Stock Price Variations across Developing and Developed Economies

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Abstract

Do developed and developing stock markets differ? For a sample of 40 countries from 1996 to 2023, we examine if disparities exist in the stock price movements. We find that stock prices move more synchronously in developing countries. The idiosyncratic component of the return variation is large in developed markets. We further study the factors causing this disparity for the time period 1996 to 2021. The findings indicate that the differences in macroeconomic instability, voice and accountability, control of corruption, and rule of law explain why developed and developing nations' stock prices move differently.

Keywords: Synchronicity, financial markets, emerging economies, firm-specific risks, economic development

EFM Classification: 150, 330, 370, 620, 630

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1. Introduction

A longstanding premise in stock market literature has been that developed and developing stock markets are different (Bekaert and Harvey, 1995; Morck et al., 2000; Chan and Hameed, 2006; Jin and Myers, 2006; Li et al., 2014). Prior studies highlight the differences between developing and developed economies. According to Morck et al. (2000), emerging economies, in contrast to developed economies, often have less diversified industries, exist in small but integrated and open economies, and are more prone to external shocks and volatility. Barry et al. (1998) note that developing markets possess great growth opportunities but are more volatile than developed economies. Furthermore, emerging economies have distinct institutional frameworks, such as high taxes, prompting businesses to have relationships with politicians, a lack of press freedom, and firms reporting lower profits to reduce their taxes (Li et al., 2014).

Developing capital markets have higher volatility, higher average returns, and more predictable returns than developed capital markets (Bekaert and Harvey, 1995, 1997, 2000). Further, capital markets in emerging economies often face liquidity issues and are underdeveloped than capital markets in developed economies (Bekaert and Harvey, 2003; Rojas-Suarez, 2014). Additionally, Lee and Suh (2005) posit that the emerging market's stock return variance is determined by the economy's expected return.

Another difference that exists between developing and developed stock markets is the high stock price synchronicity in developing markets (Morck et al., 2000; Li et al., 2004; Jin and Myers, 2006), implying that more firm-specific information is generated in developed markets. Chan and Hameed (2006) discuss that the dearth of firm-specific information in developing markets can be attributed to few information disclosure requirements, which are rarely enforced, corporate transparency, and voluntary disclosure being low.

1

In the last two decades, stock markets around the globe have seen significant advancements due to various initiatives taken by governments, regulators, and exchanges. One such important change includes the proliferation of digital technologies. Internet usage has substantially enhanced individual investors' access to information, and it has helped them increasingly connect with financial markets (Hvide et al., 2024; Sun et al., 2024). Hvide et al. (2024), in their study of the Norwegian market, observe that increased broadband usage leads to enhanced stock market participation, enhanced portfolio diversification, and greater partaking in bonds, bond funds, and unlisted equities. The findings suggest that internet usage promotes stock market involvement, especially among socioeconomic groups with initially low participation rates (Hvide et al., 2024). The advent of broadband internet facilitates information availability and enhances consumers' financial skills. Yet, it also influences individual investors' financial decision-making factors. Recently, social media usage seems to have ambiguous consequences on the quality of financial decision-making (Barber and Odean, 2002; Allen et al., 2022; Barber et al., 2022; Hirshleifer et al., 2023). Barber and Odean (2002), Barber et al. (2022), and Allen et al. (2022) note that users of internet trading platforms engage in excessive stock trading. On the one hand, Allen et al. (2022) posit that, for US stock markets, investors who use Twitter, StockTwits, and Reddit engage in speculation and herding. On the other hand, Hvide et al. (2024), for the Norwegian stock market, do not observe any negative impacts of internet use. The conflicting results show that differences in investor behavior and market outcomes are quite dynamically different across economies, indicative of differences in digital accessibility.

An additional essential modification is enhanced corporate governance. The Cadbury report issued by the UK following the corporate scandals in the late 1980s and early 1990s lays down the recommendations for corporate governance practices. Acknowledging the significance of effective corporate governance practices, economies around the globe have incorporated various reforms aimed at redefining the role and structure of company boards (Hu et al., 2020). For example, Spain launched the Unified Code in 2006, after which companies started to prepare their disclosure statements by employing internationally acknowledged best practices. These reforms have renewed pressure on corporations to enhance their governance standards (Kim and Lu, 2013). Hu et al. (2020), while examining the impact of corporate board reforms on stock price crash risk, find that board reforms are associated with a significant reduction in crash risk. The authors note that board reforms are linked with enhanced information transparency, a reduction in overinvestment, and an increase in investment efficiency. Therefore, after improvement in corporate board practices, an investor anticipates a reduction in negative news retention and, hence, lower stock price crash risk (Hu et al., 2020).

One more notable advancement is the adoption of IFRS. The IFRS is characterized as a principles-based framework that emphasizes the improvement of the balance sheet as a statement of financial worth and investor relevance (Bissessur and Hodgson, 2012). It proposes to improve the ability to predict future cash flows and provide sufficient flexibility for accounting reports to accurately represent the firm's distinct economic conditions (Schipper, 2005). However, some Australian studies report that the adoption of IFRS reduces the availability of firm-specific information to investors and financial analysts (Matolcsy and Wyatt, 2006; Ritter and Wells, 2006). Adhikari et al. (2021) for Indian firms posit that the implementation of IFRS-converged norms leads to reduced variability in net income, an increased number of discretionary accruals, delayed value relevance of reported earnings, and diminished value relevance of reported earnings. As economies adopt/converge IFRS at different time periods, the impact on accounting information and stock prices will be observed at different time periods.

These changes, since the last two decades, necessitate a fresh examination of synchronicity in both developing and developed markets to determine if stocks in emerging

markets remain more synchronous or if they incorporate less market-level information, and to identify which markets are efficient. We examine the impact of economic factors, countrylevel institutional structure indicators, openness, and opaqueness variables on stock price synchronicity. We investigate whether significant differences still persist between developing and developed stock markets. Understanding the disparities is essential for financial analysts and investors, as it enables them to determine which markets exhibit greater efficiency. It also helps them understand where do potential investment opportunities exist, particularly when developing markets evolve and integrate with the global economy.

This study aims to examine the degree of price synchronicity between stock markets in emerging and developed nations. The motivation for this study comes from the differences between developed and developing nations (Bekaert and Harvey, 1997; Fan et al., 2011; Jin and Myers, 2006). Earlier studies posit that differences in synchronicity exist due to poor protection of investors' property rights (Morck et al., 2000), higher crash risk (Jin and Myers, 2006), and few information disclosure requirements (Chan and Hameed, 2006). Additionally, disparities exist owing to the lower level of transparency in the information environment due to the limited presence of analysts and media coverage (Chen et al., 2011; Francis et al., 2012) in developing nations. Nevertheless, numerous substantial alterations have occurred in the stock markets (Adhikari et al., 2021; Bissessur and Hodgson, 2012; Hu et al., 2020; Hvide et al., 2024; Sun et al., 2024), since the conduct of Morck et al. (2000) and Jin and Myers (2006).

In this study, first, we calculate the yearly equal-weighted average R^2 for a set of 40 countries from 1996 to 2023 using the stock return data from Datastream, following Morck et al. (2000). When compared to stock prices in other countries, we find that China's stock price moves the most synchronously, and Peru's the least. It highlights that in China, there is a lower level of integration of firm-specific information into the stock prices, and instead, stock prices move due to market-level information. We find no significant variation in R^2 over the sample

period. During episodes of macroeconomic shocks, there is a rise in the average R^2 , signifying a higher proportion of stock price movements due to market movements rather than firmspecific information.

Then, using the GDP data from the World Bank website, the regression analysis reveals that, from 1996 to 2023, the log per capita GDP is significantly and negatively associated with stock price synchronicity. The result complements the previous studies of Morck et al. (2000), Jin and Myers (2006), He et al. (2013), and Dang et al. (2020). It indicates that developing countries tend to have a higher level of synchronicity, implying that stocks tend to move in tandem due to their dependence on marker-level information and are more subject to systematic risks.

Additionally, we note that stock prices move more synchronously in economies with higher macroeconomic instability (*MACROINS*) and where there is more adherence to the rule of law (*RULELAW*). The enhanced synchronicity ascribed to greater macroeconomic instability results from investors' dependence on economy-level information. The strong legal environment minimizes the likelihood of idiosyncratic instability, which increases synchronicity as macroeconomic shocks affect stock prices more.

Furthermore, we find that economies with more political and civil liberties (*ACNTABILITY*) and lower corruption-related activities (*CONCORRUP*) have lower stock price synchronicity. In an economy characterized by enhanced political and civil liberties, investor confidence rises, resulting in greater dependence on firm-specific information and, thus, reduced synchronicity. Likewise, a lower level of corruption-related activities enhances investor confidence and hence decreases synchronicity.

The study adds to the synchronicity literature by examining stock price synchronicity and the effects of macro-level economic development, institutional factors, openness, and opaqueness variables in 40 developed countries (An and Zhang, 2013; Gassen et al., 2020; Boubaker, 2014). Our research highlights the current distinctions between developed and developing markets due to macroeconomic instability, differences in voice and accountability, control of corruption, and rule of law. By highlighting these factors, we contribute to a contemporary perspective that builds upon and potentially challenges the findings of earlier literature (Morck et al., 2000; Li et al., 2004; Jin and Myers, 2006).

Our study provides valuable insights for investors who wish to diversify their portfolios globally, as it helps them understand that disparities in stock price movements still persist in developed and developing markets due to macroeconomic instability and institutional developments. The results will help investors by clarifying that the movement in stock prices is predominantly impacted by market-level information in developing markets. The research aids not only the investors but also the academicians who study emerging markets on these differences underscored in the old literature (Jin and Myers, 2006; Fan et al., 2011). Our study presents the current scenario and enhances the understanding of the present-day differences between developing and developed economies.

2. Literature Review

Morck et al. (2000) study 40 countries for the year 1995. The authors find that compared to developed countries, stock prices tend to move more synchronously in developing countries. The authors examine whether the structural variables, poor and uncertain protection of investor property rights, and poor protection of public investors from corporate insiders make the coefficient on per capita GDP insignificant or not. If any of the variables do, then the study concludes that those variables explain the difference between stock price synchronicity in developing and developed countries. The authors find that synchronicity cannot be attributed to certain structural variables, including country size, fundamentals volatility, economy diversification, market size, or the co-movement of fundamentals. Instead, a higher level of respect for private property by the government and enhanced legal protection for public shareholders against corporate insiders are linked to reduced synchronicity (Morck et al, 2000). Jin and Myers (2006), further extending the study of Morck et al. (2000) from 1990 to 2001 to 40 different countries, note that lack of transparency (more opaqueness) regarding a firm's performance leads to an increase in synchronicity by shifting firm-specific risk to managers. The authors argue that this is due to insiders who have privileged access to information in a less transparent environment which enables them to obtain personal benefits by gaining control over a greater share of cash flows. The paper further indicates that the probability of stock price synchronization and crashes decreases if controlling shareholders possess a significant proportion of cash flow rights. Jin and Myers (2006) posit that this is a result of a high level of ownership concentration, which enhances the firm's informational environment and enables the transfer of firm-specific information to the market.

Chan and Hameed (2006), in their study of 25 emerging markets from 1993 to 1999, find that companies having more analysts following them are integrating market-level information at a higher efficiency as compared to firms followed by fewer analysts. The authors further posit that their findings suggest that a lack of corporate transparency and poor information disclosure leads to higher expenses for aggregating firm-specific information. As a result, analysts heavily rely on macroeconomic information to make their earnings forecasts.

Chan et al. (2013), in their study from January 1989 to December 2008, find that stock price synchronicity has a negative relationship with stock illiquidity because market makers gain additional information from the market when a stock exhibits a higher correlated fundamental. Additionally, the study finds that the relationship between liquidity and stock price synchronicity is stronger for firms exhibiting a greater level of information asymmetry. Gassen et al. (2020), examining the relationship between illiquidity and stock price synchronicity from 1990 to 2012 for a sample of 50 countries, find that the countries with high synchronicity tend to have low illiquidity. The paper mentions that due to this negative

relationship, caution be exercised when analyzing synchronicity metrics. As these variables of interest are frequently linked, either directly or indirectly, to liquidity, which may impede the interpretation of results. Furthermore, the authors posit that firm-specific information flows through annual earnings announcements, leading to a decrease in synchronicity. In addition, the authors, while focusing on temporal variation, find that decreases in illiquidity coincide with rises in synchronicity, whereas increases in illiquidity coincide with declines in synchronicity.

