**The Effects of Governance Quality on the Stability of Equity Markets: Evidence from Cross-Listed Securities**

**Abstract**

In this paper, we examine the effects of governance quality on the price stability of American depository receipts (ADRs) listed on major U.S. exchanges. Using a unique dataset of 791 ADRs from 44 countries around the globe, we provide evidence that good (poor) quality governance in the home country is associated with less (more) volatile trading. The relationship is driven mainly by governance quality measures, including: Voice and Accountability (VA), Political Stability and Absence of Violence (PV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). The calming effect on volatility is not subsumed by the inclusion of ADRs’ specific characteristics or fixed country effects, and is robust under all types of governance quality and volatility measures. To overcome the possibility of endogeneity and reversed causality in the governance-volatility relationship, we also examine the stability of Brazilian ADRs in comparison with non-Brazilian ADRs, in response to an event that significantly undermined governance quality in Brazil. We propose that this arguably exogenous governance quality event can be used in quasi-natural experimental design, helping us make a stronger causality interpretation. The inverse governance-volatility relationship is clearly demonstrated by this event. The volatility of Brazilian ADRs, as compared with *non*-Brazilian ADRs, increases significantly in response to the Brazilian corruption leakage event. The information documented here supports the conjecture that governance quality is a key prerequisite for the stability of equity markets and the enhancement of economic growth.

*Keywords*: ADR, American depository receipts, volatility, governance, rule of law, control of corruption, political risk, voice and accountability.

*JEL classifications*: G01, G12, G15.

1. **Introduction**

Volatility as a measure of risk and uncertainty is one of the key variables for investors, managers, regulators, and other financial markets participants, and has captured a central place in the academic debate surrounding traditional asset pricing and portfolio theory (Markowitz 1952; Sharpe 1964; Lintner 1965; Black and Scholes 1973). A volatile stock market can be a major source of concern to policy makers, given that stock market instability can induce uncertainty, which could have adverse effects on growth prospects. Hence, volatility is a fundamental consideration in decisions pertaining to formulating economic policies, rules, and regulations related to financial markets. A myriad of studies have sought to identify and focus on factors that affect the volatility of individual securities and to determine how volatility affects the decisions of agents on both the state and firm levels.[[1]](#footnote-1)

At the same time, there is a growing body of research in recent years dealing with the potential role of internal (firm) governance practices and, inter alia, the firm’s cost of capital (e.g., Chen et al., 2009; Zhu, 2014; Tran, 2014; Guptaet al., 2018), liquidity (e.g., Chung et al., 2010, Prommin et al., 2014), and volatility (e.g., Aloui & Jarboui, 2018; Lee et al. 2019). However, given that a firm operates under a set of rules, laws (set by the legislature and the judiciary), regulations, norms and ethical standards determined on the level of the country (North 1990, 1991; Scott, 1994), it is not unreasonable to infer that the external governance infrastructure at the country level might shape practices at the level of the firm, and affect the ability of the firm to apply its corporate governance standards. In this study, we delve into this issue and examine whether the country-level governance quality, which functions as a sort of external governance environment, affects the stability of cross-listed securities. More specifically, we assess whether improved (worsened) governance quality – as captured by different levels of governance, including the rule of law, voice and accountability, political stability, government effectiveness, regulatory quality, and control of corruption – has a calming or amplifying effect on the price volatility of ADRs. All six levels indicated above are measures of the country-level capacity to construct and apply a governance structure, which can accordingly support or distort the economic and financial environment in which firms operate.

There are four major reasons for conducting the current research. First, volatility leads investors to demand higher risk premiums as compensation for high levels of uncertainty. Higher risk premiums are translated into higher capital costs. To the extent that volatility is indeed alleviated by a set of improved country-level governance quality features, it has implications in terms of lowering firms’ cost of capital, thus possibly enhancing firms’ investment and growth opportunities. This proposition is closely related to empirical findings in earlier studies. Hail and Leuz (2006), for example, showed that firms from countries with more extensive disclosure requirements, stronger securities regulation, and stricter enforcement mechanisms have a significantly lower cost of capital, which can improve firms’ ability to raise external financing and to take advantage of growth opportunities, while Campbell et al., (2001) and Alfaro et al. (2004) showed that lower levels of firm-specific volatility can also lead to stronger economic growth. In addition, in Kaufmann, Kraay, and Zoido-Lobaton (1999) a strong *causal* relationship was demonstrated between better governance and better economic outcomes in a sample of 150 countries, while Choudhry (2003) found evidence of *causality* between stock market volatility and consumer expenditure.

Identifying governance quality as a sustaining factor in stability might support the contention that country-level governance quality has a significant impact on investments, with good quality strengthening economic growth. Moreover, identifying the link between governance quality and volatility may clarify a potential channel through which country-level governance quality affects economic activity.

Second, previous studies show that less-developed governance quality in terms of the rule of law and investor protection, for example, discourages foreign direct inflows. Globerman and Shapiro (2003) found that countries that do not enjoy U.S. foreign direct investment are mainly those with ineffective governments and that do not promote free and transparent markets, while English and Moore (2002) showed that announcements by companies about investing in countries with poorly defined and protected property rights and greater uncertainty were associated with a negative response in the firm’s stock price. Leuz, Lins, & Warnock (2009) found that foreigners invest less in firms domiciled in countries with poor outsider protection and disclosure, and in firms with ownership structures conducive to governance problems. In addition, Aggarwal, Klapper & Wysocki (2005) showed that U.S. funds invested more in open emerging markets with stronger accounting standards, shareholder rights, and legal frameworks. They also showed that at the firm level, U.S. funds were found to invest more in firms that adopt discretionary policies, such as greater accounting transparency and issuance of an ADR. They found that firms with unlisted ADRs received higher mutual fund allocations only if they voluntarily adopted high quality accounting disclosures. Other studies, such as that of Li and Filer (2007), have shown that stronger rule-based countries in terms of governance tend to attract more portfolio investment and thus develop a more stable stock market, while La Porta et al. (1997, 1998, 2000) and other early studies demonstrated that countries characterized by an environment that supports good governance were associated with positive effects on financial market development. Hall and Jones (1999) showed that the long-run economic performance of a country is dependent mainly on its institutions and government policies.

Given that financial markets are a platform for the transfer of funds through which countries and companies operate by making financial investments, then any step that may increase the stability of the domestic capital market and attract foreign investment and fund inflows should further accelerate local economic growth and strengthen underlying economic factors, such as the labor market.

Third, previous studies have addressed corporate governance effects during periods of crisis (e.g., Johnson et al., 2000; Mitton, 2002, Baek et al., 2004; Ding et al., 2021). In the midst of the COVID-19 pandemic and future financial crises or black swans, which pose a threat to the future of companies and the economy alike, governance quality may be of paramount importance. If good governance quality indeed reduces volatility in routine times, then in periods of crisis, which are inevitably associated with a high degree of uncertainty, governance quality has a crucial role in supporting the stability of the domestic capital market from such shocks, as well as in possibly encouraging economic recovery.

Fourth, poor governance mechanisms, such as government ineffectiveness, government inability to apply rules, and unchecked corruption, are barriers that can create ambiguity and heightened policy uncertainty (Pastor and Varonesi, 2012), leading to more volatile markets, as mentioned above, especially during turbulent periods. Greater uncertainty is a challenge for both individuals and firms in making forward-looking decisions, and substantially increases the value of waiting (McDonald & Siegel, 1986). The latter option increases the possibility that investments will be deferred, thus making it harder for economies to grow. Bernanke (1983), for example, showed that under uncertain conditions, firms tended to reduce and postpone their investments and wait for additional information, as investment costs are irreversible. Therefore, if governance quality can enhance stability, it can also reduce the negative impact of such uncertainty.

