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Zulfiqar Ali Imran[a], Abdullah Ejaz[b], Cristi Spulbar[c] (ID), Ramona Birau[d] (ID) and Periyapatna Sathyanarayana Rao Nethravathi[e]

[a]Universiti of Utara Malaysia, Sintok, Kedah, Malaysia and Lahore Business School, University of Lahore, Lahore, Pakistan; [b]Accounting Department, Bredin College of Business and Healthcare, Edmonton, AB, Canada; [c]Faculty of Economics and Business Administration, University of Craiova, Craiova, Romania; [d]Faculty of Education Science, Law and Public Administration, Constantin Brancusi University of Targu Jiu, Targu Jiu, Romania; [e]Department of Master of Computer Applications, Shree Devi Institute of Technology, Mangaluru, Karnataka, India

ABSTRACT

The aim of this article is to examine the relationship between stock market performance and country level governance indicators. A good quality of governance in a country ensures effective implementation of laws which can protect the investor and improve stock market performance and vice versa. Our study utilises annual stock returns and country level governance indicators for 25 developed countries from 1996 to 2018. The fixed effect estimation suggests that stock market performance and governance indicators share a positive relationship. Our findings suggest that high quality of governance is associated with higher returns on stock. Institutional quality is a preconditioned for financial developed that set the direction of change to reduce transaction costs and agency costs and make profitable projects available to firms that subsequently leads to higher demand for equity financing. These findings have significant implications for stock market policymakers and standard asset pricing models that only include market risk factors to predict future expected stock returns.

1. Introduction

The factors that determine the development of financial systems are of prime importance to answer the question on how some countries manage to acquire necessary resources for providing financial funding and support for companies, where others cannot. How do some countries develop laws related to investor protection, their enforceability and contract enforcement mechanisms which eventually support the operational capability of financial markets while some other countries fail to strengthen such laws? If policymakers discover the underlying factors that play a

deterministic role in differentiating financial development across countries, perhaps they can provide better and potential advise to up lift those factors?

There has been number of studies to determine the factors of well-functioning stock markets. Much, but certainly not all, research discusses the inextricable role of legal system, governance quality and stock market performance across countries. La Porta et al. (1997, 1998, 1999, 2000) examine legal theories which have different enforceability across countries and their relationships with stock market performance. The inability of the legal system that cannot enforce shareholder's contractual rights often results into managerial expropriation and stealing profits from shareholders. Moreover, legal systems investor protection mechanisms tend to increase the amount of funds that risk-averse investors are willing to channel towards firms. Levine (2001) highlights the importance of law and finance theory in the development of financial systems of the respective countries. Aggarwal et al. (2002) find that fund managers invest less in countries with poor legal environments and low corporate governance standards.

As stated by Hooper et al. (2009) better governance quality reduces transaction and agency cost by achieving economics of scale, thus, higher governance quality increasing the stock returns for shareholder. However, Low et al. (2011) find countries with poor governance quality in terms of political instability, weak investor protection laws, inefficient government, bad regulatory quality (R.Q.) and less control over corruption leads to higher stock returns as compare to those countries that have greater governance quality. Moreover, better governance quality has two competing hypothesis. The first hypothesis states that better governance quality increases stock returns by reducing transaction costs and agency costs and second hypothesis establishes that better investor protection environment will require equity premium in competitive financial markets internationally (Hooper et al., 2009). This will reduce the stock returns.

Based on these two competing hypothesis, our research study estimates the relationship between country-specific governance quality and its impact on stock markets returns in developed countries. To estimate the governance quality, we consider World Governance Indicators as a proxy to measure governance and institutional environment under which corporate governance laws are applicable. Quality of laws, rules and regulations regarding governance indicators like voice and accountability (V.A.), political stability (P.S.), absence of violence, G.E., control of corruption (C.C.) and their implementation is guaranteed by several stake holders like market regulators, courts, market participants and several other government departments. The cross comparison studies show numerous channels through which effective firm level corporate governance is exercised. Since the relevance of firm level corporate governance is well established in the literature, however, it is necessary to study the country level governance quality that formulates the investor protection laws. These legal regulations will strengthen the corporate governance laws based on enforceability. The firms and their corporate governance laws do not operate in a vacuum so the overall governance quality of country affects them.

Hence, there is also an important link between country level governance indicators and firm level governance indicators which indirectly affects stock market's performance.

So far, financial literature has mostly emphasised on firm level governance indicator, however, the effective and successful implementation of firm level governance indicators is strongly attached to the successful implementation of country level governance indicators because no firm can operates in isolation rather it operates in a country which is governed by certain laws and its governance indicators have the ability to affect the performance of firm directly which will eventually hurt the stock market performance. This study intends to evaluate the extent to which governance quality affect stock market performance.

Therefore, the aim of this article is to examine cross-sectionally that to what extent country level governance quality affects, whether positively or negatively, 25 developed stock market performance. As per the researcher's knowledge, two comprehensive cross-sectional studies have been carried out to study such a relationship. Both studies have contradictory results. Moreover, the first study of Hooper et al. (2009) considers excess stock returns as a dependent variable, while, second study Low et al. (2014) considers equity market risk, measured as betas, as dependent variables. Moreover, Low et al. (2011) find World Governance Indicators are insignificant for stock market performance in developed countries.

Matadeen (2017) conducted empirical research and argued that the determinants of stock market development include: macroeconomic determinants (real income, saving rate, financial development, inflation, interest rate and stock market liquidity) and institutional determinants (corruption, political rights, public sector efficiency, and regulatory burdens, legal protection of private property and law enforcement, but also the limits on political leaders). Keita et al. (2019) conducted a complex empirical study on 89 emerging and developing economies, in order to investigate the linkage between the quality of fiscal governance and access to market-based external finance. The authors concluded that transparency of public finances, fiscal reporting, debt management and fiscal strategy are essential in improving credit ratings, issuing bonds, and obtaining lower cost of external financing. A durable fiscal governance has a significant contribution in increasing the capacity of a country to access international capital markets, impact its credit rating, and influence the terms and cost of its external debt. Coulibaly et al. (2019) argued that poor governance and fiscal indiscipline contributed to the debt overhang and that, unless there are genuine systemic reforms, history will repeat itself.