In their study from 1998 to 2007 for French-listed firms, Boubaker et al. (2014) note that stock price synchronicity rises with excess control, as controlling shareholders tend to reveal less firm-specific information to hide opportunistic practices. In addition, the authors find that a firm's stock price synchronicity is less, and a firm is less susceptible to crash when controlling shareholders hold a large portion of cash flow rights. This aligns with the notion that controlling shareholders do not have enough incentives to withhold negative news and implement poor disclosure policies, as holding a high cash flow stake allies their interests with those of minority shareholders. An and Zhang (2013), for a sample of US firms from 1987 to 2010, observe that both trading and holding by dedicated institutional investors are associated with lower synchronicity. Conversely, there is a higher synchronicity if trading and holding of transient institutional investors increases. The study highlights that, with long-term (shortterm) investment horizons and large (small) holdings of dedicated (transient) institutional investors, it is difficult (easy) for managers to capture and conceal the firm's cash flow and, thus, lower (higher) synchronicity. Using a sample of US firms from 1995 to 2004, Xing and Anderson (2011) find an inversely U-shaped relationship between public information and price synchronicity. The authors posit that a rise in public information is often due to a fall in private information, resulting in an inverse U-shaped relationship. The study further mentions that synchronicity is not always a correct indicator of a firm's information environment quality, as

there is a non-monotonic relationship between synchronicity and public firm-specific information.

Dang et al. (2020), in their study from 2000 to 2016 of 40 countries, note that media coverage and stock price synchronicity are negatively associated, implying that media helps in disseminating firm-specific information into share prices. Furthermore, the authors find that the impact of media coverage on declining stock price synchronicity is greater in countries not being audited by Big4 auditors, with poor regulatory environment, low accounting standards, weak government effectiveness, poor regulatory quality, poor protection of investors, lower institutional block ownership, and less strict disclosure requirements. For a set of 29 emerging markets from 1990 to 2008, Hsin and Tseng (2012) find that greater stock price synchronicity is associated with a lower level of integration with the global market and a higher inclination towards speculative transactions. The finding is in line with the conjecture that it is challenging to price firm-level fundamentals in a speculative market dominated by noise traders and that country-specific information plays a more significant role in pricing stocks in a segmented market.

In summary, stock price synchronicity exhibits variation across different economies. Both country-level factors and firm-specific factors contribute to the diversity observed across different economies, reflecting the impact of market-level and firm-specific information.

3. Data

Our sample consists of all the stocks that are covered by LSEG Refinitiv Workspace from January 1996 to December 2023 for a set of 40 countries. The paper uses DataStream's market value (MV) and total return index (RI), which covers price changes, and dividends. The industry classification benchmark (ICB) (Hsin and Tseng, 2012) and the number of auditors are downloaded from the Datastream. Country-level institutional structural variables (Dang et

9

al., 2020; Song, 2015), and per capita US\$ GDP are collected from the World Development Indicators of the World Bank. The analyst's data is sourced from I/B/E/S.

4. Stock price synchronicity

In accordance with Morck et al. (2000), stock price synchronicity refers to the extent to which the price movements of individual stocks are correlated with the movements of the overall market. Following Morck et al. (2000), to calculate stock price synchronicity, we do not include stocks that trade for fewer than 30 weeks each year. In addition, following Dang et al. (2019), we exclude stocks that have American Depository Receipts (ADRs) traded in the US, or Global Depository Receipts (GDRs) traded globally, trusts, non-equity securities, funds, and warrants. We include only ordinary shares in the sample. We compute the weekly rates of return (Wednesday to Wednesday) for all the stocks in our sample (Jin and Myers, 2006). These returns are compounded from daily total returns (Morck et al., 2000). R^2 s and residual returns are computed using the Jin and Myers (2006) as in the firm-level model (1).

$$\begin{aligned} r_{i,t,j} &= \alpha_i + \beta_{1,i} r_{m,j,t} + \beta_{2,i} [r_{US,t} + EX_{j,t}] + \beta_{3,i} r_{m,j,t-1} + \beta_{4,i} [r_{US,t-1} + EX_{j,t-1}] + \\ \beta_{5,i} r_{m,j,t-2} + \beta_{6,i} [r_{US,t-2} + EX_{j,t-2}] + \beta_{7,i} r_{m,j,t+1} + \beta_{8,i} [r_{US,t+1} + EX_{j,t+1}] + \beta_{9,i} r_{m,j,t+2} + \\ \beta_{10,i} [r_{US,t+2} + EX_{j,t+2}] \end{aligned}$$

...(1)

where, the dependent variable $r_{i,t,j}$ is the weekly return on stock *i* in week *t* (in country *j*), $r_{m,j,t}$ is the local market index return, $r_{US,t}$ is the US market index return (a proxy for the global market), and $EX_{j,t}$ is the change in the country *j*'s exchange rate versus the US dollar. The term $r_{US,t} + EX_{j,t}$ converts the US stock market returns into the equivalent value in local currency units. The firm-specific return is computed by the residual return obtained from Equation (1). This is the unexplained return that cannot be accounted for by the US and local market. In line with Jin and Myers (2006), we calculate a country's stock market synchronicity by its equal-

weighted average R^2 for each year. A higher value of R^2 signifies that stock prices exhibit simultaneous movements.

Figure 1 displays the global pattern of equal-weighted R^2 for 40 countries from 1996 to 2023. There is no consistent increase or decrease in the mean and the median. Enhanced average R^2 has been there at different time periods. At the onset of the COVID-19 pandemic, the average R^2 reached its peak with a mean (median) value of 0.396 (0.390) in 2020. The lowest mean (0.233) and median (0.223) values of average R^2 were observed in 2017. The surge in average R^2 during the late 1990s and 2008 can be ascribed to the Asian financial crisis and the global financial crisis, respectively. During periods of macroeconomic shocks, the average R^2 rises, indicating that the ratio of market to firm-specific risk increases.

[Insert Figure 1 here]

Table 1 displays the stock price synchronicity, calculated as the equal-weighted R^2 of 40 countries over the sample period, ranked according to the per capita US\$ GDP. Columns (1), (2), and (3) show the number of listed stocks in our sample, 2023 per capita US\$ GDP, and stock return synchronicity, respectively. Germany has the highest number of listed stocks (35938), and Hungary (65) has the lowest number of listed stocks covered by LSEG Refinitiv Workspace. The 2023 per capita GDP is the lowest for Pakistan (US\$ 1407) and highest for Ireland (US\$ 103684). We find that China has the most synchronous stocks (with a synchronicity of 0.45), while Peru has the least synchronous stocks (with a synchronicity of 0.45), while Peru has the least synchronous stocks (with a synchronicity of 0.21). The five highest R^2 s are for China (0.45), Hungary (0.40), Hong Kong, Taiwan, and Türkiye (0.37). The five lowest R^2 s are for Peru (0.21), Portugal, France, and Germany (0.22), and Poland and Canada (0.23).

[Insert Table 1 here]

In line with Morck et al. (2000), we find that the highest and lowest levels of synchronicity are present in low- and high-income countries, respectively. Therefore, we

empirically analyze the relationship between stock price synchronicity (*SYNCH*) and the log of per capita US\$ GDP (*LPCGDP*). As $R_j^2 \in [0,1]$, we apply the following logistic transformation to derive *SYNCH* (Morck et al., 2000; Jin and Myers, 2006; An and Zhang, 2013) of country *j* in year *t*, which approximates a normal distribution:

$$SYNCH_j = \log\left[\frac{R_{j,t}^2}{1 - R_{j,t}^2}\right] \dots (2)$$

A higher *SYNCH* value signifies greater stock price synchronicity. To empirically examine the relationship between *SYNCH* and *LPCGDP*, we run the following regression:

$$SYNCH_{j,t} = \alpha_i + \beta_1 LPCGDP_{j,t} + Year \ dummies + e_{j,t}$$

... (3)

where, *SYNCH* is the stock price synchronicity (Morck et al., 2000; Jin and Myers, 2006; Hutton et al., 2009) of country *j* in year *t*, *LPCGDP* is the log of per capita US\$ GDP of country *j* in year *t*. Model (3) also includes year dummies to control for year-fixed effects. We compute heteroscedastic-robust standard errors.

[Insert Table 2 here]

Panel A of Tables 2, 3, 4, and 5 reports the summary statistics country and year-wise, descriptive statistics, and correlation between synchronicity and the log of per capita GDP, respectively. Panel A of Table 2 presents the univariate statistics of *SYNCH* and *LPCGDP* of 39 countries, as GDP data is not available for Taiwan from 1996 to 2023. Portugal has the lowest synchronicity of -1.33, whereas China has the highest synchronicity of -0.08, as indicated by the R^2 values reported in Table 1. It suggests that, in China, stock prices are influenced more by macroeconomic information instead of firm-specific information. The result suggests that in the sample countries, stock price synchronicity is relatively low, implying that stock prices are influenced more by firm-specific information. Over the sample period the

LPCGDP ranges from 6.86, the lowest for Pakistan, to 11.12, the highest for Norway. Implying that over the sample period, the per capita GDP is the lowest for Pakistan and the highest for Norway. As anticipated, the developing countries have lower per capita GDP.

[Insert Table 3 here]

Panel A of Table 3 reports the mean and median of *SYNCH* and *LPCGDP* year-wise. *SYNCH* is the lowest (-1.2) in 2017 and the highest (-0.43) in 2020, highlighting that stock prices move the least (most) synchronously in 2017 (2020). We observe that the stock price synchronicity is higher during recessions like the Asian financial crisis, the Global financial crisis, and the COVID-19 pandemic. The stock prices move less synchronously from 1999 to 2005 and from 2012 to 2019. The *LPCGDP* ranges from 9.05 in 1998 to 10.09 in 2023. The *LPCGDP* data suggests consistent economic growth, characterized by intermittent periods of increased growth and stability. The overall trend indicates positive economic growth in the long run.

[Insert Table 4 here]

For the full sample, as reported in Panel A of Table 4, the mean (median) *SYNCH* and *LPCGDP* are -0.93 (-0.95) and 9.64 (10.05), respectively.

[Insert Table 5 here]

Table 5, Panel A reports the correlation coefficients for *SYNCH* and *LPCGDP*. *SYCH* and *LPCGDP* are negatively correlated at the 5% statistical significance level. The evidence highlights that high-income countries have lower stock price synchronicity.

[Insert Table 6 here]

Table 6 presents the result from the regression Model (3). It shows that the coefficient on *LPCGDP* is negative and statistically significant at the 1% level, implying that economies with high per capita GDP have high stock price synchronicity. The result is in line with Morck et al. (2000), Jin and Myers (2006), and Dang et al. (2020), who also find that stock prices

move more synchronously in developing nations. The finding indicates that stocks in developing stock markets generate less firm-specific information, and stock prices move synchronously because of market-level information. Consequently, stocks in developing economies are more susceptible to market-wide risks and tend to move together due to shared market sentiments, and it diminishes the advantages of diversification as individual stock returns are less independent. However, stocks in developed stock markets exhibit a lower degree of movement with the broader market and experience less synchronized movements due to more availability of firm-specific information.

We note that the stock price synchronicity is different for all countries. There could be several reasons for differences in variation in stock prices. These include economic characteristics (Morck et al., 2000), analyst coverage (Chan and Hameed, 2006), lack of transparency (Jin and Myers, 2006), stock liquidity (Chan et al., 2013; Gassen et al., 2020), controlling (Boubaker et al., 2014) and institutional (An and Zhang, 2013) shareholdings, an economy's development (Dang et al., 2020) and governance (Song, 2015) indicators, media coverage (Dang et al., 2020), and speculative trading (Hsin and Tseng, 2012). As we have country-level synchronicity, the focus of this study is on the country-level factors (economic development, institutional structures, market integration, opaqueness) that affect stock price synchronicity, which will help us identify if the differences still exist in the developing and developed stock markets.

In the next sections, along with the economic fundamentals of a country, we empirically examine if institutional structures, degree of market openness, and opaqueness explain the positive relation between per capita US\$ GDP and stock price synchronicity. In the subsequent section, we discuss how the economic fundamental variables, institutional structure variables, degree of market openness, and opaqueness can affect the stock price synchronicity. In section 6, we discuss the results and identify the macroeconomic variables that have a

relation with synchronicity, as they make per capita US\$ GDP insignificant in multivariate regression (Morck et al., 2000; Jin and Myers, 2006).

5 Empirical Framework

We focus on identifying the variables that help explain the differences in stock price synchronicity in developing and developed economies. In accordance with prior research (Morck et al., 2000 and Jin and Myers, 2006), the logarithm of per capita GDP is our primary control variable. We now examine if the inclusion of four categories of county-specific variables, elaborated in subsequent subsections, makes *LPCGDP* insignificant and, thus, helps explain the disparities in stock price synchronicities.

5.1 Economic Fundamentals

Consistent with prior studies (Morck et al., 2000; Jin and Myers, 2006), a country's economic fundamental variables include macroeconomic instability (*MACROINS*), within-country diversification (*WITHINDIVER*), and economic and managerial diversification (*INDHERF* and *FIRMHERF*).