Fifth, the absence of a well-designed governance environment may attract subprime or unsophisticated traders whose decisions are rarely based on rational fundamentals, thereby causing asset prices to deviate from their fundamental value. Poor governance quality may reduce the participation of sophisticated investors, whose investment decisions are based on rational factors. In the new era of zero commission trading, the effect of short-squeeze investors acting in concert, as seen in the recent GameStop saga, and the fear of the contagion effect in trading (Aharon et al., 2021a; Aharon et al., 2021b; Klein, 2021), could be a timely concern, given that the presence of sophisticated investors could potentially contribute to efficiency, liquidity and stability in trading. [David's note: it will be better to show a paper demonstrating that more volatile markets attract noise traders]

Lastly, according to North’s (1990) institutional theory, organizations’ structure and actions are affected by the social environment, meaning basically that firms do not function as isolated units. Instead, they are elements in a dynamic environment of formal laws, norms, rules and regulations established by a government and regulatory authorities. Organizations that do not conform to the rules, beliefs, and norms, are legally sanctioned and lose the support of their surrounding society. According to this approach, each foreign firm issuing cross-listed securities is expected to conform to the host country’s governance standards. In addition, the benchmark used by investors is that the foreign country-level governance quality at least conforms to the local (host) country norms. This paper offers an opportunity to observe whether firms from countries with poor (superior) governance are penalized (rewarded) with increased (decreased) volatility.

In exploring our main research question, two potential drawbacks should be addressed. First, it is possible that the structure of a certain capital market is determined endogenously by the governance environment. Hence, any attempt to draw conclusions about the impact of governance quality on volatility without properly controlling for market structure could be misleading. To avoid this potential obstacle, we use ADRs, which are shares of foreign companies traded in U.S. stock exchanges. Using ADRs is a unique model, allowing us to control for different market structures, currencies, and country effects, while still enabling us to take advantage of the cross-sectional variation in governance quality among countries, in addition to the time-series variation which is that most commonly examined in former studies. More simply, the ADR-based model enables us to isolate the influence of governance quality in the home country on the volatility of a security, while keeping the market structure constant. This benefit renders the design suitable to addressing endogeneity issues (Eleswarapu & Venkataraman, 2006; Brough & Thomas, 2014; Blau, 2017; Blau, Baig, Blau, and Sabah, 2021; Blau, Griffith, & Whitby, 2021).

The second potential complication is that endogeneity might appear from an alternative direction. Our initial premise is that governance quality affects the stability of ADRs, but there remains the possibility that the reverse relationship can emanate from a different source. Documenting a governance-volatility correlation is not equivalent to determining that governance quality directly causes volatility. It could be the case that volatility by some means affects the overall governance environment, even if this possibility seems less likely intuitively. Therefore, an appropriate design should enable us to make a clear causal inference from the governance environment to volatility. To alleviate this sort of endogeneity, and strengthen our casual inference result, we employ a difference-in-difference approach to one of the most notorious corruption scandals in Brazil that erupted in June 2017, which can be considered as an exogenous shock for governance quality. This arguably quasi-natural experiment clearly damaged the quality of government and the public perception of the government’s credibility and efficiency . Therefore, we expect to witness a deterioration in the stability of ADRs, meaning increased volatility vis-à-vis other ADRs, after the event.

The main results of our study can be summarized as follows. First, after controlling for the specific characteristics of ADRs (such as price, spread, and liquidity), as well as for country-fixed effects (such as the country GDP per capita, population, and unemployment rate), governance quality variables are associated with a negative impact on ADRs’ volatility. In other words, a poor quality of governance is associated with greater ADR volatility. For example, our multivariate regression shows that a one unit increase in the Control of Corruption Index (government effectiveness) is associated with at least 20 (30) bp decrease in ADR volatility. A similar picture arises from examining governance quality through the lens of other governance quality variables, such as Voice and Accountability (VA), Political Stability and Absence of Violence (PV), Regulatory Quality (RQ), and Rule of Law (RL). The documented phenomenon also facilitates the use of four types of volatility measures: the well-known historical standard deviation to measure total volatility, the idiosyncratic volatility extracted from the Fama-French (1993) three-factor model, the range volatility, and the conditional GARCH(1,1) volatility. Second, when we inspect the volatility of Brazilian ADRs around the time of the Brazilian leak scandal, which arguably represents a dramatic violation of the quality of governance, it appears that Brazilian ADRs became less stable in the days following the leak in comparison to the non-Brazilian ADRs sample. The results remained qualitatively similar under a set of multivariate tests including different control variables. On the basis of these findings, we conclude that country-level governance quality *causes* changes in the stability of ADRs.

Our paper joins previous studies exploring external variables at the country level and their effect on stability in the equity markets (Blau, Brough and Thomas, 2014; Blau, 2017; Blau, Griffith & Whitby, 2021) It is also consistent with the study by Hooper, Sim, & Uppal (2009), which investigated the link between the quality of government institutions and the performance of global stock markets. Their results show a clear positive relationship between stock market performance measures (the average monthly stock index excess returns and the Sharpe ratio) and the quality of the institutional environment. They also found that the quality of governance is negatively associated with stock market total risk and idiosyncratic risk.

Our paper provides support for the adoption of governance standards to maintain sustainable financial markets and resilient economies. To the extent that better governance quality enhances the price stability of ADRs, and given the potential implications of low volatility in the context of both domestic and foreign investment, economies will benefit from establishing and strengthening high-quality governance rules, norms, and regulatory frameworks that could help reduce uncertainty and promote economic growth.

The remainder of this study is organized as follows. In **Section 2** we describe the data sources, in **Section 3** we present our research methodology and the measurement of the variables. In **Section 4** we detail the empirical findings, while in **Section 5** section we provide a summary and conclusion.

1. **Data and Methodology**

We gathered our data from several sources. The following six measures of ***Governance Quality*** were retrieved from the World Bank database: Voice and Accountability (VA), Political Stability and Absence of Violence (PV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). The definition of each governance quality measure is as follows: ***Control of Corruption*** captures perceptions of the extent to which public power is exercised for private gain, including both petty and substantial forms of corruption, as well as “capture” of the state by elites and private interests. ***Government Effectiveness*** is a proposed measure for the quality of public services, the quality of the civil service and its degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies. ***Political* *Stability and Absence of Violence/Terrorism*** measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. ***Regulatory Quality*** aims to assess perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. ***Rule of Law*** is the proxy for perceptions of the extent to which agents have confidence in and abide by the rules of society, and, in particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Finally, ***Voice and Accountability*** is a proposed score for the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. Importantly, according to the World Bank definitions, each of the above measures represents an estimate for the country’s score on the aggregate indicator, forming a standard normal distribution with values ranging from approximately -2.5 to 2.5. Annual data for the country-specific attributes, including demographic information, and macroeconomic variables, such as GDP and unemployment rates in the ADR home country, were also retrieved from the World Bank database.

We matched the corresponding home country from *Bloomberg* for each ADR, and obtained the daily ADR returns, volume, bid and ask, exchange listing, and related information in each sample year from the Center for Research in Security Prices (CRSP). The governance, ADR sample, and macroeconomic data were collected for roughly 18 years beginning in 2002 and ending in 2019, which resulted in a relatively thorough database of 785 ADRs from 44 countries, with a total of 5,591 ADR-year observations.

 Next, we constructed a number of different measures of volatility using the CRSP data: the commonly-used ***historical standard deviation*** (VLT1) which is the standard deviation of each ADR daily returns, the ***idiosyncratic volatility*** (VLT2) which is the standard deviation of residual returns where the latter are obtained through estimations using a daily Fama-French (1993) three-factor model, the ***range volatility*** (VLT3) which is the daily ADR volatility calculated as the difference between the natural log of intra-day high and low prices, and the ***conditional volatility*** (VLT4) estimated using a GARCH(1,1) model. We used several control variables for all our estimations. ***Spread***is the daily average bid-ask spread – the difference between ask and bid prices of ADRs scaled by their mid-point.***Turnover*** is calculated as the daily trading volume scaled by the number of shares outstanding. ***Illiquidity*** is the daily Amihud (2002) price impact measure computed by scaling the absolute return by the dollar volume up by a million.***Price*** is the daily closing ADR price*.* ***Market cap***is the daily market capitalization computed as the product of price and shares outstanding (in billions). ***Nasdaq*** is a dummy variable that takes on a value of 1 for ADRs listed on NASDAQ, zero otherwise. ***GDP***, ***unemployment*** and ***population*** are the gross domestic product per capita, the unemployment rate, and the size of the population for each country in each year, respectively.