The research questions for this study are as follows: Is there a linkage between stock market performance and country level governance indicators? If yes, how can it be measured? What is the impact of country level governance indicators on stock market performance in the case of the sample of developed countries? Was the effect was positive or negative? Which is the most efficient regression model? Can governance quality that strengthen investor protection laws play an important role in affecting the performance of the stock market of any country? Which aspect of governance should be emphasised if governance is affecting a country's stock market performance?

Our research study contributes to the existing literature by confirming the positive relationship between governance quality of a county and returns to shareholders in developed countries. It is argued that the institutional agents that govern a country

have a direct impact on the profitability of firms by reducing agency cost associated to business managers, shareholders, the regulation and enforcement of corporate governance mechanisms.

The remainder of this article is organised as follows: Section 2 critically reviews the previous studies and establishes the relationship between governance quality and stock market performance, Section 3 discusses data used in this article and the methodology used to estimate the regression analysis, Section 4 sheds light on empirical findings and Section 5 concludes.

2. Literature review

The relationship between governance quality at country level and stock market performance is well documented in finance literature. In this precept, La Porta et al. (1997) suggested that firms' dependency on equity financing increases significantly when improvements are made in rules of corporate governance, their implementation and the quality of accounting standards. Several aspects of judiciary put a limit on the funds of corporate resources that mangers can divert, which in turn enable the shareholders to monitor a manager's performance at a significantly lower cost. Governance and its relationship with firms has been the focus of research for a long time. Early literature in this regard has focused on firm level variables, i.e., agency cost and firm's control structure, etc. Jensen and Meckling (1976) wrote an exceptional piece of research in this context. They argued that governance mechanisms vary greatly in terms of their definition which weaken their enforceability as a result they hurt the level of investor protection since governance mechanisms are flawed at the fundamental level with weak enforceability and this issue can only be addressed by the firms themselves. Therefore, the enforceability of a contract's clauses becomes the first ever branch of research in the literature of agency cost. However, modern literature on finance has shifted the focus of research from corporate level governance indicators to country level governance indicators (see e.g., La Porta et al., 1997, 1998, 2000; Ball et al., 2000; Gul and Qui, 2002; Shleifer and Wolfenson, 2002). It was suggested that, eventually only through legal action, clauses of contracts can be enforced between managers and shareholders. Therefore, the judicial system's efficiency of a country is used as a proxy to monitor the enforcement of contracts. Pajuste (2002) investigated the impact of corporate governance on stock market performance for the following countries in Central and Eastern Europe; the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. The author concluded that the effectiveness of financial regulations exhibits the highest explanatory force of stock market returns in the selected countries.

Zaremba (2019) investigated a cross-section of country equity returns based on an exhaustive literature survey which includes empirical studies for the last 30 years. The author suggested that the empirical results indicate a large number of cross-sectional patterns in country equity indices. Moreover, value, momentum, or seasonality resemble their stock-level counterparts, while others, like fund flows or political risk, represent a specific feature for country level return patterns. In addition, Bhagat and Bolton (2008) suggested that stock market-based performance measures are

vulnerable to investor anticipation due to inter-relationships among corporate governance, corporate performance, corporate capital structure, and corporate ownership structure. Khan (2019) argued that non-financial performance measures based on environmental, social and governance (E.S.G.) factors represent significant indicators that have big potential to influence corporate financial performance.

Connection between the investor protections and the returns to the shareholders is also extremely weak. Hail and Leuz (2003) examined equity's cost of firms from 40 countries in terms of their international differences. Their analysis was based on differences in country's legal institutions in general and its securities regulation in particular and the systematic link of both to the international cost of capital differences. After controlling for risk and country factors, they reported this finding that firms operating in a country with strong legal institutions experienced lower costs of equity on average as compared to the firms operating in countries with weak legal system. They also found that countries with strong securities regulation with extensive disclosure rules and robust legal enforcement would offer firms a systematic lower cost of capital. They argue that full disclosure to investors and implementation of financial contracts by judicial system of the country improve the investor protection significantly. Hail and Leuz (2003) also inspected how much legal institutions and securities regulations differ due to integration of markets and economic development. Due to increased integration of financial markets around the world, in asset pricing, country-specific variables get weaker as suggested by empirical evidence (e.g., Bekaert & Harvey, 1995; Stulz, 1999). The authors found that for the financial markets which are most integrated, the effects of institutions and securities regulation were either minimal or negligible or insignificant whereas financial markets which are least integrated had strongest legal institution and securities regulation affects which inferred that market integration and lower cost of capital are related to each other.

Asongu (2011a) investigated the impact of government policies and institutions on African stock market performance and concluded that countries with better developed government institutions would favour stock markets with higher market capitalisation, better turnover ratios, higher value in shares traded and greater number of listed companies. Moreover, Asongu and Nwachukwu (2018) examined the effect of political institutions on stock market performance in 14 African countries for the sample period 1990–2010 and revealed that countries with democratic regimes enjoy higher levels of financial market development compared to their counterparts with autocratic inclinations.