MACROINS is measured as the variance of per capita GDP growth, measured in nominal US dollars, for each country based on the data for the last five years. *MACROINS* will determine whether changes in stock price synchronicity may be attributed to volatile fundamentals. Macroeconomic instability can cause market fundamentals to become unstable, which can overshadow variations caused by firm-specific factors, resulting in stock prices moving together. *WITHINDIVER* is estimated as the natural log of country size (surface area), in square kilometers, for each country. The size of a country has two primary impacts on economic activity and, thus, on stock price movements. Firstly, smaller countries are more susceptible to localized occurrences such as geopolitical instability and natural disasters, leading to higher synchronicity. Additionally, larger countries, because of their broad factor endowments, demonstrate less economic specialization and less synchronous stock movements

compared to smaller countries. To measure economic and managerial diversification, we will use industry and firm Herfindal indices. Firm and industry Herfindahl indices are included because countries with larger firms or industries (higher Herfindahl indices) are predicted to exhibit greater stock price synchronicity. We will construct the industry Herfindal index (*INDHERF*) of country j as $H_j = \sum_k h_{k,j}^2$, where $h_{k,j}$ is the total sales value of all firms (j) in an industry k of a country as a percentage of all the firms (j) belonging to a country.

Similarly, we construct the firm Herfindal index (*FIRMHERF*) of country j as $\hat{H}_j = \sum_i \hat{h}_{i \in j}^2$, where $\hat{h}_{i,j}^2$ is the sales of firm i as a percentage of the total sales of all country j firms. The indices are formed via the Datastream ICB maintained by FTSE Russell.

To examine if the negative relation between stock price synchronicity and per capita GDP is attributable to differences in economic fundamentals between developing and developed economies, we use the OLS method, including economic fundamental factors in the Model (3):

$$SYNCH_{j,t} = \alpha_i + \beta_1 LPCGDP_{j,t} + \beta_2 LN_{j,t} + \beta_3 MKTVOL_{j,t} + \beta_4 EF_{j,t} + Year \ dummies$$
$$+ e_{j,t}$$

where, *SYNCH* is stock price synchronicity, calculated from Model (2). *LPCGDP* is the log of per capita US\$ GDP of country *j* in year *t*. *LN* is the log of the number of stocks traded in each country *j* and year *t*. It is included to account for a decrease in R^2 as the number of stocks increases. *MKTVOL* refers to the local market volatility to account that the economic development variables are not just proxies for variations in market risk. *EF* refers to the country *j*'s economic fundamental variables in year *t*.

If any economic fundamental variable is significant and the inclusion of it makes the coefficient on *LPCGDP* insignificant in Model (4), then we can conclude that higher

synchronicity in developing economies is due to economic fundamentals. Model (4) also includes year dummies to control for year-fixed effects. We compute heteroscedastic-robust standard errors and cluster the standard errors at the country level. The sample period for examining if economic fundamental variables affect synchronicity is from 1996 to 2021 because of the availability of the country-level data on the World Bank's website for this period only. We perform this analysis for 39 countries as for Taiwan the GDP and surface area data are not available. The final sample consists of 1012 country-year observations.

5.2 Institutional Structures

Drawing from literature (Dang et al., 2019; Song, 2015), institutional structures (IS) include six proxies for country-level information environment and governance characteristics. These proxies include the regulatory quality index (RQUALITY), government effectiveness index (GOVEFFECT), voice and accountability (ACNTABILITY), political stability and absence of violence/terrorism (POLSTABILITY), rule of law (RULELAW), and control of corruption (CONCORRUP). RQUALITY measures investors' assessments of a government's proficiency to frame and employ effective policies and regulations that facilitate and foster private sector growth. GOVEFFECT measures investors' judgments regarding the efficacy of public services, the quality of the civil service and its autonomy from political influences, the effectiveness of policy creation and execution, and the government's credibility in adhering to the policies. ACNTABILITY measures perceptions of the extent to which a country's citizen can participate in selecting their government, freedom of expression, freedom of association, and free media. POLSTABILITY measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. RULELAW measures possession on the degree of confidence agents have in and adherence to societal rules, specifically focusing on the contract enforcement quality, law enforcement, property rights, and judicial enforcement, alongside the probability of crime and violence. CONCORRUP measures

perceptions of the degree to which public power is utilized for personal benefit, comprising both minor and major forms of corruption, and "capture" of the state by elites and private entities.

All the *IS* proxies range from -2.5 to 2.5. A low score of *RQUALITY*, *GEFFECT*, *ACNTABILITY*, *POLSTABILITY*, *RULELAW*, and *CONCORRUP* implies weak regulatory quality, less effective government performance, less political and civil liberties, less stable political environment with more violence, less adherence to the rule of law, and high level of corrupt practices, respectively. A low score may indicate high stock price synchronicity, as when institutional structures are weak, market participants make decisions based on macroeconomic information rather than firm-specific information. Morck et al. (2000) also suggest that countries characterized by inferior institutions, including inadequate governance, tend to exhibit higher stock price synchronicity. Moreover, Jin and Myers (2006) contend that in settings characterized by reduced transparency and less robust legal systems, there is a higher probability of stock prices exhibiting more synchronicity. This is due to the diminished informative value of firm-specific information for investors.

To evaluate whether the negative relation between stock price synchronicity and per capita GDP is because of differences in institutional structures between developing and developed economies, we use the OLS method, including institutional structure variables in the Model (4):

$$\begin{split} SYNCH_{j,t} &= \alpha_i + \beta_1 LPCGDP_{j,t} + \beta_2 LN_{j,t} + \beta_3 MKTVOL_{j,t} + \beta_4 EF_{j,t} + \beta_5 IS_{j,t} \\ &+ Year \ dummies + e_{j,t} \end{split}$$

... (5)

where, *SYNCH* is stock price synchronicity, calculated from Model (2). *LPCGDP* is the log of per capita US\$ GDP of country *j* in year *t*, *LN* is the log of the number of stocks traded in each country *j* and year *t*, *MKTVOL* refers to the local market volatility of country *j* and year *t*, *EF*

refers to the country j's economic fundamental variables in year t, and IS refers to the country j's institutional structures in year t.

If any institutional structure variable is significant and makes the coefficient on *LPCGDP* insignificant in Model (4), we have evidence that lower synchronicity in developed economies is due to differences in institutional structure. We control year-fixed effects by including year dummies in Model (5). We calculate heteroscedastic-robust standard errors and cluster the standard errors at the country level. Many country-level institutional structural variables, including regulatory quality index, government effectiveness index, voice and accountability, political stability and absence of violence/terrorism, rule of law, and control of corruption, are unavailable for the years 1997, 1999, and 2001. The final sample comprises 896 observations.

5.3 Market openness

Based on the prior literature (Hsin and Tseng, 2012; Li et al., 2004; Dang et al., 2020), we measure market openness using three proxies, market integration (*MKTINGRA*), capital market openness (*MVGDP*), and trade market openness (*XMGDP*).

MKTINGRA is the market integration measured by regressing the local market index return for market *j* on its lag value and the world market index return. Hsin and Tseng (2012) argue that in a market that is less integrated with the global market, investors may overlook certain idiosyncratic fundamental information that is relevant to the world market when determining prices. While investors still price some country-specific information that is universally diversifiable. *MVGDP* is obtained as the ratio of equity market capitalization to GDP. Rajan and Zingales (2003), Li et al. (2004), and Stulz (2022) note that capital market openness compels authorities to use global best practices in governance, regulation, and disclosure. It results in more availability of firm-specific information for investors. Consequently, it leads to less stock price synchronicity (Li et al., 2004). *XMGDP* is calculated as the sum of exports and imports as a percentage of GDP. Li et al. (2004) posit that trade openness may diminish an economy's diversification among industries, thereby converting industry-specific factors to market-wide factors. Hence, increasing systematic variation and the stock price synchronicity.

To determine if the negative relation between stock price synchronicity and per capita GDP is due to variations in market openness of developing and developed economies, we employ the OLS method, including economic fundamental factors in the Model (6):

$$\begin{aligned} SYNCH_{j,t} &= \alpha_i + \beta_1 LPCGDP_{j,t} + \beta_2 LN_{j,t} + \beta_3 MKTVOL_{j,t} + \beta_4 EF_{j,t} + \beta_5 OPENNESS_{j,t} \\ &+ Year \ dummies + e_{j,t} \end{aligned}$$

... (6)

where, *SYNCH* is stock price synchronicity, calculated from Model (2). *LPCGDP* is the log of per capita US\$ GDP of country *j* in year *t*, *LN* is the log of the number of stocks traded in each country *j* and year *t*, *MKTVOL* refers to the local market volatility of country *j* and year *t*, *EF* refers to the country *j*'s economic fundamental variables in year *t*, of country *j* in year *t*, and *OPENNESS* includes *MKTINGRA*, *XMGDP*, and *MVGDP* of country *j* in year *t*.

If the coefficient on *MKTINGRA* or *XMGDP* or *MVGDP* is significant and makes the coefficient on *LPCGDP* insignificant in Model (6), we have evidence that increased synchronicity in developing economies is due to differences in market openness. We control year-fixed effects by including year dummies in Model (7). We calculate heteroscedastic-robust standard errors and cluster the standard errors at the country level. The final sample consists of 1012 observations.

5.4 Opaqueness

We have two measures of opaqueness: one based on auditing activities (*AUDITOR*) and the other from the diversity of analysts' forecasts (*DIVERSITY*) (Jin and Myers, 2006).

Jin and Myers (2006) posit that countries with greater opacity for investors tend to have higher synchronicity. Opaqueness denotes the lack of transparency that allows investors to assess operating cash flow and income and thus calculate the firm value (Jin and Myers, 2006). They show in their study that lack of information influences the allocation of risk sharing among external investors and internal managers. When outside investors' property rights cannot be adequately safeguarded, then inside managers grab a share of the firm's operating cashflows. Insiders capture more when the cash flows exceed the investors' expectations. However, insiders limit the capture to keep the firm running when cash flows are lower than what investors expect. Thus, more capture by insiders reduces the firm-specific risk outside investors observe. Increased opaqueness, coupled with insider capture, results in reduced firm-specific risk for investors and increased synchronicity (Jin and Myers, 2006).

AUDITOR is the number of auditors relative to each country's stock market capitalization, measured in billions of US dollars (Bhattacharya et al., 2003). It is a measure of transparency rather than opaqueness (Bhattacharya et al., 2003). Thus, a higher score on *AUDITOR* implies greater market transparency and increased availability of firm-specific for investors, resulting in lower stock price synchronicity (Jin and Myers, 2006). *DIVERSITY* is measured as the standard deviation of analysts' forecasts of the firm's earnings at the end of the next fiscal year, normalized by the mean forecast, and then divided by the square root of the number of analysts following that firm. Jin and Myers (2006) highlight that *DIVERSITY* is proportional to the standard deviation of the hidden firm-specific information. If analysts obtain contradictory indications on a firm's cash flow, then a portion of each period's variation in residual cash flow is disclosed to the market. The undisclosed part remains opaque to investors. It is a measure of opaqueness; hence, higher values of diversity mean less availability of firm-specific information and higher stock price synchronicity.

To investigate why the negative relation between stock price synchronicity and per capita GDP is due to disparities in opaqueness between developing and developed economies, we employ the OLS method, adding opaqueness variables in the Model (7):

$$SYNCH_{j,t} = \alpha_i + \beta_1 LPCGDP_{j,t} + \beta_2 LN_{j,t} + \beta_3 MKTVOL_{j,t} + \beta_4 EF_{j,t}$$
$$+ \beta_5 OPAQEUNESS_{j,t} + Year \ dummies + e_{j,t}$$
$$\dots (7)$$

where, *SYNCH* is stock price synchronicity, calculated from Model (2). *LPCGDP* is the log of per capita US\$ GDP of country *j* in year *t*, *LN* is the log of the number of stocks traded in each country *j* and year *t*, *MKTVOL* refers to the local market volatility of country *j* and year *t*, *EF* refers to the country *j*'s economic fundamental variables in year *t*, *OPAQUENESS* refers to *AUDITOR* or *DIVERSITY* of country *j* in year *t*.

If the coefficient on *ADUTIOR* or *DIVERSITY* is significant and makes the coefficient on *LPCGDP* insignificant in Model (7), we have evidence that increased synchronicity in developing economies is due to differences in opaqueness. To control year-fixed effects, year dummies are also included in Model (7). We calculate heteroscedastic-robust standard errors and cluster the standard errors at the country level. Only 34 countries have analyst data on I/B/E/S for the full sample. We drop firms for years where the firm's *DIVERSITY* is zero, indicating all analysts agree (Jin and Myers, 2006). The final sample consists of 896 observations.

6. Results

6.1 Economic Fundamentals

This sub-section discusses the results of whether the negative relation between stock price synchronicity and per capita GDP is due to economic fundamental disparities between developing and developed economies.