**Table 1** presents the overall statistics of the key variables across the whole ADRs sample. More specifically, Panels A, B and C report the descriptive statistics for the volatility, ADR and country characteristics, respectively. According to Panel A in **Table 1**, the average volatility, as measured by the standard volatility (VLT1) is 0.030, while the median estimate is nearly 0.025. Similarly, the idiosyncratic volatility (VLT2) is 0.027, and the median estimate is about 0.022. Similar statistics are found for the other two remaining volatility measures (range and GARCH volatility). With regard to ADR-specific characteristics, Panel B shows that the ADRs participating in the sample have, on average, a bid-ask spread of 0.9%, a market capitalization of USD 1.395 billion, and a corresponding market price of USD 24.552.

Also, the average value of the Governance Quality variables across the sample of ADRs is 0.366 for Voice and Accountability (VA), 0.133 for Political Stability and Absence of Violence (PV), 0.885 for the Government Effectiveness (GE), 0.731 for Regulatory Quality (RQ), 0.650 for Rule of Law (RL) and finally, 0.675 for Control of Corruption (CC). Finally, Panel C shows that the average country has a GDP (per capita) of USD 27,448.4, an unemployment rate of 7.77%, and a population size of about 7.777 million.

**Table 2** reports the total number of ADRs across the sample countries. As **Table 2** illustrates, there is a considerable variation not only in the number of ADRs in each country, but, more importantly, with respect to the Volatility and Governance Quality measures. The latter is important for analyzing the volatility-governance quality relationship. While 203 ADRs in the sample are Chinese and 103 are from the United Kingdom, several countries, such as Austria, Bermuda, Colombia, the Dominican Republic, Ghana, Papua New Guinea, the Philippines, and Turkey have only a single ADR listed in the United states. As can be seen from this Table, and as measured by our four proxies for volatility, the Dominican Republic, Cayman Islands and China are associated with the highest ADR price volatility, while Portugal, Austria, and the Philippines have the highest volatility measures. Finally, as measured by the Voice and Accountability (VA) estimate, Norway (1.626) and Denmark (1.589) are located at the top, while China (-1.612) and Russia (-0.852) have the worst perceptions of Voice and Accountability. Regulatory Quality (RQ) is the highest in Hong Kong (1.922) and Singapore (1.903), and the lowest in Venezuela (-0.964) and Papua New Guinea (-0.746). Similarly, as measured by the Control of Corruption (CC) estimate, Finland (2.338) and New Zealand (2.325) have the best perceptions of Control of Corruption, while, again, Venezuela (-1.044) and Papua New Guinea (-0.972) have the worst Control of Corruption.

**Table 3** reports the correlation matrix, according to which there is a negative Pearson correlation between each of the six measures for governance quality and the four measures of volatility, which provides preliminary support for our contention. That is, the better the governance quality is, the more stable financial markets are. To better capture and isolate the effect of Governance Quality level on ADR price volatility, we ran the following multivariate regression:

$LN\\_VLT\_{i,c,t}^{j}=β\_{o}+β\_{1}LN(GOVERNANCE\_{c,t})+β\_{2}SPREAD\_{i,t}+β\_{3}TURNOVER\_{i,t}+β\_{4}ILLIQUIDITY\_{i,t}+β\_{5}LN(PRICE\_{i,t})+β\_{6}LN(MARKETCAP\_{i,t})+β\_{7}NASDAQ\_{i}+β\_{8}LN(GDP\_{c,t})+β\_{9}LN(UNEMPLOYMENT\_{c,t})+β\_{10}LN(POPULATION\_{c,t})+δ\_{t}+ε$*it*. (1)

1. **Empirical Results**
2. **Summary and Conclusions**

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**Table 1: Summary Statistics**

**Panel A** presents the descriptivestatistics for the ADR volatility measures: historical standard deviation (VLT1), idiosyncratic volatility (VLT2) extracted from Fama-French (1993) three-factor model, the range volatility (VLT3) which is the difference between the natural log of intra-day high and low prices, and finally the conditional GARCH(1,1) volatility (VLT4). **Panel B** reports the ADR statistics: **Spread** is the daily bid-ask spread computed as the difference between ask and bid prices of ADRs scaled by their mid-point. **Turnover** is the trading volume scaled by the shares outstanding. **Illiquidity** represents the Amihud (2002) illiquidity measure computed by scaling the absolute return by the dollar volume scaled up by a million. **Market cap** is the ADR market capitalization calculated by multiplying price and shares outstanding, and is presented in billions. **Price** is the closing ADR price. **Nasdaq** is a dichotomous variable that takes on a value of 1 for ADRs listed on NASDAQ, zero otherwise.Finally, **Panel C** reports the statistics of the macroeconomic, population, and governance variables at the country level using information retrieved from the World Bank Database. The size sample for each variable is 5,591 observations.

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|   | **MEAN** | **MEDIAN** | **SD** | **P25** | **P75** |
|  **VARIABLE** | **[1]** | **[2]** | **[3]** | **[4]** | **[5]** |
| ***Panel A: Volatility Characteristics*** |
| **Volatility (VLT1)** | 0.030 | 0.025 | 0.017 | 0.018 | 0.037 |
| **Idiosyncratic Volatility (VLT2)** | 0.027 | 0.022 | 0.016 | 0.016 | 0.034 |
| **Range Volatility (VLT3)** | 0.034 | 0.028 | 0.022 | 0.017 | 0.046 |
| **GARCH Volatility (VLT4)** | 0.031 | 0.026 | 0.016 | 0.019 | 0.038 |
| ***Panel B: ADR Characteristics*** |
| **Spread** | 0.009 | 0.003 | 0.015 | 0.001 | 0.009 |
| **Turnover** | 0.015 | 0.008 | 0.023 | 0.004 | 0.016 |
| **Illiquidity** | 1.644 | 0.011 | 11.256 | 0.002 | 0.130 |
| **Market Cap** | 1.395 | 0.309 | 3.059 | 0.065 | 1.270 |
| **Price** | 24.552 | 16.520 | 24.685 | 7.080 | 34.380 |
| **Nasdaq** | 0.291 | 0.000 | 0.454 | 0.000 | 1.000 |
| ***Panel C: Country Characteristics*** |
| **GDP** | 24448.4 | 19896.820 | 19541.470 | 7678.600 | 40290.310 |
| **Unemployment** | 7.777 | 7.270 | 4.345 | 4.890 | 8.660 |
| **Population** | 0.762 | 0.606 | 0.556 | 0.466 | 1.090 |
| **Voice and Accountability (VA)** | 0.366 | 0.723 | 1.151 | -0.030 | 1.297 |
| **Political Stability and Absence of Violence (PV)**  | 0.133 | 0.143 | 0.732 | -0.502 | 0.839 |
| **Government Effectiveness (GE)** | 0.885 | 1.064 | 0.758 | 0.123 | 1.589 |
| **Regulatory Quality (RQ)** | 0.731 | 0.991 | 0.859 | -0.221 | 1.569 |
| **Rule of Law (RL)** | 0.650 | 0.954 | 0.961 | -0.407 | 1.602 |
| **Control of Corruption (CC)** | 0.675 | 0.624 | 1.023 | -0.340 | 1.674 |