Himmelberg et al. (2004) investigated the fact that financial markets do not provide any investor protection so the consequence will be to enable company insiders to retain a bigger chunk of equity of the firm they manage. These retaining of a bigger chunk of equity by the insiders leads to the increased risk premium and marginal capital cost due to significant presence of idiosyncratic risk. They found a negative relationship between extent of investor protection laws and portion of equity held by the insiders and a positive correlation between insider's equity and marginal return to capital. Bhattacharya and Daouk (2002) investigated the relationship between cost of equity and insider trading regulations and found that the presence of anti-insider trading laws does not stop insider trading from happening, however, their

implementation in true letter and spirit lowers the expected return (risk adjusted) on equity. They found that implementation of insider trading laws reduces the equity cost by 5% after controlling several deterministic variables related to cost of equity. Lombardo and Pagano (2006) examined the correlation coefficient between the level of institutions' qualities and performance of stock markets from developed and emerging capital markets. They took equity returns from stock markets indices as a proxy to stock market performance. They adopted several different measures to calculate return on equity, including initial public offerings. They found a positive correlation between institutional quality and equity risk adjusted returns. The variables they used were judicial system, respect of the law, government employees, absence of corruption, value of accounting rules and risk of contract denial. Lombardo (2000) quantified institutional infrastructure's importance and estimated its impact on stock market performance as equity return. The author inspected the outcomes of fairness of the law and its impartiality and the degree to which it makes sure that contract is implemented in its true letter and spirit. The author also examined several measures of *ex post* interference. They found that risk-based models C.A.P.M. may not hold true in several unique situations. Johnson and Shleifer (1999) recommended that policy designers from transition economies have to create a fair play situation for investors so that potential investors can concentrate on exploiting growth opportunities and move beyond the worry of property rights, only then can such economies can bear the fruits of reforms which are market-oriented.

La Porta et al. (1997) argued that by bringing consistent betterment in the corporate governance laws, their implementation and enforceability and level of accounting standards' quality would result in significant improvement in dependence on equity financing by firms. Coffee (1999) argues that the discrepancies in cases of corporate law may be less significant than the discrepancies regarding the degree of regulation which characterises the strategies implemented by various countries on their securities markets. Aggarwal et al. (2002) argued that countries with inadequate legal environment and lower levels of corporate governance experienced smaller levels of investment from fund managers. La Porta et al. (2000) investigated the relationship between economies in transition and the integral role played by their legal institutions in the working of financial markets and found that foreign investors are ready to put down funds into the markets and express their will to provide the necessary managerial capabilities to new firms which are private in nature provided that legal departments and the political system are enough to limit the corruption among bureaucracy and eliminate the risk of properties being confiscated by the government. Rosenberg and Birdzell (1987) wrote that the only reason London arose as the world's financial capital was due to the obvious fairness in England's legal system, that had been capitalised on at the beginning of the twentieth century. Csontó (2014) suggested that cross-country correlation of spreads increases in high-volatility regimes but country-specific fundamentals are substanĩial determinants of spreads in each regime. Moreover, Spulbar and Birau (2019) argued that international linkages based on causality and interdependence between emerging and developed stock markets reveal the effect of dynamic transmission models focused on spreading financial shocks.

Most of the economic and political science literature focuses on the effects of global trade and finance on the policymaking of an individual country at the national level (see for example, Armijo, 1999; Friedman, 1999; Helleiner, 1994; Obstfeld and Taylor, 2004; Strange, 1996). Beck et al. (2003) examined why law and its origins matter in financial development as far as political and adaptability aspects are concerned. Moreover, income level plays a significant role in finance and growth relationship (Beck et al., 1999; Asongu, 2011b). Economies can only grow if good governance is promoted in the aspects of enforcement of rule of law (R.L.), making the public sector more accountable and efficient in taking care of corruption (International Monetary Fund [IMF], 2005). La Porta et al. (1997, 1998) are of the view that firms go for stock market financing more if significant improvements are brought to corporate governance rules and their enforcement and quality of accounting standards. Fund manager for investments assigns extreme importance to legal framework of a country and corporate governance standard (Aggarwal et al., 2002). Various empirical studies shifted their focus from corporate governance level to country-specific governance environments (see for example, Agbor, 2011; Asongu, 2011b, 2011c, 2011d, 2011e, 2011f; La Porta et al., 1997, 1998; Shleifer and Wolfenson, 2002). North (1994) argued that stringent property right laws result in lower transaction costs which leads to economic prosperity.

Stock market performance has its wider grip on the economy of the country. Certain researchers such as Asongu (2012a, 2012b, 2012c) and Chen et al. (2009) suggested that efficient distribution of capital is provided by developed stock markets as a result, while its cost of capital decreases. A well performing stock market brings a positive vibe to the financial sector of the country and provides stability (Umutlu et al., 2010). Financial stability shields the economy against risk spill overs across the border (Beine et al., 2010). When a stock market is in a development phase, it offers abnormal profits to investors and limit the scope of international portfolio diversification because of the rise of arbitrage opportunities (von Furstenberg et al., 1989). Castro et al. (2004) are of the view that two opposite factors form the bases of the relationship between economic development and investor protection. Larger demands for capital and equitable risk sharing are the implications of significant improvement in investor protection and the demand factor creates a positive relationship between investor protection and economic development, whereas, supply effect fosters the same phenomenon in opposite direction. Economies with limited capital restrictions experience stronger demand effect than the supply effect (La Porta et al., 1998). There is an ample amount of literature that examines the relationship of stock market performance with governance indicators or investor protection. However, recent literature has not focused particularly on a specific group of countries (developed or emerging stock markets) to examine their relationships with stock market performance, specifically after the financially changing landscape of economies. There is a need to re-examine the relationship of stock market performance and investor protection of developed countries and how stock markets' returns get effected in this regard.

Narayan et al. (2015) find governance quality, proxied by government stability, corruption, bureaucratic quality, democratic accountability and law and order, is a

price risk factor for the countries that are not good at governance quality. The sample of 38 countries ranked based on their risk measured by standard and Poor credit rating (AAA to BBB negative). There are 10 countries out of 38 with poor governance quality where stock returns can be predicted by country-governance quality. However, there is no evidence that country-governance quality can predict stock returns in those countries that have relatively good standing on governance quality. More recently, Boadi and Amegbe (2017) find V.A. and R.L. are positively significant with stock market equity returns in the case of 23 countries from 1996 to 2014. However, their study does not account for multicollinearity problem which is common and major issue among World Governance Indicators. In the presence of multicollinearity issue estimated coefficients are not efficient and reliable due higher standard error.