22

Panel B of Tables 2 and 3 reports the descriptive statistics by country and by year for LN, MKTVOL, and all the economic fundamental variables in the study, respectively. Panel A of Table 2 presents the mean value of LN, MKTVOL, and all economic variables for each country. During the sample period, the LN varies from 3.5 (for Hungary) to 10 (for Germany). The findings indicate that Hungary has the least stocks listed on its exchange, while Germany has the highest number of stocks listed on its exchange over the sample period. MKTVOL is the lowest for Italy (0.00003) and the highest for Hungary (0.0466). The result suggests that the financial markets in Italy (Hungary) have the least variation in prices and are the most stable from 1996 to 2021. Australia exhibits the lowest level of fluctuation in per capita GDP growth for the whole sample period, as shown by a MACROINS value of 0.97. Ireland has the biggest variation in per capita GDP growth, with MACROINS having the highest value of 23.44. Descriptive statistics indicate that most of the variation in the per capita GDP is not observed in developing countries. Singapore has the smallest surface area, with WITHINDIVER being 6.56. It is, therefore, likely that stocks in Singapore will incorporate more localized occurrences such as geopolitical instability. While Canada has the largest surface area, with a WITHINDIVER value of 16.12. Thus, stock prices in Canada will be less susceptible to localized occurrences affecting the country. INDHERF is the lowest for Malaysia (0.13) and the highest for Switzerland (0.80). The industry herfindahl index's lowest value in Malaysia indicates the most diversified economy compared to other countries in the sample. On the contrary, the industry herfindahl index's highest value in Switzerland signifies the highest concentrated economy, then other countries in the sample. Japan has the lowest FIRMHERF index, with a value of 0.005, while Switzerland has the highest, with a value of 0.45. The result suggests that among the sample countries, Japan has the most competitive market and fewer dominant firms. On the other hand, Switzerland has the most concentrated market with more dominant firms and the least diversification in the capital allocation between companies.

Panel B of Table 3 reports the mean value of the country-level economic variables by year. *LN*'s mean value increases from 5.91 in 1996 to 6.87 in 2021, implying a consistent expansion in the number of stocks, indicating a growth in market participation. *MKTVOL* ranged from 0.0001 in 2017 to 0.03 in 2021. Market volatility is observed to increase during the outburst of the dot-com bubble, GFC, and COVID-19 pandemic. *MACROINS* is the lowest (1.66) in 2008 and the highest in 2021 (13.91). The average values of *MACROINS* are indicative of economic stability as well as instability. During the late 1990s and after a crisis, there is a rise in the variance of per capita GDP growth, which suggests a higher level of economic uncertainty and variability in growth rates. In contrast, time periods such as 2004-2008 and 2015-2019 exhibit greater stability with lower variance. The *WITHINDIVER* remains stable over the sample period. The average *INDHERF* values across the sample imply a worldwide pattern of moderate market concentration. *FIRMHERF*'s mean value also demonstrates a stable trend. This indicates that, on average, the dominance of large firms has not changed over time.

Table 4, Panel B reports the univariate statistics for the economic variables. For the full sample, the mean (median) *LN*, *MKTVOL*, *MACROINS*, *WITHINDIVER*, *INDHERF*, *FIRMHERF* is 6.37 (6.28), 0.003 (0.0004), 6.51 (2.65), 12.68 (12.78), 0.28 (0.22), 0.11 (0.05), respectively. The average value of *LN* implies that, on average, the sample countries exhibit a moderate level of stock trading. The mean and median of *MKTVOL* indicate that most of the sample economies have low market volatility. A large difference between the mean and median of *MACROINS* signifies that the majority of the countries display moderate volatility in per capita GDP growth. While, a few countries have high volatility, elevating the mean. The summary statistics of *WITHINDIVER* show that most countries possess surface areas near the, with few extreme outliers. The average values of *INDHERF* mean that industries in most economies exhibit diversification, although certain industries demonstrate a more concentrated

sales distribution. A higher mean value of *FIRMHERF* indicates that a few numbers of firms exert dominance in some economies. However, a low median suggests that most countries' firms are not concentrated.

Panel B of Table 5 presents the correlation coefficients for synchronicity, the log of per capita GDP, the log of the number of listed stocks, market volatility, and economic development proxies. *SYCH* and *LPCGDP* are negatively correlated at the 5% significance level. The evidence highlights that logarithm per capita GDP negatively influences the stock price synchronicity, in line with Morck et al. (2000) and Jin and Myers (2006). The variable *SYNCH* is significantly and negatively correlated at 5% with *INDHERF* and *FIRMHERF*. This suggests that when industry and firm concentration within the total market rises, the stock price synchronicity decreases. The stock price synchronicity positively correlates with the per capita GDP growth variance, although the correlation is statistically insignificant. The correlation between synchronicity and the logarithm of the number of stocks, market volatility, and the logarithm of the geographical size is negative, however insignificant.

[Insert Table 7 here]

Panel A of Table 7 reports the results of Model (4) to check if any economic variables might explain the link between stock price synchronicity and log per capita GDP. We find that the coefficient of *MACROINS* is positively significant at the 10% level. It can be attributed to increased macroeconomic instability, which reduces investors' reliance on firm-specific information. Therefore, the stock prices move synchronously based on macroeconomic information.

As the coefficient on *LPCGDP* becomes insignificant, the result suggests that changes in macroeconomic instability explain the difference in stock price synchronicity and, therefore, in stock markets of developing and developed economies.

6.2 Institutional Structures

This sub-section examines the findings about the negative relation between stock price synchronicity and per capita GDP, attributing it to variations in institutional structure variables across developing and developed economies.

Panel C of Table 2 reports the mean value of the instrumental structure variables for each country. RQUALITY is the lowest for Pakistan (-0.69) and the highest for Singapore (1.99). The result implies that among all countries in the sample period, the regulatory quality is the weakest in Pakistan and the strongest in Singapore. In the case of government effectiveness as well we note that Pakistan has the lowest GEFFECT value of -0.63, while Singapore has the highest GEFFECT value of 2.17. Among all nations in the study, the government of Pakistan exhibits the least effective performance, and the government of Singapore demonstrates the most effective government performance. For ACNTABILITY, China, being a one-party state, has the lowest value of -1.58, and Norway has the highest value of 1.63. The highest score of ACNTABILITY in Norway signifies that it has the most political and civil liberties. For POLSTABILITY, Colombia ranks the lowest with a score of -1.44, and New Zealand ranks the best with a score of 1.36. It implies that Colombia (New Zealand) has the least (most) stable political environment. Pakistan (RULELAW score of -0.82) demonstrates the lowest level of compliance with the law among all the countries examined, whereas Finland (*RULELAW* score of 1.97) demonstrates the highest level of compliance. Pakistan (Denmark) has the lowest (highest) score of CONCORRUP of -0.94 (2.31). It indicates that Pakistan (Denmark) has the highest (lowest) level of corrupt activities compared to all the countries in the sample. Overall, we note that the developing markets demonstrate lower regulatory quality (ROUALITY), weaker government effectiveness (GEFFECT), lower quality of governance (ACNTABILITY), less political stability (POLSTABILITY), lower adherence to the law (RULELAW), and a higher level of corruption (CONCORRUP). Consistent with the findings

of Dang et al. (2020), our research reveals that countries with high per capita income have high scores in institutional structural proxies.

Panel C of Table 3 presents the average values of the instrumental structure variables for each year. The values of *RQUALITY* reflect stability in regulatory quality but with minor fluctuations. *GEFFECT* is stable in the early 2000s, however, the values highlight a decline after 2015, implying difficulties in governance across the countries. *ACNTABILITY* and *CONCORRUP* remain relatively stable during the sample period. The result of *POLSTABILITY* suggests that political stability witnessed a huge fall throughout the late 1990s and early 2000s, followed by a period of relatively stable and lower levels. The *RULELAW*'s mean value highlights that it has been decreasing over the sample period.

The instrumental variables' descriptive statistics are shown in Panel C of Table 4. The mean (median) values of *RQUALITY*, *GEFFECT*, *ACNTABILITY*, *POLSTABILITY*, *RULELAW*, and *CONCORRUP* are 0.96 (1.10), 0.98 (1.11), 0.74 (1.00), 0.38 (0.61), 0.86 (1.11), and 0.87 (1.02), respectively. Overall, the findings suggest that the average regulatory quality and government effectiveness are higher for our sample countries. It indicates that the sample countries have good regulatory quality and effective governments. Rule of law, accountability, and control of corruption mean values are also relatively high, implying that these countries have a moderately strong legal framework, high civil liberties, and higher control of corruption. Political stability is lower than other variables, suggesting that, on average, it is weaker in the sample countries.

Panel C of Table 5 reports the correlation coefficients for synchronicity and institutional structure indicators. The variable *SYNCH* is negatively and significantly correlated with *INDHERF*, *FIRMHERF*, *RQUALITY*, *GEEFECT*, *ACNTABILITY*, *POLSTABILITY*, *RULELAW*, and *CONCORRUP* at the 5% significance level. The negative correlation

27

coefficient aligns with the view that robust institutional structures lead market participants to make decisions based on firm-specific information resulting in less stock price synchronicity.

Panel B of Table 7 presents the findings of Model (5) to check if any institutional structure variables might explain the link between stock price synchronicity and log per capita GDP. The coefficient on *LPCGDP* becomes positive and insignificant. The coefficients on *MKTVOL*, *ACNTABILITY*, and *CONCORRUP* are negative and statistically significant at 1%. 5%, and 10%, respectively. However, the coefficient on *RULELAW* is positive and significant at the 5% level. All other variables are statistically insignificant.

The negative coefficient on voice and accountability signifies that stock price synchronicity is higher in countries where citizen participation in government selection is less, along with reduced freedom of expression, association, and media. The negative relation can be due to higher government control and lower investor confidence which leads to investors' reliance on market-level information, leading to higher stock price synchronicity.

Similarly, the negative coefficient on control of corruption highlights that as the corruption levels reduce (shown by a higher score on control of corruption), the stock price synchronicity also falls. This can be due to an increase in the investors' confidence that public power is not exercised for private gain, resulting in greater reliance on firm-specific information and lower stock price synchronicity.

A positive coefficient on the rule of law implies that stock prices exhibit more synchronicity in countries where the citizens abide by the rules of society and the quality of contract enforcement and property rights are robust. The positive relationship may be attributed to the robust legal environment, which reduces the possibility of companies facing idiosyncratic disruptions. This leads to higher synchronicity as common factors like macroeconomic shocks have a greater influence on stock price movements.

28

In Model (5), the insignificance of the *LPCGDP* coefficient indicates that changes in voice and accountability, control of corruption, and rule of law account for the disparity in stock price synchronicity and, thus, stock markets in developing and developed economies.

6.3 Market openness

The results of the inverse relation between stock price synchrony and per capita GDP are examined in this subsection, which establishes a connection to changes in market openness in both developing and developed economies.

Panel D of Table 2 shows the average value of openness variables for each country. For Pakistan, the *MKTINGRA* is the lowest, with a score of 0.12, and it is the highest for Canada, with a score of 0.71. The findings indicate that investors in Pakistan (Canada) prioritize country-specific factors the most (least) over global factors in the stock market (Hsin and Tseng, 2012). The average value of *MVGDP* is the lowest in the case of China (0.0000002) and highest in the case of Japan (0.0000056). This indicates that China's stock market is the smallest in comparison to its GDP. Conversely, the highest value implies a more developed equity market. A higher *MVGDP* might suggest that Japan's financial system is the most interconnected with equity markets, whereas a lower value might signify reduced dependence on stock markets within the economy. For *XMGDP*, Norway exhibits the lowest value at 1.73, while Pakistan presents the highest value at 2.57. The lowest *XMGDP* indicates that out of the sample countries, Norway exhibits the smallest percentage of trade relative to its GDP. Conversely, the highest *XMGDP* signifies that Pakistan's economy predominantly depends on trade, with exports and imports constituting the highest percentage of GDP.

Panel D of Table 3 presents the average values of the openness variables for each year. The average value of *MKTINGRA* ranges from 0.15 in 1996 to 0.73 in 2020. On average, market integration is observed to increase from 1996 to 2021. *MVGDP* has the lowest value (0.12) in 1996 and the highest value (0.23) in 2020. Equity market capitalization relative to GDP tends to increase from 1996 to 2021. However, a decline is observed following the Asian and global financial crisis. The minimum value (1.96) of *XMGDP* is in 2002, and the maximum value (2.03) is in 1996. Total trade value as a percentage of GDP remains within a stable range throughout the sample period, although minor changes occur annually.

Table 4, Panel D presents the summary statistics for the openness variables. *MKTINGRA*'s, *MVGDP*'s, and *XMGDP*'s mean (median) values are 0.47 (0.48), 0.0000017 (0.0000013), and 1.99 (1.96), respectively. The average value of *MKTINGRA* implies a moderate degree of stock market integration with the global market, indicating that world-level factors impact the stock markets. However, country-specific variables also exert significant influence. The summary statistics value of *MVGDP* highlights that, on average, stock markets are relatively small compared to the size of the economies. The aggregate figures of *XMGDP* indicate that the economies exhibit trade openness. The mean value of 1.99 suggests that trade flows roughly represent double the GDP, signifying high levels of integration in global trade.