**Table 2: Summary Statistics by Country**

This table presents the summary statistics for our sample by ADR home country. For the definition of variables, please refer to Table 1.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COUNTRY** | **ADRs** | **VLT1** | **VLT2** | **VLT3** | **VLT4** | **VA** | **PV** | **GE** | **RQ** | **RL** | **CC** |
| **[1]** | **[2]** | **[3]** | **[4]** | **[5]** | **[6]** | **[7]** | **[8]** | **[9]** | **[10]** | **[11]** | **[12]** |
| Argentina | 20 | 0.032 | 0.029 | 0.043 | 0.032 | 0.397 | -0.058 | -0.095 | -0.693 | -0.590 | -0.360 |
| Australia | 24 | 0.036 | 0.033 | 0.037 | 0.041 | 1.411 | 0.973 | 1.708 | 1.734 | 1.779 | 1.916 |
| Austria | 1 | 0.017 | 0.017 | 0.011 | 0.017 | 1.375 | 1.147 | 1.865 | 1.603 | 1.891 | 1.981 |
| Belgium | 6 | 0.027 | 0.024 | 0.026 | 0.027 | 1.376 | 0.658 | 1.438 | 1.287 | 1.387 | 1.520 |
| Bermuda | 1 | 0.027 | 0.024 | 0.039 | 0.023 | 0.967 | 0.797 | 1.021 | 1.398 | 0.856 | 1.289 |
| Brazil | 21 | 0.027 | 0.023 | 0.033 | 0.027 | 0.467 | -0.215 | -0.154 | -0.022 | -0.178 | -0.175 |
| Cayman Islands | 15 | 0.041 | 0.038 | 0.055 | 0.042 | 0.564 | 1.128 | 1.229 | 1.046 | 0.874 | 1.041 |
| Chile | 25 | 0.021 | 0.019 | 0.025 | 0.021 | 1.089 | 0.581 | 1.165 | 1.434 | 1.289 | 1.388 |
| China | 203 | 0.038 | 0.035 | 0.047 | 0.040 | -1.612 | -0.465 | 0.225 | -0.235 | -0.410 | -0.404 |
| Colombia | 1 | 0.028 | 0.024 | 0.036 | 0.027 | -0.118 | -1.559 | -0.045 | 0.285 | -0.351 | -0.325 |
| Denmark | 8 | 0.030 | 0.028 | 0.035 | 0.031 | 1.589 | 1.054 | 2.053 | 1.722 | 1.939 | 2.305 |
| Dominican Rep. | 1 | 0.053 | 0.052 | 0.064 | 0.049 | 0.103 | -0.215 | -0.539 | -0.323 | -0.651 | -0.588 |
| Finland | 4 | 0.022 | 0.019 | 0.019 | 0.022 | 1.571 | 1.456 | 2.108 | 1.759 | 1.974 | 2.338 |
| France | 43 | 0.031 | 0.028 | 0.032 | 0.032 | 1.247 | 0.428 | 1.544 | 1.198 | 1.421 | 1.366 |
| Germany | 28 | 0.029 | 0.025 | 0.026 | 0.029 | 1.396 | 0.842 | 1.590 | 1.580 | 1.695 | 1.841 |
| Ghana | 1 | 0.034 | 0.034 | 0.047 | 0.035 | 0.150 | -0.067 | -0.148 | -0.355 | 0.056 | -0.292 |
| Greece | 5 | 0.028 | 0.025 | 0.030 | 0.028 | 1.014 | 0.386 | 0.674 | 0.868 | 0.779 | 0.262 |
| Hong Kong | 14 | 0.033 | 0.031 | 0.042 | 0.034 | 0.471 | 0.971 | 1.735 | 1.922 | 1.560 | 1.803 |
| Hungary | 2 | 0.026 | 0.023 | 0.031 | 0.027 | 1.003 | 0.868 | 0.777 | 1.113 | 0.855 | 0.531 |
| India | 18 | 0.031 | 0.027 | 0.034 | 0.031 | 0.424 | -1.137 | -0.020 | -0.345 | 0.019 | -0.392 |
| Indonesia | 2 | 0.023 | 0.021 | 0.019 | 0.023 | -0.035 | -1.048 | -0.253 | -0.389 | -0.628 | -0.713 |
| Ireland | 19 | 0.031 | 0.028 | 0.040 | 0.031 | 1.365 | 1.149 | 1.507 | 1.692 | 1.643 | 1.571 |

**Table 2: Summary Statistics by Country – *Continued***

This table presents the summary statistics for our sample by ADR home countries. For the definition of variables, please refer to Table 1.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COUNTRY** | **ADRs** | **VLT1** | **VLT2** | **VLT3** | **VLT4** | **VA** | **PV** | **GE** | **RQ** | **RL** | **CC** |
| **[1]** | **[2]** | **[3]** | **[4]** | **[5]** | **[6]** | **[7]** | **[8]** | **[9]** | **[10]** | **[11]** | **[12]** |
| Israel | 23 | 0.033 | 0.031 | 0.038 | 0.036 | 0.684 | -1.101 | 1.269 | 1.154 | 0.984 | 0.914 |
| Italy | 14 | 0.023 | 0.020 | 0.024 | 0.023 | 1.033 | 0.479 | 0.507 | 0.904 | 0.486 | 0.299 |
| Japan | 36 | 0.022 | 0.019 | 0.018 | 0.022 | 1.021 | 1.023 | 1.472 | 1.131 | 1.348 | 1.381 |
| Luxembourg | 3 | 0.032 | 0.028 | 0.031 | 0.032 | 1.548 | 1.441 | 1.767 | 1.739 | 1.815 | 1.881 |
| Mexico | 31 | 0.026 | 0.023 | 0.032 | 0.025 | 0.145 | -0.567 | 0.164 | 0.334 | -0.487 | -0.427 |
| New Zealand | 3 | 0.020 | 0.017 | 0.019 | 0.019 | 1.546 | 1.272 | 1.775 | 1.733 | 1.863 | 2.325 |
| Norway | 5 | 0.022 | 0.018 | 0.021 | 0.022 | 1.626 | 1.253 | 1.905 | 1.509 | 1.961 | 2.107 |
| Papua New Guinea | 1 | 0.029 | 0.028 | 0.028 | 0.031 | -0.275 | -0.647 | -0.648 | -0.746 | -0.995 | -0.972 |
| Peru | 4 | 0.029 | 0.027 | 0.040 | 0.029 | 0.164 | -0.622 | -0.268 | 0.395 | -0.538 | -0.386 |
| Philippines | 1 | 0.018 | 0.016 | 0.020 | 0.018 | 0.028 | -1.304 | 0.005 | -0.100 | -0.453 | -0.598 |
| Portugal | 2 | 0.015 | 0.014 | 0.013 | 0.015 | 1.340 | 1.133 | 1.068 | 1.209 | 1.210 | 1.134 |
| Russia | 9 | 0.034 | 0.029 | 0.038 | 0.033 | -0.852 | -0.936 | -0.323 | -0.322 | -0.851 | -0.934 |
| Singapore | 4 | 0.035 | 0.031 | 0.040 | 0.036 | -0.120 | 1.285 | 2.142 | 1.903 | 1.679 | 2.208 |
| South Africa | 13 | 0.031 | 0.029 | 0.037 | 0.031 | 0.634 | -0.113 | 0.458 | 0.447 | 0.102 | 0.172 |
| South Korea | 14 | 0.027 | 0.023 | 0.026 | 0.026 | 0.714 | 0.365 | 1.101 | 0.927 | 1.004 | 0.521 |
| Spain | 13 | 0.022 | 0.018 | 0.023 | 0.023 | 1.136 | 0.029 | 1.232 | 1.141 | 1.121 | 1.059 |
| Sweden | 12 | 0.030 | 0.028 | 0.032 | 0.030 | 1.572 | 1.268 | 1.975 | 1.714 | 1.919 | 2.209 |
| Switzerland | 11 | 0.021 | 0.018 | 0.018 | 0.021 | 1.544 | 1.313 | 1.975 | 1.675 | 1.889 | 2.072 |
| The Netherlands | 18 | 0.024 | 0.019 | 0.022 | 0.024 | 1.555 | 0.999 | 1.865 | 1.795 | 1.798 | 2.047 |
| Turkey | 1 | 0.025 | 0.022 | 0.023 | 0.025 | -0.267 | -1.092 | 0.193 | 0.225 | -0.012 | -0.087 |
| United Kingdom | 103 | 0.027 | 0.024 | 0.027 | 0.028 | 1.354 | 0.383 | 1.667 | 1.733 | 1.696 | 1.845 |
| Venezuela | 2 | 0.032 | 0.031 | 0.034 | 0.034 | -0.523 | -1.299 | -1.000 | -0.964 | -1.252 | -1.044 |