There are three important and comprehensive studies that estimate the relationship between governance quality (World Governance Indicators) and stock market performance. The first study carried out by Hooper et al. (2009), who studied 50 countries (developed and developing), found a positive relationship between World Governance Indicators and stock markets access returns ($r_{it} - r_f$). On the other hand, Low et al. (2011) found World Governance Indicators have a negative impact on stock market access returns in 48 countries. Low et al. (2014) ascertain a negative significant impact of World Governance Indicators on emerging stock market returns, but this effect is insignificant for developed countries. However, Ejaz et al. (2020) argued that emerging stock markets provide more attractive portfolio diversification opportunities compared to developed stock markets. These contradictory findings require further investigation into the impact of governance quality on stock market performance. This would also establish the channel through which governance quality improves stock market performance, i.e., agency costs and transaction costs. Moreover, not only above studies have contradictory findings but also old when World Governance Indicator data was not available for substantial number of years to extract meaningful results.

3. Data and methodology

The sample size consists of only 25 developed countries due to data limitation,[1] namely Australia, Belgium, Canada, Chile, Denmark, Finland, France, Germany, Greece, Hong Kong, Israel, Italy, Japan, Korea, the Netherlands, New Zealand, Norway, Poland, Singapore, Spain, Sweden, Switzerland, Taiwan, the U.K. and the U.S., for the period from 1997 to 2018. The annual stock market data and trading volume are obtained from Datastream whereas World Governance Indicators, inflation data are downloaded from the World Bank's website. The oil prices are obtained from the OECD website.

To examine the impact of country level governance quality on stock market returns, we employ panel data regression analysis where the dependent variable is stock market annual returns and independent variables are World Governance Indicators including control variables namely oil prices, inflation and volume.

3.1. Governance quality and stock market returns

Governance quality is designed to encapsulate the overall institutional environment of a respective country rather than just focusing one particular dimension of quality. We divide governance quality into three clusters as discussed below.

3.1.1. Cluster one: voice and accountability/political stability

Cluster one describes the way individuals who are responsible for managing the government institutions are selected or replaced and their strength and ability to effectively manage those institutions. The ability of government to govern over financial system usually comes from the extent to which government are empowered. V.A. measures political processes such as civil liberties and political rights. This indicator also accounts for the freedom of media that play a vital role in monitoring and holding authorities accountable for their actions. The P.S. indicates that how wrenching changes in government compromises the quality of governance and continuity of policies in a country. Lower V.A. and political instability lead to lower investor confidence which further market volatility in downward and vice versa.

3.1.2. Cluster two: government effectiveness/regulatory quality

The second set of clusters shed a light on the capacity of institutions to comprehensively develop and effectively enforce regulatory changes. Government Effectiveness (G.E.) and R.Q. provide in-depth insight that how effectively government can formulate and implement the policies. G.E. indicates the level of quality in provision of public services, bureaucracy, provision and competency of civil services without any political interferences and integrity of government's commitment to policies. R.Q. indicates market unfriendly policies like inadequate bank supervision and price control. Moreover, R.Q. also explains unaligned and unplanned excessive regulation on foreign trade and business development. The authorities in government and R.Q. formulate certain policies that prevent any activity in stock market which harm the interest of general public or investors. Moreover, R.Q. enforces firms for full disclosure of information to prevent any chance of insider trading.

3.1.3. Cluster three: rule of law/control of corruption

R.L. and C.C. are the most important indicators especially in the case of momentum. These indicators provide a detailed overview of the relationship between the citizens and institutions in a country. How much value institutions give to their countrymen and how much institutions protect them from illegal and unethical practices going on in a country. R.L. measures how effective, enforceable and predictable is the judicial system in a country. Moreover, how well the law protects the contractual obligations and property rights. This indicator can also be used as a proxy about how nations achieve success and develop an environment which favours social interactions and economic progress. In the financial development context, R.L. has a great importance, as this indicator explains the perception and belief of investors and trust in the legal

Table 1. Description, method and sources of variables.

Variables	Measurement	Sources
Returns (Dependent Variable)	Time series and cross-section annual returns $R_{i,t} = \left(\frac{P_t - P_{t-1}}{P_{t-1}}\right) * 100$	DataStream
Corruption Control	Time series and Cross-sectional data	World Governance Indicator Website. https://databank.worldbank.org/reports.aspx?Report_Name = WGI-Table&Id = ceea4d8b
Effectiveness	Time series and Cross-sectional data	World Governance Indicator Website. https://databank.worldbank.org/reports.aspx?Report_Name = WGI-Table&Id = ceea4d8b
Stability	Time series and Cross-sectional data	World Governance Indicator Website. https://databank.worldbank.org/reports.aspx?Report_Name = WGI-Table&Id = ceea4d8b
Regulatory	Time series and Cross-sectional data	World Governance Indicator Website. https://databank.worldbank.org/reports.aspx?Report_Name = WGI-Table&Id = ceea4d8b
Law	Time series and Cross-sectional data	World Governance Indicator Website. https://databank.worldbank.org/reports.aspx?Report_Name = WGI-Table&Id = ceea4d8b
Voice	Time series and Cross-sectional data	World Governance Indicator Website. https://databank.worldbank.org/reports.aspx?Report_Name = WGI-Table&Id = ceea4d8b
Inflation	Time series and Cross-sectional annual data (Consumer Price Index)	World Bank Website / World Development Indicators https://databank.worldbank.org/source/world-development-indicators
Volume	Time series and Cross-section annual data. (Number of share traded for each stock in one year)	DataStream
Oil Prices	Time series and Cross-sectional annual data	OECD website https://data.oecd.org/energy/crude-oil-import-prices.htm

Note: Table 1 enlists measurement and sources of dependent variable 'Returns', independent variables 'World Governance Indicators' and control variable 'inflation, volume and oil prices'. All variables are in annual form. Sources: Author's own calculation.

system of a country. C.C. summarises the level of corruption in state institutions and magnitude of misuse of public power to obtain personal benefits.