The correlation coefficients between synchronicity and openness variables are reported in Panel D of Table 5. *SYNCH* is significantly and positively correlated with *MKTINGRA* at the 5% level. Contradicting Hsin and Tseng (2012), this suggests that as local stock markets integrate more with the global stock markets, the stock price synchronicity rises, with prices influenced by macro-level information rather than firm-specific information. Conversely, *SYNCH* is negatively correlated with *MVGDP* at the 5% significance level. This is due to the increased availability of firm-specific information resulting from the adoption of global best practices in governance, regulation, and disclosure by authorities. Additionally, we note that the correlation between *SYNCH* and *XMGDP* is not significant.

The result of Model (7) is presented in Panel C of Table 7. We find that there is still a negative and significant coefficient on *LPCGDP*, and the openness variables are insignificant.

30

This suggests that openness variables do not account for the disparities in stock price synchronicity that exist between developed and developing stock markets.

6.4 Opaqueness

This sub-section analyzes the findings of the inverse relationship between stock price synchronicity and per capita GDP, linking it to changes in opaqueness variables among developing and developed economies.

Panel E of Table 2 reports the mean value of the opaqueness variables for each country. *AUDITOR* is the lowest for Switzerland (0.00003) and the highest for Pakistan (0.0021). Pakistan exhibits the highest audit intensity relative to its stock market size. In the case of *DIVERSITY* we note that Brazil has the lowest value of -0.32, while Indonesia has the highest value of 0.1. Brazil exhibits the least diversified and most consistent analysts' forecasts among all nations. This may result from more consensus or certainty concerning the future profits of firms in Brazil.

Panel E of Table 3 reports the mean value of the opaqueness variables by each year. *AUDITOR*'s mean value ranges from 0.00021 in 1996 to 0.00097 in 2002. Auditor's value increased from 1997 to 2002 during the Asian financial crisis and the outburst of the dot-com bubble. Since then, till 2008, the auditor has been falling. Since 2008, it has been stable, which is an indication that the intensity of auditing has remained stable. *DIVERSITY* is the lowest (-0.23) in 1997 and the highest in 2021 (0.08). A significant decline (from 0.08 to -0.23) was observed in diversity in 1997. Conversely, it remained stable throughout the period, showing that the analysts are in consensus.

Descriptive statistics for the opaqueness variables are reported in Panel E of Table 4. The mean (median) values of *AUDITOR* and *DIVERSITY* are 0.00045 (0.00018) and 0.03 (0.04), respectively. *AUDITOR*'s mean value signifies that, on average, market transparency is low. The mean value of *DIVERSITY* implies that analysts demonstrate less divergence in their earnings forecasts for the companies.

Panel E of Table 5 presents the correlation coefficients for synchronicity and opaqueness variables. The variable *SYNCH* is not significantly correlated with *AUDITOR*. However, it is positively and significantly correlated with *DIVERSITY* at 5% level. The positive correlation coefficient supports the notion that an increase in *DIVERSITY* results in higher opaqueness, which subsequently enhances stock price synchronicity.

Panel D of Table 7 presents the results of the Model (7). The coefficient on the *LPCGDP* remains significant, whereas none of the opaqueness variables are significant. This indicates that the differences in stock price synchronicity among developed and developing stock markets are not accounted for by opaqueness variables.

7. Conclusion

In this study, we analyze stock price synchronicity in 40 developed and developing economies utilizing daily stock return data for all firms covered by LSEG Refinitiv Workspace. We note that the average R^2 is the highest during the COVID-19 pandemic and lowest in 2017. Nonetheless, it has increased amid various macroeconomic shocks, such as during the Asian financial crisis and the global financial crisis, implying greater dependence on market-level factors. Further, we observe that synchronicity is the highest in China and it is lowest in Peru. Additionally, we find that a negative relationship exists between stock price synchronicity and GDP. This indicates that stock prices still exhibit greater synchronicity in developing economies compared to developed economies.

Moreover, we investigate the factors that may elucidate the difference in synchronicity between developed and developing economies. Differences in macroeconomic instability, voice and accountability, control of corruption, and rule of law account for differences in synchronicity. Factors that do not contribute to disparities in synchronicity include within diversification, industry herfindahl index, firm herfindahl index, regulatory quality, government effectiveness, political stability, market integration, capital market openness, trade market openness, number of auditors, and diversity in analysts' forecasts.

Our findings indicate that stock markets in developing economies may be less effective at processing economic information compared to those in developed economies. The findings will assist researchers who support their views with two decades-old evidence regarding the significance of studying developing markets. The study offers insights for investors aiming to internationally diversify their portfolios by emphasizing the differences in stock price synchronicity between developed and developing markets. In emerging markets, where stock prices are more susceptible to macroeconomic instability and institutional variables, investors may want to hedge against broader market risks.

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Figure 1: Trend for mean and median equal-weighted R^2

The figure plots the mean and median of equal-weighted R^2 's for 40 countries, obtained from the firm-level regressions of weekly stock returns on local and US market indexes in each country. The sample period of the study is from 1996 to 2023.

Table 1: Stock return synchronicity

This table presents the country-wise number of stocks in the sample, country-wise 2023 per capita US\$ GDP, and the country's average synchronicity, as measured by the equal-weighted R^2 of each stock. The equal-weighted average R^2 is measured from the firm-level regressions of weekly stock returns on local and US market indexes in each country. Countries are ranked by per capita US\$ GDP. The sample period is from 1996 to 2023.

	(1)	(2)	(3)
Country Name	Number of stocks in the sample	2023 per capita US\$ GDP	R_J^2
Pakistan	600	1,407	0.28
India	5049	2,485	0.29
Philippines	373	3,725	0.28
Indonesia	1064	4,940	0.28
South Africa	1100	6,253	0.26
Colombia	96	6,979	0.28
Thailand	1781	7,171	0.30
Peru	402	7,789	0.21
Brazil	995	10,043	0.25
Malaysia	1398	11,648	0.34
China	5017	12,614	0.45
Türkiye	709	12,985	0.37
Mexico	2086	13,926	0.30
Chile	427	17,093	0.28
Poland	1194	22,112	0.23
Hungary	65	22,147	0.40
Greece	509	22,990	0.31
Portugal	213	27,275	0.22
Taiwan	2174	32,074	0.37
Spain	269	32,677	0.24
South Korea	3801	33,121	0.33
Japan	6333	33,834	0.36
Italy	1378	38,373	0.35
France	2779	44,460	0.22
New Zealand	435	48,527	0.26
UK	5527	48,866	0.24
Hong Kong	603	50,696	0.37
Germany	35938	52,745	0.22
Canada	5945	53,372	0.23
Belgium	553	53,475	0.25
Finland	404	53,756	0.27
Sweden	1914	56,305	0.28
Austria	1233	56,506	0.26
Netherlands	660	62,536	0.26
Australia	1711	64,711	0.24
Denmark	510	67,967	0.26
Singapore	1054	84,734	0.25
Norway	949	87,961	0.28
Switzerland	253	99,994	0.26
Ireland	168	103,684	0.28

Table 2: Sample distribution by Country

This table presents the descriptive statistics of all the variables in the study for each of the countries. SYNCH is the logistic transformation of the yearly values of country-average R^2 s, *LNPCGDP* is the natural log of the per capita US\$ GDP, *LN* is the natural log of the number of stocks traded in each country and year, MKTVOL is the variance of each country's market return, MACROINS, the variance of per capita GDP growth, measured in nominal US dollars, based on data from the last five years, WITHINDIVER, the natural log of surface area, in square kilometers, *FIRMHERF*, calculated as $\hat{H}_j = \sum_i \hat{h}_{i \in j}^2$, $\hat{h}_{i,j}^2$ is the sales of firm *i* as a percentage of the total sales of all country *j* firms, INDHERF, calculated as $H_j = \sum_k h_{k,j}^2$, $h_{k,j}$ is the total value of the sales of all country j firms in industry k as a percentage of those of all country *j* firms, *POLSTABILITY* is the perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism, RQUALITY is the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development, GEFFECT is the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies, RULELAW is the 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, ACNTABILITY is the perceptions of 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, CONCORROUP is the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests, MKTINGRA is obtained by regressing the local market index return for market *j* on its lag value and the world market index return, MVGDP is measured as the ratio of the equity market capitalization to GDP, XMGDP is the sum of exports and imports as a percentage of GDP, AUDITOR is the number of auditors per country's stock market capitalization, and DIVERSITY is the standard deviation of the analysts' forecasts of the firm's earnings in the next fiscal year-end, normalized by the mean forecast, and then divided by the square root of the number of analysts following that firm.

Panel A: This panel reports the mean value of the synchronicity and log per capita US\$ GDP for all 40 countries. The sample period is from 1996 to 2023.

Country Norma	(1)	(2)
Country Name	SYNCH	LPCGDP
Australia	-1.18	10.60
Austria	-1.02	10.61
Belgium	-1.08	10.55
Brazil	-1.10	8.82
Canada	-1.23	10.54
Chile	-0.94	9.18
China	-0.08	8.15
Colombia	-0.97	8.43
Denmark	-1.04	10.82
Finland	-0.95	10.59
France	-1.22	10.46
Germany	-1.23	10.55
Greece	-0.90	9.88
Hong Kong	-0.55	10.43
Hungary	-0.38	9.29
India	-0.88	6.93
Indonesia	-0.93	7.63
Ireland	-0.92	10.83
Italy	-0.62	10.33
Japan	-0.60	10.55
Malaysia	-0.67	8.88
Mexico	-0.84	9.10
Netherlands	-0.99	10.67
New Zealand	-1.02	10.30
Norway	-0.99	11.12
Pakistan	-0.96	6.86
Peru	-1.30	8.30
Philippines	-0.91	7.58
Poland	-1.14	9.18
Portugal	-1.33	9.84
Singapore	-1.07	10.64
South Africa	-1.02	8.61
South Korea	-0.72	9.95
Spain	-1.13	10.12
Sweden	-0.92	10.73
Switzerland	-1.04	11.10
Taiwan	-0.54	NA
Thailand	-0.87	8.32
	• •	

Turkey UK

Panel B: This panel reports the mean value of the log number of stocks, local market volatility, and economic fundamentals variables for 39 countries. The sample period is from 1996 to 2021.

Country Name	(1)	(2)	(3)	(4)	(5)	(6)
	LN	MKTVOL	MACROINS	WITHINDIVER	INDHERF	FIRMHERF
Australia	6.83	0.0001	0.97	15.86	0.42	0.27
Austria	6.75	0.0008	3.97	11.34	0.29	0.06
Belgium	6.05	0.0001	3.39	10.34	0.22	0.05
Brazil	6.31	0.0008	5.65	15.96	0.17	0.03
Canada	8.07	0.0003	3.71	16.12	0.18	0.06
Chile	5.82	0.0024	7.74	13.54	0.19	0.03
China	7.18	0.0013	2.30	16.07	0.17	0.05
Colombia	4.00	0.0153	7.58	13.95	0.30	0.10
Denmark	5.93	0.0003	3.71	10.67	0.28	0.05
Finland	5.42	0.0010	7.66	12.73	0.26	0.11
France	7.55	0.0004	3.95	13.21	0.27	0.07
Germany	9.96	0.0008	5.29	12.78	0.14	0.01
Greece	5.94	0.0003	10.42	11.79	0.16	0.04
Hong Kong	5.74	0.0009	11.47	7.00	0.21	0.05
Hungary	3.48	0.0466	7.41	11.44	0.31	0.28
India	7.71	0.0011	6.45	15.00	0.17	0.04
Indonesia	6.06	0.0008	13.38	14.46	0.16	0.02
Ireland	4.88	0.0114	23.44	11.16	0.53	0.22
Italy	6.75	0.00003	6.41	12.62	0.14	0.01
Japan	8.37	0.0006	4.12	12.84	0.17	0.01
Malaysia	6.74	0.0007	13.64	12.71	0.13	0.01
Mexico	7.22	0.0006	12.24	14.49	0.22	0.04
Netherlands	6.26	0.0005	3.68	10.63	0.49	0.22
New Zealand	5.66	0.0003	2.77	12.49	0.22	0.08
Norway	6.06	0.0250	1.75	13.03	0.20	0.09
Pakistan	5.91	0.0081	3.48	13.58	0.17	0.02
Peru	5.63	0.0002	13.57	14.06	0.16	0.03
Philippines	5.59	0.0009	7.97	12.61	0.15	0.04
Poland	5.74	0.0009	4.58	12.65	0.45	0.42
Portugal	5.19	0.0001	6.18	11.43	0.34	0.18
Singapore	6.50	0.0016	19.41	6.56	0.43	0.34
South Africa	6.74	0.0005	3.91	14.01	0.19	0.05
South Korea	7.51	0.0011	9.58	11.51	0.16	0.02
Spain	5.65	0.0007	7.46	13.13	0.40	0.29
Sweden	6.64	0.0006	5.65	13.07	0.21	0.02
Switzerland	5.09	0.0014	2.79	10.63	0.80	0.45
Thailand	6.84	0.0004	12.64	13.14	0.20	0.03
Turkey	5.83	0.0026	21.50	13.57	0.22	0.04
UK	8.25	0.0005	6.74	12.40	0.21	0.05

Panel C: This panel reports the mean value of the instrumental structure variables for 39 countries. The sample period is from 1996 to 2021.