**Table 3: Correlations**

This table provides the Pearson correlation between variables. For the definition of variables, please refer to Table 1.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] | [13] | [14] | [15] | [16] | [17] | [18] | [19] |
| Volatility (VLT1) | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Idiosyncratic Volatility (VLT2) | 0.98 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Range Volatility (VLT3) | 0.88 | 0.88 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| GARCH Volatility (VLT4) | 0.92 | 0.92 | 0.86 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Spread | 0.50 | 0.56 | 0.48 | 0.50 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Turnover | 0.29 | 0.26 | 0.29 | 0.28 | -0.11 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Illiquidity | 0.27 | 0.30 | 0.23 | 0.28 | 0.60 | -0.05 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| Market Cap | -0.22 | -0.25 | -0.21 | -0.24 | -0.22 | -0.06 | -0.07 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| Price | -0.38 | -0.40 | -0.41 | -0.41 | -0.28 | -0.04 | -0.11 | 0.30 | 1.00 |  |  |  |  |  |  |  |  |  |  |
| Nasdaq | 0.33 | 0.37 | 0.40 | 0.39 | 0.32 | 0.03 | 0.17 | -0.13 | -0.16 | 1.00 |  |  |  |  |  |  |  |  |  |
| GDP | -0.13 | -0.14 | -0.20 | -0.12 | -0.01 | -0.09 | 0.02 | 0.07 | 0.10 | 0.07 | 1.00 |  |  |  |  |  |  |  |  |
| Unemployment | 0.06 | 0.07 | 0.07 | 0.06 | 0.04 | 0.04 | 0.02 | -0.06 | -0.06 | 0.02 | -0.25 | 1.00 |  |  |  |  |  |  |  |
| Population | 0.02 | 0.03 | 0.08 | 0.03 | 0.07 | -0.04 | 0.04 | 0.00 | -0.06 | 0.06 | -0.01 | 0.08 | 1.00 |  |  |  |  |  |  |
| Voice and Accountability (VA) | -0.26 | -0.27 | -0.36 | -0.29 | 0.06 | -0.22 | 0.03 | 0.08 | 0.12 | -0.09 | 0.68 | -0.08 | 0.14 | 1.00 |  |  |  |  |  |
| Political Stability and Absence of Violence (PV)  | -0.14 | -0.14 | -0.23 | -0.15 | 0.05 | -0.13 | 0.01 | -0.01 | 0.09 | -0.02 | 0.73 | -0.09 | -0.20 | 0.66 | 1.00 |  |  |  |  |
| Government Effectiveness (GE) | -0.14 | -0.14 | -0.25 | -0.14 | 0.08 | -0.10 | 0.05 | 0.01 | 0.10 | 0.09 | 0.81 | -0.16 | -0.11 | 0.72 | 0.79 | 1.00 |  |  |  |
| Regulatory Quality (RQ) | -0.19 | -0.19 | -0.29 | -0.19 | 0.07 | -0.13 | 0.05 | 0.04 | 0.12 | 0.03 | 0.80 | -0.16 | -0.01 | 0.81 | 0.76 | 0.93 | 1.00 |  |  |
| Rule of Law (RL) | -0.18 | -0.19 | -0.30 | -0.18 | 0.06 | -0.12 | 0.04 | 0.04 | 0.12 | 0.04 | 0.82 | -0.15 | -0.07 | 0.83 | 0.79 | 0.96 | 0.96 | 1.00 |  |
| Control of Corruption (CC) | -0.17 | -0.17 | -0.28 | -0.17 | 0.08 | -0.12 | 0.05 | 0.03 | 0.11 | 0.04 | 0.81 | -0.13 | -0.07 | 0.81 | 0.81 | 0.96 | 0.95 | 0.98 | 1.00 |

**Table 4: Government Quality and Volatility Regressions – VLT1**

This table provides the results from the following OLS regression equation on a pooled sample of ADR-day observations.

$LN\\_VLT\_{i,c,t}^{1}=β\_{o}+β\_{1}LN(GOVERNANCE\_{c,t})+β\_{2}SPREAD\_{i,t}+β\_{3}TURNOVER\_{i,t}+β\_{4}ILLIQUIDITY\_{i,t}+β\_{5}LN(PRICE\_{i,t})+β\_{6}LN(MARKETCAP\_{i,t})+β\_{7}NASDAQ\_{i}+β\_{8}LN(GDP\_{c,t})+β\_{9}LN(UNEMPLOYMENT\_{c,t})+β\_{10}LN(POPULATION\_{c,t})+δ\_{t}+ε$*i*

The dependent variable is Ln\_VLT1, which is the historical standard deviation (VLT1). The main independent variable is LN\_GOVERNANCE, which is the natural log of each of the six governance quality measures from World Bank Database: Voice and Accountability (VA), Political Stability and Absence of Violence (PV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). For definitions of the remaining variables, please refer to Table 1. Robust t-stats corresponding to standard errors clustered at the firm level are reported in parenthesis. \*\*\*, \*\*, and \* reflect statistical significance at 0.01, 0.05, and 0.10 levels, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] |
|  |   |   |   |   |   |   |   |   |   |   |  |  |
| **VA** | -0.004\*\*\* |  |  |  |  |  | -0.002\*\*\* |  |  |  |  |  |
|  | (-9.038) |  |  |  |  |  | (-5.497) |  |  |  |  |  |
| **PV** |  | -0.003\*\*\* |  |  |  |  |  | -0.001 |  |  |  |  |
|  |  | (-4.924) |  |  |  |  |  | (-0.983) |  |  |  |  |
| **GE** |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\*\* |  |  |  |
|  |  |  | (-4.860) |  |  |  |  |  | (-3.074) |  |  |  |
| **RQ** |  |  |  | -0.003\*\*\* |  |  |  |  |  | -0.003\*\*\* |  |  |
|  |  |  |  | (-6.173) |  |  |  |  |  | (-5.279) |  |  |
| **RL** |  |  |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\*\* |  |
|  |  |  |  |  | (-6.028) |  |  |  |  |  | (-4.045) |  |
| **CC** |  |  |  |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\*\* |
|  |  |  |  |  |  | (-5.548) |  |  |  |  |  | (-3.765) |
| **Spread**  |  |  |  |  |  |  | 0.421\*\*\* | 0.412\*\*\* | 0.409\*\*\* | 0.410\*\*\* | 0.408\*\*\* | 0.410\*\*\* |
|  |  |  |  |  |  |  | (12.066) | (11.661) | (11.410) | (11.171) | (11.346) | (11.430) |
| **Turnover** |  |  |  |  |  |  | 0.202\*\*\* | 0.210\*\*\* | 0.212\*\*\* | 0.211\*\*\* | 0.211\*\*\* | 0.211\*\*\* |
|  |  |  |  |  |  |  | (10.172) | (10.470) | (10.537) | (10.651) | (10.535) | (10.587) |
| **Illiquidity** |  |  |  |  |  |  | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 |
|  |  |  |  |  |  |  | (-0.733) | (-0.776) | (-0.684) | (-0.623) | (-0.627) | (-0.672) |
| **Ln Price** |  |  |  |  |  |  | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* |
|  |  |  |  |  |  |  | (-15.068) | (-15.082) | (-14.890) | (-14.761) | (-14.818) | (-14.821) |
| **Ln Market Cap** |  |  |  |  |  |  | 0.000\*\* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|  |  |  |  |  |  |  | (1.991) | (1.365) | (1.149) | (1.228) | (1.266) | (1.224) |
| **Nasdaq** |  |  |  |  |  |  | 0.005\*\*\* | 0.006\*\*\* | 0.006\*\*\* | 0.006\*\*\* | 0.006\*\*\* | 0.006\*\*\* |
|  |  |  |  |  |  |  | (7.935) | (9.193) | (9.376) | (9.131) | (9.157) | (9.194) |
| **Ln GDP** |  |  |  |  |  |  | 0.000 | -0.001\*\* | -0.000 | 0.001 | 0.000 | 0.000 |
|  |  |  |  |  |  |  | (0.472) | (-2.460) | (-0.522) | (1.349) | (0.238) | (0.168) |
| **Ln Unemployment** |  |  |  |  |  |  | 0.001 | 0.001\* | 0.001 | 0.001 | 0.001\* | 0.001\* |
|  |  |  |  |  |  |  | (1.566) | (1.724) | (1.557) | (1.341) | (1.656) | (1.801) |
| **Population** |  |  |  |  |  |  | -0.000 | -0.002\*\*\* | -0.001\*\*\* | -0.001\*\* | -0.001\*\*\* | -0.001\*\*\* |
|  |  |  |  |  |  |  | (-0.959) | (-3.135) | (-3.157) | (-2.155) | (-2.892) | (-2.878) |
| **C** | 0.031\*\*\* | 0.030\*\*\* | 0.033\*\*\* | 0.032\*\*\* | 0.032\*\*\* | 0.032\*\*\* | 0.026\*\*\* | 0.039\*\*\* | 0.034\*\*\* | 0.026\*\*\* | 0.030\*\*\* | 0.030\*\*\* |
|  | (66.734) | (62.453) | (47.139) | (54.819) | (58.223) | (57.461) | (4.884) | (7.333) | (6.430) | (4.985) | (5.567) | (5.420) |
| **Year Fixed Effects** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Robust Standard Errors** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Observations** | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 |
| **R-squared** | 0.212 | 0.169 | 0.166 | 0.179 | 0.177 | 0.173 | 0.610 | 0.603 | 0.604 | 0.609 | 0.606 | 0.606 |

**Table 5: Government Quality and Volatility Regressions– VLT2**

This table provides the results from the following OLS regression equation on a pooled sample of ADR-day observations.