The study also applies two world risk factors such as oil prices and inflation along with trading volume as previous studies have established the relationship between stock returns and trading volume. Previous literature finds a significant relationship between these variables and stock market performance (Low et al., 2011, 2014; Hooper et al., 2009; Hail & Leuz, 2006). The regression line involves variables such as stock market annual returns (*Returns),* control over corruption (*Corruption Control*), G.E. (*Effectiveness*), P.S. and avoidance of violence (*Stability*), R.Q. (*Regulatory*), R.L. (*Law*), annual inflation (*Inflation*), annual trading volume (*Volume*) and annual oil prices (*Oil Prices*). The measurement and source of these variables are given in Table 1.

3.2. Research methodology

The study aims to measure the impact of governance quality (proxied by World Governance Indicators) on stock market returns. To answer this question, current study applies regression estimation technique to obtain sign and significance of betas. In this vein, current study intends to regress following regression line.

Regression Line

$$Returns = \propto_1 + \beta_1 CorruptionCotrol_{j,t} + \beta_2 Effectivenss_{j,t} + \beta_3 Stability_{j,t}$$
$$+ \beta_4 Regulatory_{j,t} + \beta_5 Law_{j,t} + \beta_6 Voice_{j,t} + \beta_7 Inflation_{j,t} + \beta_8 Volume_{j,t}$$
$$+ \beta_9 OilPrices_{j,t} + \omega_{j,t}$$

(1)

3.2.1. Model specification

World Governance Indicators are usually subject to higher multicollinearity problems due to measuring inter linked dimensions of governance quality. In this regard, Table 2 provides a correlation matrix among World Governance Indicators, V.A. (*Voice*), G.E. (*Effectiveness*), P.S. and avoidance of violence (*Stability*), R.Q. (*Regulatory*), R.L. (*Law*) and control over corruption (*Corruption Control*) and control variable such as oil prices (*Oil Prices*), Trading volume (*Volume*) and inflation (*Inflation*).According to the criteria if correlation coefficient is greater than or equal to 0.9, it indicates the possible presence of multicollinearity (Gujarati, 2009). *Corruption Control* is highly associated with *Effectiveness*, *Regulatory*, *Law* and *Voice*. Similarly, *Effectiveness* is highly correlated with *Law*.

Due to a higher correlation among variables, we carry out the variance inflation factor (V.I.F.) to confirm the presence of multicollinearity. Table 3 shows the V.I.F. for dependent and independent variables. *Corruption Control*, *Law* and *Effectiveness* values are greater than 10, which indicate the presence of multicollinearity. The problem of multicollinearity violates one of the assumptions of classical regression (best linear unbiased estimators). The estimators are not efficient (minimum variance) if data is subject to the problem of multicollinearity (Guajarati, 2009).

The one suggested method to eliminate the problem of multicollinearity is to carry out the principal component analysis (P.C.A.). The P.C.A. eliminates the common variation among variables and make a composite variable that is representative of all independent variables. Table 4 demonstrates the eigenvalues associated to each component. The first component has 4.326 eigenvalue and explains 72% of variations in the data. Cumulatively, all six components explain 100% of the variation. According to the criteria, components with greater than 1.0 eigenvalue will be selected to constitute composite index through the P.C.A. Table 4 shows only component 1 has an eigenvalue greater than 1. The composite index based on the P.C.A. is given new name *WGI_Index* which will be use in further analysis.

4. Empirical analysis

This section provides the model specifications tests such as: multicollinear, serial correlation and heteroskedasticity to ensure that variables meet the classical linear regression assumption. As well as illustrating some descriptive statistics; the Hausman test, regression analysis and robustness check.

Table 2. Correlation matrix.

	Returns	Corruption Control	Effectiveness	Stability	Regulatory	Law	Voice	Oil prices	Volume	Inflation
Returns	1									
Corruption Control	0.059	1								
Effectiveness	0.058	0.921***	1							
Stability	0.149***	0.580***	0.551***	1						
Regulatory	0.005	0.877***	0.849***	0.532***	1					
Law	0.040	0.938***	0.927***	0.588***	0.840***	1				
Voice	0.815**	0.448***	0.366***	0.344***	0.307***	0.520***	1			
Oil Prices	−0.070	0.0078	0.0167	−0.0089	0.028	0.021	−0.0048	1		
Volume	0.117***	0.020	0.020	−0.031	0.188***	−0.006	−0.299***	−0.0624	1	
Inflation	−0.176***	−0.073	−0.124***	−0.120***	−0.400	−0.079	−0.034	0.067	0.108*	1

Note: Table 2 presents pairwise correlation among dependent and independent variables. Governance quality variables such as stability and voice are positively significant with with stock returns. Moreover, World Governance Indicators are highly correlated with each other, for instance, corruption control has higher significant correlation with effectiveness (0.921) and same pattern can be ascertained for all the governance indicators. Governance correlation with stock returns, albeit does not an evidence of causality, but strengthens the viewpoint for further investigation into the interplay between returns and governance quality.
The level of significant of correlation coefficient is market with asterisk where.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.
Sources: Author's own calculation.

Table 3. Variance inflation factor.

