)***	(0.000)***	(0.000)***
ROA	-0.0048	-0.00489	-0.004889
	(0.2496)	(0.228)	(0.228)
N	150	150	150

Adj. R2	0.538	0.513	0.513
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TABLE 5.25: Voluntary Disclosure (25 Items Scale)

I.	Summary of Historical Results
a.	Return on assets or sufficient information to compute ROA (net income, tax rate, interest expense and total assets)
b.	Net profit margin or sufficient information to compute PM (net income, tax rate, interest expense and sales)
c.	Asset turnover or sufficient information to compute TAT (sales and total assets)
d.	Return on equity or sufficient information to compute ROE (net income and total equity)
e.	Number of quarters that firm discloses sales and net income (quarterly disclosure)
f.	Trends in the industry (numbers, graphs, charts)
g.	Discussion of corporate strategy
II.	Other Financial Measures
a.	Free cash flow (or cash flow other than those reported in SCF)
b.	Economic profit, residual income type measure
c.	Cost of capital (wacc, hurdle rate, EVA target rate)
III.	Non-Financial Measures
a.	Number of employees
b.	Average compensation per employee
c.	Percentage of sales in products designed in the past few (3-5) years
d.	Market share
e.	Units sold (or other output measure, e.g., production)
f.	Unit selling price

- g. Growth in units sold (or growth in other output measure, e.g., production)
 - h. Growth in investment (expansion plans, number of outlets etc)
 - IV. **Projected Information (for company as whole)**
 - a. Forecasted market share
 - b. Cash flow forecast
 - c. Capital expenditures, R&D expenditures or general investment forecast
 - d. Profit forecast
 - e. Sales forecast
 - f. Other output
 - g. Industry forecast (of any kind)
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TABLE 5.26: Voluntary Disclosure (10 Items Modified Scale)

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- a. Voluntary financial information like ROA, NPM, ATO, ROE etc
 - b. Quarterly financial data (any quarterly numerical data)
 - c. Industrial Trends, graphs, charts
 - d. FCF, Economic profit, cost of capital
 - e. Number of employees
 - f. Market Share
 - g. Units sold or any other output or production related information
 - h. Expansion Plans
 - i. Forecasted Financial Figures, like numbers, trends, graphs, charts
 - j. Forecasted Non-Financial aspects like discussion about forecasts
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TABLE 5.27: Comparison summary of association of firm-specific factors with SPS in Developed, Emerging and Developing Markets

V.D	Negative relationship is found between V.D and SPS in all developed, emerging and developing markets.
Board Composition	Partial acceptance is found between board composition and SPS in all developed, emerging and developing markets.
Audit Committee Composition	Partial acceptance is found between audit committee composition and SPS in all developed, emerging and developing markets.
Financial Constraints	KZ index is positively related to SPS in developed and developing Markets however it is positively related with SPS in emerging markets. The relationship between interest cover and SPS is consistent in all markets.
Audit Quality	Insignificant with SPS in developed markets. Significant and negatively associated with SPS in emerging markets. Significant and Positively associated with SPS in developing markets.
Enterprise Risk Management	Only risk committee is significant and negatively associated with SPS in developed markets. Only risk committee is significant and positively associated with SPS in emerging markets. Both the CRO and risk committee are significant with SPS in developing markets.

Age and Government Ownership	Age and Government ownership are insignificant mostly with SPS in all markets. However these are partially significant with other robust measures.
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