Country Namo	(1)	(2)	(3)	(4)	(5)	(6)
Country Name	RQUALITY	GEFFECT	ACNTABILITY	POLSTABILITY	RULELAW	CONCORRUP
Australia	1.73	1.66	1.40	0.98	1.72	1.87
Austria	1.48	1.66	1.38	1.09	1.83	1.65
Belgium	1.27	1.54	1.36	0.77	1.35	1.44
Brazil	0.04	-0.22	0.42	-0.22	-0.23	-0.18
Canada	1.65	1.77	1.47	1.05	1.73	1.89
Chile	1.34	1.00	1.02	0.45	1.12	1.27
China	-0.30	0.16	-1.58	-0.44	-0.42	-0.37
Colombia	0.16	-0.15	-0.12	-1.44	-0.47	33
Denmark	1.75	1.99	1.57	1.07	1.90	2.31
Finland	1.77	2.03	1.55	1.32	1.97	2.25
France	1.16	1.45	1.21	0.44	1.39	1.33
Germany	1.57	1.55	1.38	0.85	1.64	1.82
Greece	0.61	0.49	0.89	0.21	0.54	0.14
Hong Kong	1.89	1.65	0.34	0.83	1.47	1.68
Hungary	0.89	0.67	0.79	0.83	0.69	0.35

India	-0.32	0.003	0.37	-1.06	0.04	-0.39
Indonesia	-0.23	-0.22	-0.08	-0.98	-0.55	-0.70
Ireland	1.65	1.49	1.36	1.11	1.59	1.58
Italy	0.80	0.50	1.02	0.53	0.47	0.32
Japan	1.12	1.43	1.01	1.04	1.37	1.38
Malaysia	0.58	0.97	-0.34	0.20	0.42	0.19
Mexico	0.20	0.06	0.09	-0.62	-0.55	-0.58
Netherlands	1.80	1.83	1.54	1.04	1.77	2.00
New Zealand	1.83	1.70	1.57	1.36	1.85	2.24
Norway	1.51	1.87	1.63	1.25	1.92	2.09
Pakistan	-0.69	-0.63	-0.86	0.30	-0.82	-0.94
Peru	0.32	-0.34	0.06	-0.70	-0.59	-0.43
Philippines	-0.03	0.01	0.04	-1.17	-0.45	-0.59
Poland	0.84	0.52	0.92	0.67	0.59	0.54
Portugal	0.95	1.06	1.24	1.00	1.12	0.99
Singapore	1.99	2.17	-0.09	1.27	1.64	2.14
South Africa	0.38	0.30	0.66	-0.20	0.03	0.13
South Korea	0.88	0.99	0.73	0.41	0.98	0.49
Spain	1.06	1.17	1.12	0.11	1.09	0.99
Sweden	1.66	1.83	1.56	1.16	1.86	2.15
Switzerland	1.67	1.95	1.54	1.31	1.85	2.04
Thailand	0.14	0.21	-0.42	-0.67	0.03	-0.378
Turkey	0.18	0.09	-0.35	-1.09	-0.13	-0.15
UK	1.72	1.59	1.31	0.47	1.65	1.79

Panel D: This panel reports the mean value of the market openness variables for 39 countries. The values of *MVGDP* are multiplied by 10^5 for better reporting of results. The sample period is from 1996 to 2021.

Country Name	(1)	(2)	(3)
	MKTINGRA	MVGDP	XMGDP
Australia	0.56	0.41	2.01
Austria	0.57	0.05	1.95
Belgium	0.53	0.08	1.96
Brazil	0.49	0.28	2.04
Canada	0.71	0.26	1.98
Chile	0.34	0.22	1.94
China	0.39	0.02	1.86
Colombia	0.30	0.17	2.25
Denmark	0.48	0.14	1.87
Finland	0.56	0.24	1.92
France	0.70	0.25	2.00
Germany	0.69	0.11	1.89
Greece	0.34	0.13	2.31
Hong Kong	0.57	0.28	1.97
Hungary	0.37	0.03	1.98
India	0.37	0.25	2.14
Indonesia	0.34	0.11	1.90
Ireland	0.48	0.04	1.83
Italy	0.57	0.13	1.95
Japan	0.52	0.56	1.96
Malaysia	0.36	0.12	1.86
Mexico	0.47	0.08	2.04
Netherlands	0.68	0.13	1.88
New Zealand	0.33	0.12	1.98
Norway	0.57	0.12	1.73
Pakistan	0.12	0.12	2.57
Peru	0.21	0.13	1.98
Philippines	0.31	0.15	2.16
Poland	0.45	0.05	2.04
Portugal	0.44	0.10	2.16
Singapore	0.53	0.07	1.86
South Africa	0.48	0.35	1.96
South Korea	0.44	0.12	1.93
Spain	0.58	0.17	2.01
Sweden	0.64	0.21	1.88
Switzerland	0.59	0.34	1.87

Thailand	0.38	0.08	1.91
Turkey	0.27	0.08	2.09
UK	0.69	0.41	2.04

Panel E: This panel reports the mean value of the opaqueness variables for each country. *AUDITOR*'s values are multiplied by 10³ for better reporting of results. The sample period is from 1996 to 2021.

Country Nama	(1)	(2)
Country Name	AUDITOR	DIVERSITY
Australia	0.12	0.001
Austria	1.45	0.03
Belgium	0.23	0.08
Brazil	0.13	-0.32
Canada	0.11	0.02
Chile	0.23	0.03
China	1.64	0.08
Colombia	0.26	0.02
Denmark	0.15	0.05
Finland	0.10	0.06
France	0.12	0.03
Germany	0.09	0.03
Greece	0.64	-0.01
Hong Kong	0.04	0.05
Hungary	0.90	0.06
India	1.24	0.07
Indonesia	0.81	0.10
Ireland	0.16	0.03
Italy	0.09	0.02
Japan	0.05	0.04
Malaysia	0.37	0.04
Mexico	0.48	0.02
Netherlands	0.07	0.03
New Zealand	0.70	0.05
Norway	0.25	0.03
Pakistan	2.10	0.07
Peru	1.44	0.02
Philippines	0.38	0.08
Poland	1.24	0.05
Portugal	0.41	0.08
Singapore	0.19	0.03
South Africa	0.17	0.06
South Korea	0.25	0.04
Spain	0.08	0.04
Sweden	0.17	0.03
Switzerland	0.03	0.03
Thailand	0.64	0.04
Turkey	0.53	0.06
UK	0.07	0.03

Table 3: Sample distribution by Year

This table presents the descriptive statistics for the variables used in the study for each of the sample years. SYNCH is the logistic transformation of the yearly values of country-average R^2 s, LNPCGDP is the natural log of the per capita US\$ GDP, LN is the natural log of the number of stocks traded in each country and year, MKTVOL is the variance of each country's market return, MACROINS, the variance of per capita GDP growth, measured in nominal US dollars, based on data from the last five years, WITHINDIVER, the natural log of surface area, in square kilometers, *FIRMHERF*, calculated as $\hat{H}_j = \sum_i \hat{h}_{i \in j}^2$, $\hat{h}_{i,j}^2$ is the sales of firm *i* as a percentage of the total sales of all country *j* firms, *INDHERF*, calculated as $H_j = \sum_k h_{k,j}^2$, $h_{k,j}$ is the total value of the sales of all country *j* firms in industry *k* as a percentage of those of all country *j* firms, *POLSTABILITY* is the perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism, RQUALITY is the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development, GEFFECT is the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies, RULELAW is the 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, ACNTABILITY is the perceptions of 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, CONCORROUP is the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests, *MKTINGRA* is obtained by regressing the local market index return for market *i* on its lag value and the world market index return, MVGDP is measured as the ratio of the equity market capitalization to GDP, XMGDP is the sum of exports and imports as a percentage of GDP, AUDITOR is the number of auditors per country's stock market capitalization, and DIVERSITY is the standard deviation of the analysts' forecasts of the firm's earnings in the next fiscal year-end, normalized by the mean forecast, and then divided by the square root of the number of analysts following that firm.

Panel A: This panel reports the mean value of the synchronicity and log per capita US\$ GDP for each sample year from 1996 to 2023.					
V	(1)	(2)			
rear	SYNCH	LPCGDP			
1996	-1.04	9.15			
1997	-0.89	9.13			
1998	-0.78	9.05			
1999	-1.06	9.07			
2000	-1.02	9.08			
2001	-0.96	9.06			
2002	-0.94	9.12			
2003	-0.98	9.27			
2004	-0.97	9.41			
2005	-1.08	9.51			
2006	-0.86	9.59			
2007	-0.91	9.74			
2008	-0.51	9.82			
2009	-0.81	9.74			
2010	-0.87	9.83			
2011	-0.66	9.93			
2012	-1.01	9.92			
2013	-1.04	9.94			
2014	-1.00	9.95			
2015	-0.92	9.85			
2016	-0.96	9.86			
2017	-1.20	9.92			
2018	-0.98	9.97			
2019	-1.05	9.96			
2020	-0.43	9.91			
2021	-1.08	10.04			
2022	-0.82	10.05			
2023	-1.05	10.09			

Panel B: This panel reports the mean value of the log number of stocks, local market volatility, and economic fundamentals variables for each sample year from 1996 to 2021.

Veen	(1)	(2)	(3)	(4)	(5)	(6)
rear	LN	MKTVOL	MACROINS	WITHINDIVER	INDHERF	FIRMHERF
1996	5.91	0.0006	7.67	12.68	0.27	0.10
1997	6.02	0.0013	5.11	12.68	0.25	0.09
1998	6.10	0.0024	4.91	12.68	0.26	0.09
1999	6.17	0.0019	10.10	12.68	0.26	0.09
2000	6.24	0.0027	9.53	12.67	0.25	0.09
2001	6.28	0.0009	8.54	12.67	0.25	0.09
2002	6.32	0.0054	8.84	12.67	0.24	0.09

2002	C 25	0.0101	0 77	12 (7	0.25	0.00
2003	0.35	0.0101	8.77	12.67	0.25	0.09
2004	6.39	0.0003	4.58	12.67	0.25	0.09
2005	6.43	0.0003	4.20	12.67	0.26	0.09
2006	6.48	0.0006	3 59	12 67	0.25	0.09
2000	6.10	0.0006	1.06	12.67	0.25	0.11
2007	0.35	0.0006	1.90	12.07	0.27	0.11
2008	6.55	0.0020	1.66	12.67	0.26	0.10
2009	6.57	0.0063	3.42	12.67	0.26	0.10
2010	6.60	0.0018	9.75	12.67	0.26	0.10
2011	6.63	0.0006	10.89	12.67	0.27	0.10
2012	0.05	0.0000	10.65	12.07	0.27	0.10
2012	0.00	0.0016	10.55	12.67	0.27	0.11
2013	6.68	0.0004	9.38	12.69	0.26	0.10
2014	6.70	0.0003	8.77	12.69	0.26	0.10
2015	6.73	0.0005	3.79	12.69	0.25	0.10
2016	675	0.0004	5 37	12.69	0.26	0.10
2017	677	0.0001	4.65	12.69	0.26	0.10
2017	0.77	0.0001	4.05	12.09	0.20	0.10
2018	6.80	0.0003	3.55	12.69	0.26	0.10
2019	6.81	0.0002	2.66	12.69	0.26	0.10
2020	6.83	0.0146	3.09	12.69	0.26	0.10
2021	6.87	0.0300	13.91	12.70	0.26	0.10
Panel C. This panel repo	orts the mean valu	e of the instrumen	tal structure variables	for each sample year	from 1996 to 20	21
Taller C. This paller repo	(1)	(2)			(5)	(6)
Year	(1)	(2)	(3)	(4)	(5)	(0)
	RQUALITY	GEFFECT	ACNTABILITY	POLSTABILITY	RULELAW	CONCORRUP
1996	0.92	0.95	0.76	1.25	0.89	0.91
1997	NA	NA	NA	NA	NA	NA
1998	0.90	0.97	0.71	0.50	0.87	0.92
1000	NA	NA	NA	NA	NA	NA
1999	INA 0.02	INA 0.00	NA 0.75	NA 0.52	NA 0.05	
2000	0.93	0.99	0.75	0.53	0.85	0.95
2001	NA	NA	NA	NA	NA	0.90
2002	0.89	0.99	0.77	0.57	0.85	0.93
2003	0.93	1.00	0.79	0.31	0.86	0.93
2004	0.94	1.04	0.86	0.27	0.85	0.90
2004	0.04	1.04	0.00	0.25	0.05	0.00
2003	0.94	0.99	0.04	0.33	0.85	0.92
2006	0.95	0.99	0.72	0.34	0.86	0.92
2007	0.99	1.02	0.72	0.32	0.86	0.90
2008	0.99	0.99	0.72	0.31	0.85	0.88
2009	0.96	0.98	0.73	0.25	0.87	0.89
2010	0.96	1.00	0.74	0.20	0.89	0.88
2010	0.90	1.00	0.74	0.29	0.00	0.88
2011	0.96	0.99	0.75	0.35	0.88	0.87
2012	0.98	0.99	0.77	0.34	0.87	0.84
2013	0.99	1.00	0.76	0.34	0.87	0.81
2014	1.00	1.01	0.73	0.37	0.97	0.81
2015	0.99	0.98	0.72	0.32	0.89	0.79
2015	0.77	0.90	0.72	0.32	0.07	0.75
2016	0.99	0.93	0.71	0.28	0.80	0.81
2017	0.99	0.93	0.71	0.33	0.84	0.80
2018	0.98	0.94	0.72	0.32	0.83	0.80
2019	0.98	0.94	0.68	0.29	0.83	0.82
2020	0.93	0.93	0.68	0.32	0.82	0.82
2021	0.91	0.90	0.69	0.31	0.81	0.80
Den al D: This man al name	0.71	0.70	0.07	0.51	1006 to 2021	0.00
Panel D: This panel repo	orts the mean valu	e of the market op	enness variables for e	each sample year from	1996 to 2021.	
Vear		(1)		(2)		(3)
i cai		MKTINGR	2A	MVGDP	2	XMGDP
1996		0.15		0.12		2.03
1007		0.34		0.14		2.02
1000		0.54		0.15		2.02
1998		0.44		0.15		2.00
1999		0.39		0.17		1.97
2000		0.26		0.22		1.98
2001		0.31		0.19		1.97
2002		0.40		0.15		1.96
2003		0.10		0.12		1.96
2003		0.41		0.14		1.70
2004		0.41		0.14		1.96
2005		0.39		0.16		1.98
2006		0.47		0.17		1.98
2007		0.62		0.19		1.99
2008		0.71		0.21		2.02
2000		0.71		0.21		2.02