Variable	VIF	1/VIF
Corruption Control	16.93	0.059065
Law	15.96	0.062676
Effectiveness	12.24	0.081727
Regulatory	6.35	0.157468
Voice	5.31	0.18822
Stability	1.85	0.54189
Volume	1.1	0.91251
Inflation	1.06	0.946664
Oil Prices	1.02	0.984188
Mean VIF	6.87	

Note: Table 3 indicates the values for variance inflation factor. If VIF for each variable greater than 10, is a sign of multicollinearity. Corruption Control, Law and Effectiveness are subject to the problem of multicollinearity.
Sources: Author's own calculation.

Table 4. Eigenvalues for each component.

Component	Eigenvalue	Proportion	Cumulative
Comp1	4.326	0.721	0.72
Comp2	0.802	0.134	0.855
Comp3	0.581	0.097	0.952
Comp4	0.170	0.028	0.980
Comp5	0.069	0.012	0.991
Comp6	0.052	0.009	1.000

Note: Table 4 shows eigenvalues, explained proportion and cumulative explanation pertaining to each component. For instance, Component 1 eigenvalue is 4.326 (greater than 1) and explain 72% of variation. Component 2 has eigenvalue 0.802 (less than 1) and only explains 13% of the variation in data. As per the rule of thumb we component that have eigenvalue greater than 1. In our case we select component 1 only as a composite variable of World Governance Indicators.
Sources: Author's own calculation.

4.1. World governance indicators and equity returns

Table 5 provides a list of statistics for all 25 selected countries which includes: mean, median, total risk, downside risk, skewness, kurtosis and value of probability for *Returns for the sample period* from 1997 to 2018. It is observed that stock market returns are highly volatile in sample countries with an average standard deviation of 27.63%. However, the downside risk 24.58% indicates that major proportion of total risk arises from semi deviation (negative volatility) in stock returns. The similar pattern can be observed for each individual country. Moreover, the probability value for skewness and kurtosis shows that stock returns are mostly normally distributed around the mean for individual country except for Australia, Chile, Germany, Greece, Hong Kong, Korea, Norway, Poland and Singapore, where the *p*-value is greater than 0.05. One plausible reason for non-normality in these countries may be a lower number of observations as there are 22 years of data for each country. The data usually behave normally distributed when there are higher number of observations. This can be verified when skewness and kurtosis are calculated for all countries including 550 observations. The *p*-value of skewness and kurtosis is less than 0.05 that imply our dependent variable is normally distributed. The normality of our dependent variable can also be confirmed through mean -14.78% and median -15.32 value for all countries. The smaller gap between mean and median also indicates that variable is normally distributed.

Table 6 provides descriptive statistics (panel form) for dependent variable *Returns* and independent variables from 1997 to 2018. Table 6 also reveals the total number

Table 5. Country-wise stock returns (%) descriptive summary.

Country	Average (%)	Median (%)	Total Risk	Downside Risk	Skewness	Kurtosis	Prob > chi2
Australia	−46.25	−48.04	29.83	26.25	0.603	0.127	0.232
Belgium	−1.91	9.67	25.68	27.11	0.000	0.016	0.002
Canada	−46.23	−55.49	33.37	30.89	0.628	0.000	0.007
Chile	−4.02	−4.60	16.56	11.00	0.521	0.502	0.629
Denmark	−3.88	−3.59	24.97	22.84	0.003	0.010	0.002
Finland	−2.69	3.00	23.72	23.31	0.002	0.010	0.002
France	−5.46	−0.60	19.53	21.22	0.000	0.000	0.000
Germany	−26.02	−18.05	29.89	27.59	0.089	0.722	0.182
Greece	−33.31	−31.35	33.35	27.34	0.752	0.291	0.515
Hong Kong	−20.82	−20.89	33.58	25.77	0.305	0.329	0.327
Israel	−34.94	−32.60	38.53	30.15	0.967	0.017	0.065
Italy	−27.41	−16.36	30.87	29.69	0.008	0.113	0.017
Japan	−9.28	−6.76	25.00	20.71	0.048	0.178	0.065
Korea	−31.68	−20.32	34.70	31.80	0.053	0.887	0.134
Netherland	−8.82	−1.17	27.95	26.97	0.008	0.109	0.017
New Zealand	−7.31	−2.98	18.24	17.85	0.005	0.030	0.007
Norway	−13.01	−8.59	31.35	24.52	0.137	0.712	0.270
Poland	−15.10	−18.23	33.50	21.78	0.497	0.086	0.153
Singapore	−18.25	−13.73	28.57	23.21	0.319	0.962	0.583
Spain	−6.67	−1.38	28.27	27.89	0.004	0.071	0.009
Sweden	−8.00	−1.70	28.42	25.84	0.021	0.253	0.047
Switzerland	−1.10	6.24	21.50	21.28	0.008	0.198	0.023
Taiwan	−5.99	2.01	26.96	26.95	0.004	0.049	0.007
United Kingdom	−14.75	−13.32	23.39	19.48	0.023	0.059	0.023
United States	−76.57	−84.15	23.13	23.13	0.000	0.000	0.000
All Countries	−18.78	−15.32	27.63	24.58	0.000	0.010	0.000

Note: Table 5 inculcates descriptive statistics of stock returns across 25 counties from 1997 to 2018 which include average returns, median, standard deviation (total risk), downside risk, skewness, Kurtosis and p-value. Average returns of all countries are normally distributed as indicated by p-value less than 0.05. Hence, our dependent variable has normal distribution for regression analysis.
Sources: Author's own calculation.

Table 6. Panel descriptive statistics.