$LN\\_VLT\_{i,c,t}^{2}=β\_{o}+β\_{1}LN(GOVERNANCE\_{c,t})+β\_{2}SPREAD\_{i,t}+β\_{3}TURNOVER\_{i,t}+β\_{4}ILLIQUIDITY\_{i,t}+β\_{5}LN(PRICE\_{i,t})+β\_{6}LN(MARKETCAP\_{i,t})+β\_{7}NASDAQ\_{i}+β\_{8}LN(GDP\_{c,t})+β\_{9}LN(UNEMPLOYMENT\_{c,t})+β\_{10}LN(POPULATION\_{c,t})+δ\_{t}+ε$*i*

The dependent variable is Ln\_VLT2 which is idiosyncratic volatility (VLT2). The main independent variable is LN\_GOVERNANCE, which is the natural log of each of the six governance quality measures from World Bank Database: Voice and Accountability (VA), Political Stability and Absence of Violence (PV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). For definitions of the remaining variables, please refer to Table 1. Robust t-stats corresponding to standard errors clustered at the firm level are reported in parenthesis. \*\*\*, \*\*, and \* reflect statistical significance at 0.01, 0.05, and 0.10 levels, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] |
|  |   |   |   |   |   |   |   |   |   |   |  |  |
| **VA** | -0.004\*\*\* |  |  |  |  |  | -0.002\*\*\* |  |  |  |  |  |
|  | (-8.999) |  |  |  |  |  | (-6.016) |  |  |  |  |  |
| **PV** |  | -0.003\*\*\* |  |  |  |  |  | -0.000 |  |  |  |  |
|  |  | (-4.951) |  |  |  |  |  | (-0.522) |  |  |  |  |
| **GE** |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\*\* |  |  |  |
|  |  |  | (-4.868) |  |  |  |  |  | (-3.116) |  |  |  |
| **RQ** |  |  |  | -0.004\*\*\* |  |  |  |  |  | -0.003\*\*\* |  |  |
|  |  |  |  | (-6.093) |  |  |  |  |  | (-5.237) |  |  |
| **RL** |  |  |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\*\* |  |
|  |  |  |  |  | (-6.069) |  |  |  |  |  | (-4.288) |  |
| **CC** |  |  |  |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\*\* |
|  |  |  |  |  |  | (-5.599) |  |  |  |  |  | (-4.003) |
| **Spread**  |  |  |  |  |  |  | 0.437\*\*\* | 0.428\*\*\* | 0.425\*\*\* | 0.426\*\*\* | 0.424\*\*\* | 0.426\*\*\* |
|  |  |  |  |  |  |  | (12.272) | (11.826) | (11.590) | (11.357) | (11.522) | (11.603) |
| **Turnover** |  |  |  |  |  |  | 0.172\*\*\* | 0.181\*\*\* | 0.182\*\*\* | 0.182\*\*\* | 0.181\*\*\* | 0.182\*\*\* |
|  |  |  |  |  |  |  | (9.435) | (9.783) | (9.855) | (9.992) | (9.863) | (9.914) |
| **Illiquidity** |  |  |  |  |  |  | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 |
|  |  |  |  |  |  |  | (-0.903) | (-0.941) | (-0.858) | (-0.799) | (-0.797) | (-0.842) |
| **Ln Price** |  |  |  |  |  |  | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* |
|  |  |  |  |  |  |  | (-14.971) | (-15.102) | (-14.838) | (-14.686) | (-14.748) | (-14.750) |
| **Ln Market Cap** |  |  |  |  |  |  | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 |
|  |  |  |  |  |  |  | (-0.084) | (-0.677) | (-0.925) | (-0.889) | (-0.836) | (-0.877) |
| **Nasdaq** |  |  |  |  |  |  | 0.005\*\*\* | 0.006\*\*\* | 0.006\*\*\* | 0.006\*\*\* | 0.006\*\*\* | 0.006\*\*\* |
|  |  |  |  |  |  |  | (8.812) | (10.196) | (10.313) | (10.098) | (10.123) | (10.161) |
| **Ln GDP** |  |  |  |  |  |  | 0.000 | -0.001\*\*\* | -0.000 | 0.000 | -0.000 | -0.000 |
|  |  |  |  |  |  |  | (0.184) | (-3.443) | (-1.113) | (0.721) | (-0.237) | (-0.285) |
| **Ln Unemployment** |  |  |  |  |  |  | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001\* |
|  |  |  |  |  |  |  | (1.488) | (1.595) | (1.488) | (1.280) | (1.587) | (1.724) |
| **Population** |  |  |  |  |  |  | -0.000 | -0.001\*\*\* | -0.001\*\*\* | -0.001\* | -0.001\*\* | -0.001\*\* |
|  |  |  |  |  |  |  | (-0.421) | (-2.635) | (-2.726) | (-1.747) | (-2.460) | (-2.444) |
| **C** | 0.028\*\*\* | 0.027\*\*\* | 0.030\*\*\* | 0.030\*\*\* | 0.029\*\*\* | 0.029\*\*\* | 0.031\*\*\* | 0.047\*\*\* | 0.041\*\*\* | 0.033\*\*\* | 0.036\*\*\* | 0.036\*\*\* |
|  | (58.234) | (54.415) | (41.535) | (48.043) | (51.183) | (50.510) | (5.998) | (8.864) | (7.738) | (6.266) | (6.876) | (6.603) |
| **Year Fixed Effects** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Robust Standard Errors** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Observations** | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 |
| **R-squared** | 0.167 | 0.117 | 0.115 | 0.129 | 0.128 | 0.123 | 0.623 | 0.614 | 0.616 | 0.620 | 0.618 | 0.618 |

**Table 6: Government Quality and Volatility Regressions– VLT3**

This table provides the results from the following OLS regression equation on a pooled sample of ADR-day observations.

$LN\\_VLT\_{i,c,t}^{3}=β\_{o}+β\_{1}LN(GOVERNANCE\_{c,t})+β\_{2}SPREAD\_{i,t}+β\_{3}TURNOVER\_{i,t}+β\_{4}ILLIQUIDITY\_{i,t}+β\_{5}LN(PRICE\_{i,t})+β\_{6}LN(MARKETCAP\_{i,t})+β\_{7}NASDAQ\_{i}+β\_{8}LN(GDP\_{c,t})+β\_{9}LN(UNEMPLOYMENT\_{c,t})+β\_{10}LN(POPULATION\_{c,t})+δ\_{t}+ε$*i*