2009	0.68	0.13	1.98
2010	0.65	0.17	1.99
2011	0.58	0.17	1.99
2012	0.51	0.15	2.00
2013	0.46	0.17	1.99
2014	0.43	0.18	2.00
2015	0.49	0.20	1.99
2016	0.50	0.18	1.99
2017	0.40	0.18	1.99
2018	0.40	0.20	2.01
2019	0.46	0.18	2.01
2020	0.73	0.23	1.99
2021	0.68	0.19	1.99

Panel E: This panel reports the mean value of the opaqueness variables for each sample year from 1996 to 2021. *AUDITOR*'s values are multiplied by 10^{^3} for better reporting of results.

Veer	(1)	(2)
i ear	AUDITOR	DIVERSITY
1996	0.55	0.08
1997	0.48	-0.23
1998	0.57	0.06
1999	0.72	0.03
2000	0.67	0.07
2001	0.85	0.02
2002	0.97	0.06
2003	0.85	0.08
2004	0.56	0.05
2005	0.44	0.04
2006	0.34	0.04
2007	0.26	0.06
2008	0.21	0.02
2009	0.49	0.06
2010	0.34	0.04
2011	0.29	0.04
2012	0.39	0.04
2013	0.33	0.03
2014	0.28	0.03
2015	0.31	0.05
2016	0.36	-0.01
2017	0.35	0.01
2018	0.27	0.04
2019	0.34	0.04
2020	0.30	0.03
2021	0.31	0.08

Table 4: Summary Statistics

This table presents the summary statistics of all the variables. SYNCH is the logistic transformation of the yearly values of country-average R^2 s, LNPCGDP is the natural log of the per capita US\$ GDP, LN is the natural log of the number of stocks traded in each country and year, MKTVOL is the variance of each country's market return, MACROINS, the variance of per capita GDP growth, measured in nominal US dollars, based on data from the last five years, WITHINDIVER, the natural log of surface area, in square kilometers, FIRMHERF, calculated as $\hat{H}_j = \sum_i \hat{h}_{i \in j}^2$, $\hat{h}_{i,j}^2$ is the sales of firm *i* as a percentage of the total sales of all country *j* firms, *INDHERF*, calculated as $H_j = \sum_k h_{k,j}^2$, $h_{k,j}$ is the total value of the sales of all country j firms in industry k as a percentage of those of all country j firms, POLSTABILITY is the perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism, RQUALITY is the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development, GEFFECT is the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies, RULELAW is the 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, ACNTABILITY is the perceptions of 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, CONCORROUP is the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests, MKTINGRA is obtained by regressing the local market index return for market *j* on its lag value and the world market index return, MVGDP is measured as the ratio of the equity market capitalization to GDP, XMGDP is the sum of exports and imports as a percentage of GDP, AUDITOR is the number of auditors per country's stock market capitalization, and DIVERSITY is the standard deviation of the analysts' forecasts of the firm's earnings in the next fiscal year-end, normalized by the mean forecast, and then divided by the square root of the number of analysts following that firm.

Panel A: This panel reports summary statistics for synchronicity and log per capita US\$ GDP. The sample period is from 1996 to 2023.					
	(1)	(2)	(3)	(4)	(5)
	Mean	Median	25 th Percentile	75 th Percentile	Std. Dev.
SYNCH	-0.93	-0.99	-1.19	-0.75	0.37
LPCGDP	9.64	10.05	8.81	10.64	1.25
Panel B: This panel reports	summary statistics for	r the log number of st	ocks, local market volat	ility, and economic fun	damentals variables.
The sample period is from 1	996 to 2021.				
LN	6.37	6.28	5.62	7.08	1.30
MKTVOL	0.003	0.0004	0.0002	0.001	0.043
MACROINS	6.51	2.65	0.98	6.44	11.09
WITHINDIVER	12.68	12.78	11.44	13.94	2.04
INDHERF	0.28	0.22	0.17	0.31	0.16
FIRMHERF	0.11	0.05	0.03	0.13	0.15
Panel C: This panel reports	summary statistics for	the instrumental struct	cture variables. The sam	ple period is from 1996	to 2021.
RQUALITY	0.96	1.10	0.33	1.63	0.76
GEFFECT	0.98	1.11	0.24	1.73	0.82
ACNTABILITY	0.74	1.00	0.16	1.39	0.79
POLSTABILITY	0.38	0.61	-0.28	1.03	1.24
RULELAW	0.86	1.11	0.01	1.73	0.91
CONCORRUP	0.87	1.02	-0.14	1.87	1.04
Panel D: This panel reports	s summary statistics f	or market openness v	variables. The values of	MVGDP are multiplied	d by 10 ⁵ for better
reporting of results. The sar	nple period is from 19	96 to 2021.			
MKTINGRA	0.47	0.48	0.29	0.66	0.22
MVGDP	0.17	0.13	0.07	0.24	0.13
XMGDP	1.99	1.96	1.88	2.05	0.18
Panel E: This panel reports	s summary statistics of	f the opaqueness var	iables. The values of A	UDITOR are multiplied	d by 10 ³ for better
reporting of results. The sar	nple period is from 19	96 to 2021.			
AUDITOR	0.45	0.18	0.09	0.45	0.79
DIVERSITY	0.03	0.04	0.02	0.07	0.35

Table 5: Correlation structure

This table presents the correlation matrix of all the variables in the study. SYNCH is the logistic transformation of the yearly values of country-average R^2 s, LNPCGDP is the natural log of the per capita US\$ GDP, LN is the natural log of the number of stocks traded in each country and year, MKTVOL is the variance of each country's market return, MACROINS, the variance of per capita GDP growth, measured in nominal US dollars, based on data from the last five years, WITHINDIVER, the natural log of surface area, in square kilometers, FIRMHERF, calculated as $\hat{H}_j = \sum_i \hat{h}_{i \in j}^2$, $\hat{h}_{i,j}^2$ is the sales of firm *i* as a percentage of the total sales of all country *j* firms, *INDHERF*, calculated as $H_j = \sum_k h_{k,j}^2$, $h_{k,j}$ is the total value of the sales of all country *j* firms in industry *k* as a percentage of those of all country *j* firms, POLSTABILITY is the perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism, RQUALITY is the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development, GEFFECT is the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies, RULELAW is the 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, ACNTABILITY is the perceptions of 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, CONCORROUP is the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests, MKTINGRA is obtained by regressing the local market index return for market *j* on its lag value and the world market index return, MVGDP is measured as the ratio of the equity market capitalization to GDP, XMGDP is the sum of exports and imports as a percentage of GDP, AUDITOR is the number of auditors per country's stock market capitalization, and DIVERSITY is the standard deviation of the analysts' forecasts of the firm's earnings in the next fiscal year-end, normalized by the mean forecast, and then divided by the square root of the number of analysts following that firm. The Pearson (Spearman) correlation coefficients are reported in the upper (lower) triangle. Statistical significance at the 5%-level is indicated by *. Panel A: This panel reports the correlation coefficients between synchronicity and log per capita US\$ GDP. The sample period is from 1996 to 2023.