Variables	Obs	Mean	Median	Standard Deviation	Minimum	Maximum
Returns	550	−17.49	−8.14	32.68	−84.15	20.75
Corruption Control	550	88.37	92.42	11.26	52.40	100
Effectiveness	550	89.72	92.34	8.96	60.19	100
Stability	550	74.02	77.34	20.06	7.10	100
Regulatory	550	89.50	92.19	8.61	59.13	100
Law	550	88.99	91.55	9.67	56.73	100
Voice	550	85.12	89.55	13.83	34.13	100
Volume	550	9.24	9.23	1.56	4.2	13.94
Inflation	550	1.70	1.67	1.42	−4.15	7.87
Oil Prices	550	10.21	8.54	7.44	3.4	36.83

Note: Table 6 provide panel-wise descriptive statistics for dependent, independent and control variables. Table 6 includes number of observations, mean, median values, standard deviation, minimum and maximum values.
Sources: Author's own calculation.

of observations, mean, median, standard deviation, minimum value and maximum value. The number of observations are 550 for all variables except *Inflation*, which has 528 observations due to some missing values. The dependent variable *Returns* has mean value -17.49% with standard deviation of 32.68%, which implies a greater volatility in stock returns as can be verified through maximum and minimum values as -84.15% and 20.75%, respectively. The World Governance Indicators have scores from 0 to 100 where 0 = poor, 100 = best. The mean and median values of all the World Governance Indicators are closer where they imply data is normally distributed around the mean. Similar intuition is also applies on *Volume* and *Inflation*.

Table 7. Panel Regression of Stock Market Returns on World Governance Indicators.

Variables	(1) Returns	(2) Returns	(3) Returns	(4) Returns	(5) Returns	(6) Returns	(7) Returns
Constant	−214.435***	−229.8***	−74.83***	−117.4***	−222.6***	−259.6***	−77.24***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.002)
Corruption Control	1.579***						
	(0.000)						
Effectiveness		1.714***					
		(0.000)					
Stability			0.286**				
			(0.040)				
Regulatory				0.766**			
				(0.018)			
Law					1.586***		
					(0.001)		
Voice						2.023***	
						(0.000)	
WGI_Index							10.307***
							(0.000)
Inflation	−9.930***	−9.045***	−8.946***	−9.094***	−9.274***	−9.333***	−9.874***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Volume	8.164***	8.210***	5.701***	5.316***	8.679***	8.467***	8.287***
	(0.003)	(0.003)	(0.008)	(0.015)	(0.002)	(0.002)	(0.002)
Oil Prices	−0.122	−0.170	−0.158	−0.180	−0.182	−0.130	−0.151
	(0.472)	(0.316)	(0.356)	(0.291)	(0.283)	(0.443)	(0.368)
R^2	0.0704	0.0792	0.1323	0.0940	0.0643	0.0824	0.0637
Hausman Test	0.0123	0.0327	0.6932	0.1035	0.0366	0.0294	0.0002
Observations	550	550	550	550	550	550	550

Note: Table 7 presents coefficient of panel regression for 25 stock markets. Column 1 to column 6 we regress individual variable of World Governance Indicators whereas column 7 ascertain the coefficient for WGI_Index composite variable for World Governance Indicators. Table 7 inculcates positive interplay between governance quality and stock returns. The value of Hausman test suggests whether estimator is fixed or random effect. We apply random effect model where value of Hausman test is greater than 0.05. The level of significance of each coefficient is presented by asterisks in parentheses, where ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.
Sources: Author's own calculation.

To investigate the impact of World Governance Indicators on the dependent variable, stock annual returns across our sample of 25 countries, Table 7 shows, based on column one to six, an individual impact of each World Governance Indicator to identify the sign and significance of individual governance indicator whereas column seven exhibits joint impact of World Governance Indicators on stock returns through a variable *WGI_Index* generated by the P.C.A. Moreover, Table 7 also reveals R^2, number of countries and value of Hausman test to select the appropriate estimator between fixed and random effect models. As per Table 7 the random effect estimator is appropriate for column 3, *Stability* and column 4 *Regulatory*, however, for remaining columns fixed effect estimator is applied.

Our finding indicates that impact of World Governance Indicators are profound on world's stock market returns. Table 7 exhibits *Corruption Control, Effectiveness, Stability, Regulatory, Law* and *Voice* have positive significant impact of stock market annual returns at 1% significance level. The composite variable *WGI_Index* is also significant with stock market returns at 1% level of significance. These finding strengthen our viewpoint that better institutional quality increases the performance of stock markets as predicted by La Porta et al. (1998) and Hooper et al. (2009). Countries that have stronger investor protection laws, where shareholder's rights attached to securities are protected and enforceable by law, increase shareholder

confidence and encourage them to surrender more funds to firm to finance their business activities. From a larger perspective, better governance quality reduces transaction cost associated with firm operational activities, moreover, better governance quality enhances investor protection through curtailing insider trading which uplifts the investors' confidence on overall financial system of the country. A reduction in transaction costs would enlarge the profitable project opportunity set available to firms, thus which in turn increases demand for equity. A better institutional enforcement of corporate governance mechanism, in connection with reduced agency cost, should increase the return to shareholders. Our findings support Hooper et al. (2009) as they find positive significant relationship between institutional quality and stock market performance, but contradict Low et al. (2014).

The control variables *Inflation* (*Volume*) are negatively (positively) significant with stock returns across all regression columns that imply shareholders demand higher premium when inflation increases and higher trading volume leads to higher stock returns. *Oil Prices* are insignificant with stock returns throughout column 1 to 7 which is also supported by Hooper et al. (2009).