The dependent variable is Ln\_VLT2 which is the natural log of the range volatility measure (VLT3). The main independent variable is LN\_GOVERNANCE which is the natural log of each of the six governance quality measures from World Bank Database: Voice and Accountability (VA), Political Stability and Absence of Violence (PV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). For definitions of the remaining variables, please refer to Table 1. Robust t-stats corresponding to standard errors clustered at the firm level are reported in parenthesis. \*\*\*, \*\*, and \* reflect statistical significance at 0.01, 0.05, and 0.10 levels, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] |
|  |   |   |   |   |   |   |   |   |   |   |  |  |
| **VA** | -0.006\*\*\* |  |  |  |  |  | -0.004\*\*\* |  |  |  |  |  |
|  | (-9.131) |  |  |  |  |  | (-7.221) |  |  |  |  |  |
| **PV** |  | -0.006\*\*\* |  |  |  |  |  | -0.000 |  |  |  |  |
|  |  | (-6.252) |  |  |  |  |  | (-0.526) |  |  |  |  |
| **GE** |  |  | -0.007\*\*\* |  |  |  |  |  | -0.006\*\*\* |  |  |  |
|  |  |  | (-7.353) |  |  |  |  |  | (-6.207) |  |  |  |
| **RQ** |  |  |  | -0.007\*\*\* |  |  |  |  |  | -0.006\*\*\* |  |  |
|  |  |  |  | (-7.934) |  |  |  |  |  | (-7.315) |  |  |
| **RL** |  |  |  |  | -0.006\*\*\* |  |  |  |  |  | -0.005\*\*\* |  |
|  |  |  |  |  | (-8.462) |  |  |  |  |  | (-7.874) |  |
| **CC** |  |  |  |  |  | -0.005\*\*\* |  |  |  |  |  | -0.004\*\*\* |
|  |  |  |  |  |  | (-7.765) |  |  |  |  |  | (-6.426) |
| **Spread**  |  |  |  |  |  |  | 0.649\*\*\* | 0.633\*\*\* | 0.621\*\*\* | 0.629\*\*\* | 0.620\*\*\* | 0.627\*\*\* |
|  |  |  |  |  |  |  | (18.513) | (17.621) | (16.970) | (16.662) | (16.987) | (17.279) |
| **Turnover** |  |  |  |  |  |  | 0.241\*\*\* | 0.257\*\*\* | 0.262\*\*\* | 0.260\*\*\* | 0.259\*\*\* | 0.260\*\*\* |
|  |  |  |  |  |  |  | (10.433) | (10.751) | (10.975) | (11.178) | (11.026) | (11.073) |
| **Illiquidity** |  |  |  |  |  |  | -0.000\*\*\* | -0.000\*\*\* | -0.000\*\*\* | -0.000\*\*\* | -0.000\*\*\* | -0.000\*\*\* |
|  |  |  |  |  |  |  | (-3.783) | (-3.776) | (-3.668) | (-3.678) | (-3.682) | (-3.694) |
| **Ln Price** |  |  |  |  |  |  | -0.008\*\*\* | -0.008\*\*\* | -0.008\*\*\* | -0.008\*\*\* | -0.008\*\*\* | -0.008\*\*\* |
|  |  |  |  |  |  |  | (-17.576) | (-18.152) | (-17.715) | (-17.274) | (-17.486) | (-17.463) |
| **Ln Market Cap** |  |  |  |  |  |  | 0.002\*\*\* | 0.002\*\*\* | 0.001\*\*\* | 0.001\*\*\* | 0.001\*\*\* | 0.001\*\*\* |
|  |  |  |  |  |  |  | (7.081) | (5.932) | (5.604) | (5.842) | (5.917) | (5.796) |
| **Nasdaq** |  |  |  |  |  |  | 0.009\*\*\* | 0.011\*\*\* | 0.011\*\*\* | 0.011\*\*\* | 0.011\*\*\* | 0.011\*\*\* |
|  |  |  |  |  |  |  | (10.223) | (12.052) | (12.656) | (12.142) | (12.177) | (12.211) |
| **Ln GDP** |  |  |  |  |  |  | -0.000 | -0.003\*\*\* | 0.000 | 0.001 | 0.001 | 0.000 |
|  |  |  |  |  |  |  | (-0.032) | (-4.609) | (0.036) | (0.928) | (1.293) | (0.342) |
| **Ln Unemployment** |  |  |  |  |  |  | 0.001\* | 0.001\* | 0.001\* | 0.001 | 0.001\* | 0.002\*\* |
|  |  |  |  |  |  |  | (1.807) | (1.810) | (1.719) | (1.436) | (1.937) | (2.113) |
| **Population** |  |  |  |  |  |  | 0.002\*\*\* | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
|  |  |  |  |  |  |  | (2.920) | (0.074) | (0.035) | (1.403) | (0.528) | (0.502) |
| **C** | 0.036\*\*\* | 0.035\*\*\* | 0.040\*\*\* | 0.039\*\*\* | 0.038\*\*\* | 0.037\*\*\* | 0.007 | 0.039\*\*\* | 0.017\*\* | 0.010 | 0.008 | 0.012\* |
|  | (47.621) | (47.678) | (37.200) | (41.692) | (44.720) | (43.860) | (1.032) | (4.988) | (2.461) | (1.481) | (1.168) | (1.660) |
| **Year Fixed Effects** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Robust Standard Errors** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Observations** | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 |
| **R-squared** | 0.215 | 0.151 | 0.159 | 0.174 | 0.180 | 0.169 | 0.669 | 0.651 | 0.660 | 0.664 | 0.667 | 0.661 |

**Table 7: Government Quality and Volatility Regressions– VLT4**

This table provides the results from the following OLS regression equation on a pooled sample of ADR-day observations.

$LN\\_VLT\_{i,c,t}^{4}=β\_{o}+β\_{1}LN(GOVERNANCE\_{c,t})+β\_{2}SPREAD\_{i,t}+β\_{3}TURNOVER\_{i,t}+β\_{4}ILLIQUIDITY\_{i,t}+β\_{5}LN(PRICE\_{i,t})+β\_{6}LN(MARKETCAP\_{i,t})+β\_{7}NASDAQ\_{i}+β\_{8}LN(GDP\_{c,t})+β\_{9}LN(UNEMPLOYMENT\_{c,t})+β\_{10}LN(POPULATION\_{c,t})+δ\_{t}+ε$*i*

The dependent variable is Ln\_VLT4 which is the Conditional GARCH(1,1) Volatility (VLT4). The main independent variable is LN\_GOVERNANCE which is the natural log of each of the six governance quality measures from World Bank Database: Voice and Accountability (VA), Political Stability and Absence of Violence (PV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). For definitions of the remaining variables, please refer to Table 1. Robust t-stats corresponding to standard errors clustered at the firm level are reported in parenthesis. \*\*\*, \*\*, and \* reflect statistical significance at 0.01, 0.05, and 0.10 levels, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] |
|  |   |   |   |   |   |   |   |   |   |   |  |  |
| **VA** | -0.004\*\*\* |  |  |  |  |  | -0.002\*\*\* |  |  |  |  |  |
|  | (-7.988) |  |  |  |  |  | (-5.284) |  |  |  |  |  |
| **PV** |  | -0.003\*\*\* |  |  |  |  |  | -0.001 |  |  |  |  |
|  |  | (-4.328) |  |  |  |  |  | (-0.732) |  |  |  |  |
| **GE** |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\* |  |  |  |
|  |  |  | (-3.901) |  |  |  |  |  | (-2.439) |  |  |  |
| **RQ** |  |  |  | -0.003\*\*\* |  |  |  |  |  | -0.003\*\*\* |  |  |
|  |  |  |  | (-4.954) |  |  |  |  |  | (-3.954) |  |  |
| **RL** |  |  |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\*\* |  |
|  |  |  |  |  | (-4.907) |  |  |  |  |  | (-3.220) |  |
| **CC** |  |  |  |  |  | -0.003\*\*\* |  |  |  |  |  | -0.002\*\*\* |
|  |  |  |  |  |  | (-4.488) |  |  |  |  |  | (-2.872) |
| **Spread**  |  |  |  |  |  |  | 0.331\*\*\* | 0.321\*\*\* | 0.318\*\*\* | 0.320\*\*\* | 0.318\*\*\* | 0.320\*\*\* |
|  |  |  |  |  |  |  | (9.794) | (9.296) | (9.150) | (9.014) | (9.104) | (9.165) |
| **Turnover** |  |  |  |  |  |  | 0.177\*\*\* | 0.186\*\*\* | 0.187\*\*\* | 0.187\*\*\* | 0.187\*\*\* | 0.187\*\*\* |
|  |  |  |  |  |  |  | (9.192) | (9.570) | (9.644) | (9.750) | (9.646) | (9.691) |
| **Illiquidity** |  |  |  |  |  |  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
|  |  |  |  |  |  |  | (0.370) | (0.313) | (0.388) | (0.448) | (0.445) | (0.399) |
| **Ln Price** |  |  |  |  |  |  | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* | -0.005\*\*\* |
|  |  |  |  |  |  |  | (-13.854) | (-14.216) | (-13.929) | (-13.674) | (-13.751) | (-13.732) |
| **Ln Market Cap** |  |  |  |  |  |  | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 |
|  |  |  |  |  |  |  | (-0.683) | (-1.187) | (-1.365) | (-1.349) | (-1.305) | (-1.328) |
| **Nasdaq** |  |  |  |  |  |  | 0.007\*\*\* | 0.007\*\*\* | 0.008\*\*\* | 0.007\*\*\* | 0.007\*\*\* | 0.007\*\*\* |
|  |  |  |  |  |  |  | (8.291) | (9.736) | (9.832) | (9.579) | (9.647) | (9.671) |
| **Ln GDP** |  |  |  |  |  |  | 0.000 | -0.001\*\* | -0.000 | 0.000 | -0.000 | -0.000 |
|  |  |  |  |  |  |  | (1.128) | (-2.021) | (-0.822) | (0.766) | (-0.071) | (-0.192) |
| **Ln Unemployment** |  |  |  |  |  |  | 0.001 | 0.001\* | 0.001 | 0.001 | 0.001\* | 0.001\* |
|  |  |  |  |  |  |  | (1.586) | (1.726) | (1.578) | (1.413) | (1.656) | (1.763) |
| **Population** |  |  |  |  |  |  | -0.000 | -0.001\*\* | -0.001\*\* | -0.001 | -0.001\*\* | -0.001\* |
|  |  |  |  |  |  |  | (-0.143) | (-2.230) | (-2.154) | (-1.448) | (-1.968) | (-1.960) |
| **C** | 0.032\*\*\* | 0.031\*\*\* | 0.033\*\*\* | 0.033\*\*\* | 0.033\*\*\* | 0.032\*\*\* | 0.035\*\*\* | 0.051\*\*\* | 0.047\*\*\* | 0.040\*\*\* | 0.043\*\*\* | 0.043\*\*\* |
|  | (60.141) | (56.597) | (43.469) | (50.221) | (53.496) | (52.925) | (6.340) | (7.957) | (7.715) | (6.706) | (7.315) | (7.025) |
| **Year Fixed Effects** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Robust Standard Errors** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Observations** | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 | 5,591 |
| **R-squared** | 0.165 | 0.113 | 0.108 | 0.121 | 0.120 | 0.116 | 0.607 | 0.597 | 0.598 | 0.601 | 0.600 | 0.599 |