						(1))			-		(2)		
SYNCH(1)						· · ·						-0.149*		
LPCGDP(2)						-0.12	5*							
Panel B: This panel r	eports the c	orrelation of	coefficients	between s	vnchronicit	v. log per d	capita USS	GDP. lo	g number	of stocks, ma	arket volatil	ity, and ec	conomic fu	ndamental
variables. The sample	period is fro	om 1996 to	2021.			<i>,</i> 81	1	- , -	0	,		.,,		
	(1)	(2)		(3)		(4)		(5)	(6)		(7)		(8)
SYNCH (1)	(-	/	-0.156	*	-0.061	-(0.012	0.0	087*	-0.006		-0.158*	-() 139*
LPCGDP(2)	-0.1	33*	0.120		0.144*	-0	0004	-0	074*	-0.438*	¢	0.363*	Ċ	267*
LN(3)	-0 (009	0.122	*	01111	-0	084*	-0	097*	0.260*		-0.363*	-() 359*
MKTVOL(4)	0.3	75*	-0.156	*	-0.075*	0	.001	0.	026	-0.011		0.026		0.048
MACROINS(5)	0.0	151	-0 114	*	-0.152*	0	064*	0.	.020	-0 123*	¢	-0.004	_	0.008
WITHINDIVER (6)	-0.0	006	-0.497	*	0.330*	-(0.004	-0	038	0.125		-0.331*	-() 287*
INDHERE(7)	-0.1	67*	0.403	*	-0.403*	0	149*	Ő	012	-0 357*	¢	0.001	Ċ	874*
FIRMHERF (8)	-0.2	36*	0.403	*	-0.486*	0	096*	-0	002	-0.316*	¢	0 854*	C C	
Panel C: This panel re	ports the co	relation co	efficients b	etween svr	chronicity	log per cap	ita US\$ GI	DP log ni	imber of s	tocks market	volatility e	conomic fr	Indamental	variables
and institutional struct	ure variable	s The same	ale neriod i	s from 199	6 to 2021	log per eup	na 050 01	D1, 105 III	inder or s	toeks, market	volutinty, e	contonne re	maamenta	variables,
and monthlondi struct	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(0)	(10)	(11)	(12)	(13)	(14)
SVNCH(1)	(1)	0.138*	0.050	0.015	0.055	0.010	0.147*	0.141*	0 102	(10)	0.316*	0.102*	0.185*	0.206*
IPCCDP(2)	0.126*	-0.156	-0.039	-0.013	0.033	-0.010	0.360*	0.268*	-0.192	* 0.840*	0.720*	0.102*	0.105	-0.200
LI CODI (2)	-0.120	0.104*	0.154	-0.003	-0.023	0.458	0.309	0.200	0.072	0.049	0.129	0.493	0.039	0.045*
LN(3) MVTVOL(4)	-0.003	0.104	0.054	-0.069	-0.103	0.203	-0.301	-0.302	0.042	0.125°	0.016	0.002	0.110	-0.090*
MKIVOL(4) MACPOINS(5)	0.419	-0.120	-0.034	0.050	0.028	-0.011	0.027	0.000	-0.02	2 -0.010	-0.010	-0.003	-0.015	-0.019
MACKOINS (3)	0.014	-0.085*	-0.149*	0.050	0.059	-0.139**	0.010	0.009	-0.05	1 -0.034	-0.121*	-0.034	-0.007*	-0.005
WITHINDIVER (0)	-0.012	-0.498*	0.332*	-0.000	-0.058	0.262*	-0.324*	-0.272*	-0.522	* -0.497*	-0.212*	-0.309*	-0.452*	-0.445*
$IND\Pi EKF(7)$	-0.105*	0.424**	-0.398*	0.144*	0.029	-0.302*	0.950*	0.875*	0.397	* 0.307*	0.320*	0.247*	0.372*	0.577*
$\Gamma IKMITEKF(0)$	-0.245*	0.544*	-0.464*	0.060*	0.015	-0.522*	0.639*	0 414*	0.518	* 0.207*	0.238*	0.223*	0.277*	0.275*
RQUALITY(9)	-0.184*	0.847*	-0.029	-0.052	-0.075*	-0.544*	0.462*	0.414*	0.000	0.929*	0.761*	0.556*	0.936*	0.947*
GEFFECI(10)	-0.162*	0.855*	0.028	0.010	-0.100*	-0.557*	0.425*	0.375*	0.908	* 0764*	0.715*	0.302*	0.957*	0.958*
ACNIABILITY (11)	-0.277*	0.763*	-0.059*	-0.165*	-0.1//*	-0.344*	0.378*	0.362*	0.749	* 0.764*	0.5.0.1	0.482*	0.816*	0.779*
POLSTABITY (12)	-0.157*	0.747*	-0.089*	0.011	-0.090*	-0.526*	0.412*	0.376*	0.818	* 0.856*	0.762*	0.0654	0.588*	0.563*
RULELAW (13)	-0.176*	0.871*	0.021	-0.025	-0.117*	-0.488*	0.433*	0.374*	0.908	* 0.939*	0.862*	0.867*		0.967*
CONCORRUP (14)	-0.193*	0.840*	-0.014	-0.007	-0.089*	-0.487*	0.439*	0.388*	0.930	* 0.948*	0.827*	0.867*	0.957*	
Panel D: This panel re	ports the con	rrelation co	efficients b	etween syr	chronicity,	log per cap	ita US\$ G	DP, log nu	umber of s	tocks, market	volatility, e	conomic fu	indamental	variables,
and market openness v	ariables. Th	e sample p	eriod is fro	m 1996 to 1	2021.									
	(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	((10)	(11)
SYNCH(1)		-0.15	6* -	0.061	-0.012	0.088*	-0.	006	-0.158*	-0.139*	0.071	* -0.	.065*	-0.005
LPCGDP(2)	-0.133*		0	.144*	-0.0004	-0.074*	· -0.4	438*	0.363*	0.267*	0.565	* 0.	217*	-0.364*
LN (3)	-0.009	0.122	2*		-0.084*	-0.097*	· 0.2	60*	-0.363*	-0.359*	0.339	* 0.	299*	-0.127*
MKTVOL (4)	0.375*	-0.15	6* -().075*		0.026	-0.	011	0.026	0.048	0.01	5 -0	0.047	0.005
MACROINS (5)	0.061*	-0.11	4* -().152*	0.064*		-0.1	123*	-0.004	-0.008	-0.143	3* -0.	.220*	-0.080*
WITHINDIVER (6)	-0.006	-0.49	7* 0	.330*	-0.038	-0.017			-0.331*	-0.287*	-0.119)* 0.	161*	0.158*
INDHERF (7)	-0.167*	0.402	2* -().403*	0.148*	0.012	-0.3	357*		0.874*	0.155	* 0	.009	-0.141*
FIRMHERF (8)	-0.236*	0.323	3* -().486*	0.096*	-0.002	-0.3	316*	0.854*		0.120	* -0	0.044	-0.113*
MKTINGRA (9)	0.090*	0.56	1* 0	.334*	0.041	-0.104*	· -0.1	134*	0.141*	0.122*		0.	253*	-0.229*
MVGDP (10)	-0.085*	0.20	7* 0	.254*	-0.089*	-0.238*	· 0.2	.02*	-0.107*	-0.144*	0.272	*		0.106*
XMGDP (11)	-0.030	-0.34	3* -().070*	-0.063*	-0.040	0.2	18*	-0.039	0.011	-0.156	ó* 0.	202*	
Panel E: This panel rep	ports the con	relation co	efficients b	etween syr	chronicity,	log per capi	ita US\$ Gl	DP, log nu	umber of s	tocks, market	volatility, e	conomic fu	Indamental	variables,
and opaqueness variab	les. The san	nple period	is from 19	96 to 2021.				-			-			
	(1)	((2)	(3)	(4))	(5)	(6)		(7)	(8)	(9)	(10)
SYNCH (1)		-0.	163*	-0.062*	-0.00)7 (0.087*	-0.00)6	-0.140*	-0.159*	0.08	*	0.037
LPCGDP (2)	-0.136*			0.142*	0.00	. 9	0.078*	-0.43	7*	0.360*	0.263*	-0.49	91*	-0.008
LN (3)	-0.011	0.1	19*		-0.08	3* -	0.097*	0.26	1*	-0.365*	-0.361*	-0.09	96*	-0.010
MKTVOL (4)	0.378*	-0.	148*	-0.074*			0.028	-0.01	12	0.029	0.051	0.0	17	0.011
MACROINS (5)	0.061	-0.	115*	-0.152*	0.064	4*		-0.12	2*	-0.005	-0.009	0.06	i9*	0.012
WITHINDIVER (6)	-0.006	-0.4	495*	0.332*	-0.03	36 -	-0.019			-0.330*	-0.286*	0.17	'1*	-0.042
INDHERF (7)	-0.168*	0.3	399*	-0.406*	0.15	3*	0.011	-0.35	7*		0.874*	-0.10)3*	-0.001
FIRMHERF (8)	-0.236*	0.3	318*	-0.489*	0.10	2* .	-0.003	-0.31	5*	0.855*		-0.0	25	0.009

AUDITOR (9)	-0.015	-0.530*	-0.173*	-0.015	0.146*	0.167*	-0.079*	-0.016		0.022
DIVERSITY (10)	0.119*	-0.254*	-0.098*	0.119*	0.019	0.047	-0.054	-0.056	0.135*	

Table 6: Log per capita US\$ GDP

This table presents the result of the regression analysis from Model (3), where the dependent variable is *SYNCH*. *SYNCH* is the logistic transformation of the yearly values of country-average R^2 s, and *LNPCGDP* is the natural log of the per capita US\$ GDP. ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively. *t*-statistics (in parentheses) are calculated based on heteroscedasticity-robust standard errors. The sample period is from 1996 to 2023.

	SYNCH	
LPCGDP	-0.052***	
	(-6.242)	
CONSTANT	-0.585***	
	(-5.892)	
Year FE	Yes	
Ν	1090	
Adj - R^2	0.216	

Table 7: Empirical Results

This table presents the result of the regression analysis from Model (4) to (7), where the dependent variable is SYNCH. SYNCH is the logistic transformation of the yearly values of country-average R^2 s, LNPCGDP is the natural log of the per capita US\$ GDP, LN is the natural log of the number of stocks traded in each country and year, MKTVOL is the variance of each country's market return, MACROINS, the variance of per capita GDP growth, measured in nominal US dollars, based on data from the last five years, WITHINDIVER, the natural log of surface area, in square kilometers, *FIRMHERF*, calculated as $\hat{H}_j = \sum_i \hat{h}_{i \in j}^2$, $\hat{h}_{i,j}^2$ is the sales of firm *i* as a percentage of the total sales of all country *j* firms, *INDHERF*, calculated as $H_j = \sum_k h_{k,j}^2$, $h_{k,j}$ is the total value of the sales of all country j firms in industry k as a percentage of those of all country *j* firms, *POLSTABILITY* is the perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism, RQUALITY is the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development, GEFFECT is the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies, RULELAW is the 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, ACNTABILITY is the perceptions of 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, CONCORROUP is the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests, MKTINGRA is obtained by regressing the local market index return for market *j* on its lag value and the world market index return, MVGDP is measured as the ratio of the equity market capitalization to GDP, XMGDP is the sum of exports and imports as a percentage of GDP, AUDITOR is the number of auditors per country's stock market capitalization, and DIVERSITY is the standard deviation of the analysts' forecasts of the firm's earnings in the next fiscal year-end, normalized by the mean forecast, and then divided by the square root of the number of analysts following that firm. ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively. tstatistics (in parentheses) are calculated based on heteroscedasticity-robust standard errors and clustered by country. The sample period is from 1996 to 2021.

	SYNCH
Panel A: This table presents the regression analysis from Model (4).	
LPCGDP	-0.044
	(-1.382)
LN	-0.028
	(-0.656)
MKTVOL	-0.225
	(-1.807)*
MACROINS	0.004
	(1.809)*
WITHINDIVER	-0.016
	(-0.818)
INDHERF	-0.347
	(-0.700)
FIRMHERF	-0.109
	(-0.209)
CONSTANT	-0.202
	(-0.488)
Year FE	Yes
N	1,012
Adj-R ²	0.262
Panel B: This table presents the regression analysis from Model (5).	
LPCGDP	0.082
	(1.464)
LN	-0.056
	(-1.584)
MKIVOL	-0.343
MACDOINE	(-3.352)***
MACKOINS	0.002
	(0.904)
WITHINDIVER	0.009
	(0.418)
ΙΝΔΠΕΚΓ	-0.175
EIDMLIEDE	(-0.380)
TIRMIIERI	(0.503)
DOUALITY	0.026
Ng Uniti I	(_0.200)
GFFFFCT	-0.049
	(-0.531)
	(-0.331)

ACNTABILITY	-0.270
	(-2.340)**
POLSTABILITY	0.008
DULEIAW	(0.429)
KULELAW	0.548 (2.589)**
CONCORRUP	-0.205
CONCORNEL	(-1 779)*
CONSTANT	-1 380
	(-2.384)**
Year FE	Yes
Ν	896
Adj - R^2	0.390
Panel C: This table presents the regression analysis from Model (6).	
LPCGDP	-0.063
	(-1.870)*
LN	-0.036
	(-0.856)
MKTVOL	-0.224
	(-1.805)*
MACROINS	0.004
	(1.475)
WITHINDIVER	-0.018
	(-0.790)
INDHERF	-0.357
	(-0.750)
FIRMHERF	-0.133
	(-0.274)
MKTINGRA	0.081
	(0.513)
MVGDP	4,401.678
WICDD	(0.117)
XMGDP	-0.204
CONCTANT	(-1.029)
CONSTANT	(0.445)
Vogn EE	(0.041) Vas
N	1012
$\Delta di_{\rm c} R^2$	0.268
Panel D: This table presents the regression analysis from Model (7)	0.200
LPCGDP	-0.040
	(-1.782)*
LN	-0.028
	(-0.663)
MKTVOL	-0.179
	(-1.480)
MACROINS	0.004
	(1.744)*
WITHINDIVER	-0.016
	(-0.810)
INDHERF	-0.328
	(-0.663)
FIRMHERF	-0.143
	(-0.277)
AUDITUK	21.30/
	(0.351)
DIVEKSITY	0.03/
	(1.558)
CONSTANT	-0.249
Voru EE	(-U.302) Vac
1еш Г L N	1006
IV $A J; D^2$	1000
Аиј-к	0.204

Appendix. Variables Definition

Variable	Definition
ACNTABILITY	Perceptions of 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
AUDITOR	Number of auditors per country's stock market capitalization
CONCORRUP	Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests
DIVERSITY	Calculated as the standard deviation of the analysts' forecasts of the firm's earnings in the next fiscal year- end, normalized by the mean forecast, and then divided by the square root of the number of analysts following that firm
$EX_{j,t}$	Change in the country j's exchange rate vs the US dollar
FIRMHERF	Calculated as $\hat{H}_j = \sum_i \hat{h}_{i \in j}^2$, $\hat{h}_{i,j}^2$ is the sales of firm <i>i</i> as a percentage of the total sales of all country <i>j</i> firms
GEFFECT	Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies
INDHERF	Calculated as $H_j = \sum_k h_{k,j}^2$, $h_{k,j}$ is the total value of the sales of all country <i>j</i> firms in industry <i>k</i> as a percentage of those of all country <i>j</i> firms
IS	A country's institutional structures proxied by regulatory quality index, government effectiveness index, voice and accountability, political stability and absence of violence/terrorism, rule of law, and control of corruption
LPCGDP	Natural log of the per capita US\$ GDP of each country and year
LN	Natural log of the number of stocks traded in each country and year
MACROINS	Variance of per capita GDP growth, measured in nominal US dollars, based on data from the last five years
MKTINGRA	Obtained by regressing the local market index return for market <i>j</i> on its lag value and the world market index return
MKTVOL	Variance of each country's market return
MVGDP	Ratio of the equity market capitalization to GDP
POLSTABILITY	Perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism
$R_{i,t,j}$	Weekly return on stock i in week t (in country j)
$R_{m,j,t}$	Local market index return
$R_{US,t}$	US market index return
RQUALITY	Perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development
RULELAW	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
SYNCH	Logistic transformation of the yearly values of country-average R^2 s
WITHINDIVER	Natural log of surface area, in square kilometers
XMGDP	Sum of exports and imports as a percentage of GDP