4.2. Robustness check

Further we apply robustness check to test whether positive significant relationship between World Governance Indicators and stock market returns in Table 4.2 still upholds for different econometric techniques. For this purpose, we aim to test how World Governance Indicators response to only positive stock market annual returns. To answer this question, we convert our dependent variable *Returns* into binary variable that contains 1 for positive stock returns and 0 for otherwise. After introducing binary dependent variable, the relationship no longer remains linear between dependent and independent variables where ordinary least square regression cannot be applied. To resolve this issue logit model is applied as follows.

$$PositiveReturns = \propto_1 + \beta_1 CorruptionCotrol_{j,t} + \beta_2 Effectivenss_{j,t} + \beta_3 Stability_{j,t}$$
$$+ \beta_4 Regulatory_{j,t} + \beta_5 Law_{j,t} + \beta_6 Voice_{j,t} + \beta_7 Inflation_{j,t}$$
$$+ \beta_8 Volume_{j,t} + \beta_9 OilPrices_{j,t} + \omega_{j,t}$$

Table 8 shows positive relationship between stock market returns and World Governance Indicators still holds under logit regression when relationship is nonlinear. Column 1 to 6 provides individual impact of World Governance Indicators whereas column 7 estimates *WGI_Index* on *Returns*. *Corruption Control, Effectiveness, Law* and *Voice* are positive and significantly affect *Returns*. Overall the coefficient of each individual World Governance Indicators decreases in Table 8 as compared to Table 7. The *Stability* and *Regulatory* has become insignificant, similarly, coefficient of *WGI_Index* also decreases in Table 8. Moreover, Table 8 also reveals the impact of control variables such as *Inflation, Volume* and *Oil Prices*. *Volume* and *Inflation* remains positively and negatively, respectively, significant in logit regression from column 1 to 7. Moreover, *Oil Prices* has become negatively significant for all columns.

Table 8. Logit Model Stock Market Positive Returns and World Governance indicators.

VARIABLES	(1) Logit Model Returns	(2) Logit Model Returns	(3) Logit Model Returns	(4) Logit Model Returns	(5) Logit Model Returns	(6) Logit Model Returns	(7) Logit Model Returns
Constant	−3.040***	−2.944**	−1.794*	−2.060	−2.705**	−4.050***	−1.00
	(0.010)	(0.030)	(0.063)	(0.111)	(0.034)	(0.003)	(0.184)
Corruption Control	0.023***						
	(0.019)						
Effectiveness		0.022*					
		(0.074)					
Stability			0.009				
			(0.150)				
Regulatory				0.013			
				(0.284)			
Law					0.019*		
					(0.084)		
Voice						0.034**	
						(0.007)	
WGI_Index							0.099*
							(0.054)
inflation	−0.422***	−0.413***	−0.404***	−0.421***	−0.416***	−0.431***	−0.417***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Oil Prices	−0.032*	−0.032*	−0.032*	−0.032*	−0.032*	−0.0311*	−0.032*
	(0.059)	(0.056)	(0.061)	(0.057)	(0.058)	(0.066)	(0.058)
Volume	0.0156**	0.150*	0.163**	0.140*	0.150*	0.1524*	0.151*
	(0.057)	(0.066)	(0.049)	(0.084)	(0.066)	(0.061)	(0.065)
R^2	0.0572	0.0527	0.0505	0.0489	0.0523	0.0607	0.0536
Observations	550	550	550	550	550	550	550

Note: Table 8 presents the coefficients estimated through logit mode. From column 1 to column 6 logit model regresses an individual World Governance Indicators, whereas column 7 estimate composite WGI_Index variable on binary dependent (returns). Our results in Table 8 confirms the results presented in Table 7 in terms of coefficient signs and significance. P-value in parentheses.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.
Sources: Author's own calculation.

5. Conclusion

The finding reveals that governance quality positively affects financial markets in developed countries. The stock markets that operate under efficient governance and institutional environments experience greater stock returns and lower level of risk. This might lead to an argument that such risk and returns relationships cannot sustain an equilibrium, as risk-averse investors will not invest in countries that are not mean variance efficient. Nevertheless, this argument disregards international market segmentation and the benefits of stock diversification that arise from countries with poor governance. This is similar to the situation that risk-averse investors carry certain stocks with higher risk and lower returns to attain diversification benefits. As conducive to Lombardo and Pagano's (2006), superior risk-returns relationship exists for countries that have higher institutional quality is also supported under international market segmentation and benefits of diversification.

Our results strengthen the viewpoint that better governance quality has a reducing effect on agency and transaction costs which increase the stock returns for shareholders. This is a demand-centered viewpoint that suggests lower transaction costs are associated with higher profitable projects for firms where firms in turn demand higher equity financing. The growth in availability of profitable project enable firms to increase the stock returns for shareholder through higher increase in the demand

for equity. Consequently, higher demand for equity financing in countries with better institutional environments are often associated with higher equity returns. Based on this evidence, we conclude that governance quality has prime importance in enhancing financial market performance.

We recommend, based on our findings, that neoclassical theories on transaction economics and agency conflict should update their theoretical framework due to an increasing interaction between governance quality and firm. Mostly this interaction arises through transaction cost and agency costs. Additionally, the agency cost should be considered as part of transaction costs. The contractual negotiation between economic agents and cost of production in real world give rise to transaction and agency costs. A comparative study between these two cost will increase our understanding about how state level governance quality is linked with the operations of financial markets. The importance of investigating such relationship rests upon economic development, institutional and financial system that are conducive to capital accumulation. Thus, the governance quality should be strengthen that set the direction of change to achieve greater financial stability and growth.

Due to a data availability issue, our analysis is confined to 25 developed countries and only includes three control variables. A higher number of countries will increase the generalisation of the research and inclusion of more control variable may increase the R^2. Our findings cannot be extrapolated to developing (emerging) countries which make it unsure whether positive relationship holds in case of developing countries or not. A future comparative research study will be conducted in order to investigate whether positive relationship and the governance quality degree of impact on stock market performance still hold and if are similar for developed and developing countries. Moreover, the relationship between quality of governance and its impact on foreign direct investment is also an area of interest.

Note

1. The data was requested from University of Utara Malaysia. We have obtained data for only 25 developed countries.

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ORCID

Cristi Spulbar https://orcid.org/0000-0002-3909-9496
Ramona Birau http://orcid.org/0000-0003-1638-4291

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