**Table 8: Brazilian and Non-Brazilian ADR Volatility - The Great Corruption Leak**

The table reports the findings from estimating Eq. (XX) on a sample of ADR-day observations between X/Y/ZZZZ, and X/Y/ZZZZ. The dependent variable is the natural log of two daily volatility measures: range volatility (VLT3) and GARCH(1,1) (VLT4) volatility*.* Range volatilityis the natural log of the daily maximum ask price minus the natural log of the daily minimum bid price. GARCH(1,1) volatility is the square root of the conditional expected variance obtained from fitting a GARCH(1,1) model to daily returns for each ADR. Between the 17th and 18th of May 2017, a compromising conversation between Brazil's President and an influential business tycoon was bugged and leaked by the Brazilian Justice Department, in which the President allegedly condoned bribing a key witness in the Carwash probe, likely because such testimony could provide aggravating evidence about government involvement in the corruption scheme. As the leak became public, the stock market posted heavy losses of around 9% (the worst trading day since the Great Financial Crisis of 2008). Not only did equity prices collapse, but sovereign credit spreads soared by 15%, and the Brazilian currency suffered a devaluation against the U.S dollar, losing 7% of its value.**Post**is an indicator variable equal to one after the Brazilian Corruption leak on 17th and 18th of May 2017 and zero otherwise. **Brazil**is an indicator variable equal to one for Brazilian ADRs, and zero otherwise. The interaction term **Brazil\*Post** is the independent variable of interest. t-statistics in parentheses are obtained from robust standard errors. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. April 20 2017 to June 15 2017. Event is May 18 2017 in Brazil. We therefore considered the period of 4 weeks (20 traded days) before and after the event on May 18 2017. We note that typically 4 weeks is the span between April 20 2017 to June 14 2017. However, Monday May 29 2017 was a Memorial Day Holiday in U.S. markets, so we considered data until June 15 2017 to get 20 traded days before after the event. Our final dataset is firm-day panel where all variables are constructed at the daily level.

|  |  |  |
| --- | --- | --- |
|  | **Range Volatility** | **GARCH Volatility** |
| **Model** | [1] | [2] | [3] | [4] |
|  |   |   |   |   |
| **Post** | 0.002\*\*\* | 0.002\*\*\* | 0.000 | 0.001\* |
|  | (3.555) | (4.355) | (0.823) | (1.725) |
| **Brazil** | 0.000 | 0.003 | -0.000 | 0.004\* |
|  | (0.160) | (1.157) | (-0.124) | (1.670) |
| **Brazil\*Post** | 0.004\*\*\* | 0.003\*\* | 0.011\*\*\* | 0.010\*\*\* |
|  | (3.016) | (2.487) | (5.685) | (5.281) |
| **Spread** |  | 0.615\*\*\* |  | 0.261\*\*\* |
|  |  | (9.085) |  | (3.391) |
| **Turnover** |  | 0.357\*\*\* |  | 0.108\*\*\* |
|  |  | (5.915) |  | (3.433) |
| **Illiquidity** |  | -0.003\*\*\* |  | 0.000 |
|  |  | (-4.925) |  | (0.002) |
| **Ln\_Price** |  | -0.005\*\*\* |  | -0.004\*\*\* |
|  |  | (-6.091) |  | (-5.520) |
| **Ln\_MarketCap** |  | -0.001\* |  | -0.002\*\*\* |
|  |  | (-1.666) |  | (-5.061) |
| **Nasdaq** |  | 0.013\*\*\* |  | 0.011\*\*\* |
|  |  | (8.451) |  | (7.619) |
| **Constant** | 0.026\*\*\* | 0.028\*\*\* | 0.026\*\*\* | 0.029\*\*\* |
|  | (26.041) | (10.243) | (28.361) | (12.212) |
| **C** | 0.000 | 0.003 | -0.000 | 0.004\* |
|  | (0.160) | (1.157) | (-0.124) | (1.670) |
| **Robust Standard Errors** | Yes | Yes | Yes | Yes |
| **Observations** | 11,155 | 11,155 | 11,155 | 11,155 |
| **R-squared** | 0.003 | 0.012 | 0.346 | 0.490 |

**The Effects of Governance Quality on the Stability of Equity Markets: Evidence from Cross-Listed Securities**

*David Y. Aharon*₰*, Ahmed S. Baig*†*,*

**Abstract**

In this paper, we examine the effects of governance quality on the price stability of American depository receipts (ADRs) listed on major U.S. exchanges. Using a unique dataset of 791 ADRs from 44 countries around the globe, we provide evidence that good (poor) quality governance in the home country is associated with less (more) volatile trading. The relationship is driven mainly by governance quality measures, including: Voice and Accountability (VA), Political Stability and Absence of Violence (PV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). The calming effect on volatility is not subsumed by the inclusion of ADRs’ specific characteristics or fixed country effects, and is robust under all types of governance quality and volatility measures. To overcome the possibility of endogeneity and reversed causality in the governance-volatility relationship, we also examine the stability of Brazilian ADRs in comparison with non-Brazilian ADRs, in response to an event that significantly undermined governance quality in Brazil. We propose that this arguably exogenous governance quality event can be used in quasi-natural experimental design, helping us make a stronger causality interpretation. The inverse governance-volatility relationship is clearly demonstrated by this event. The volatility of Brazilian ADRs, as compared with *non*-Brazilian ADRs, increases significantly in response to the Brazilian corruption leakage event. The information documented here supports the conjecture that governance quality is a key prerequisite for the stability of equity markets and the enhancement of economic growth.

First draft: June 30 2021

This version: July 08 2021

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1. See for example: Christie, 1982; Schwert, 1989; Minton and Schrand, 1999; Bekaert and Wu, 2000; Botosan and Plumlee, 2002, Verma and Verma, 2007, Bartram, Brown & Stulz, 2012, Carvalho, 2018, Aharon and Yagil, 2019. [↑](#footnote-ref-1)