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Determinants of FinTech Equity Funding Flows: Evidence From a Global Perspective

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ABSTRACT

This study explores the factors affecting FinTech (Financial technology startups) equity financing and deals. Traditional and alternative financing are currently progressing together; however, alternative financing remains underexplored. Using panel data from 57 countries in 2010 to 2020 and one-step difference generalised method of moments (Diff-GMM) regressions, we show that, at the global level, gross domestic product (GDP), domestic credit to the private sector, regulations, innovations, globalisation, stock market return, information technology (ICT) goods export and internet users influence FinTech equity funding. With respect to FinTech deals, except GDP, regulations and globalisation, all other factors aforementioned have a substantial effect. Nevertheless, our category-specific findings slightly differ from the global context. Our study emphasises the need for the rapid development of communication technology and increased accessibility to mobile internet services for users. Moreover, authorities should strike a balance between imposing regulations and facilitating FinTech equity funding growth. Innovations should prioritise user-friendliness, affordability and commercial viability.

1 | Introduction

Over the last decade, there has been a rapid surge in the number of financial technology startups (FinTechs) specialising in the development of digital and alternative financial products and solutions. The redefined role of technology in designing and delivering financial products and services has increased manifold since the 2008 global financial crisis (Chai et al. 2024). Customers now can access traditional financial products and services more quickly, easily and efficiently than ever before, with FinTech stimulating financial expansion and mitigating risks through improved information disclosure and sharing (Sunny et al. 2022; Zhao, Goodell, et al. 2022). According to Allen, Gu, and Jagtiani (2021), Financial Technology (FinTech) could help more than 2 billion unbanked people worldwide gain

access to financial services, particularly in less developed nations such as Pakistan, Bangladesh, Nigeria and so on.

In recent years, venture capitals (VCs) have also emerged to fund innovation pursued by early-stage enterprises, such as FinTechs. This has accelerated the growth of FinTech innovations and startups globally (Cumming and Schwienbacher 2018). In 2021, the total amount of VC financing worldwide was \$643 billion, which was \$335 billion in 2020 (Teare 2022). In fact, FinTech companies often rely on VC investments, granting equity ownership in exchange for funds to support their research and development (R&D). However, the success of these investments depends on various critical factors such as entrepreneurial experiences, number of deals, average amount per deal, broad-scale economic integration policies, regulatory changes, tax rate,

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economic growth and research and development expenditure. These factors collectively determine the outcome and profitability (Glücksman 2020; Gompers et al. 1998; Ning, Wang, and Yu 2015).

Figure 1 shows a consistent rise in FinTech equity funding and several FinTech deals globally. Figure 2 shows a parallel increase in FinTech equity capital and worldwide VC funding since 2010, indicating the significant role VCs play in financing the FinTech industry.

Although we have seen significant growth in FinTech equity funding, the literature often only pays attention to the determinants of FinTech credits (e.g., Claessens et al. 2018; Cumming and Schwienbacher 2018; Kim 2018; Röder et al. 2018; Suryono, Budi, and Purwandari 2020; Zarrouk, El Ghak, and Bakhouché 2021; Zhao et al. 2023). The determinants of FinTech equity funding remain largely unexplored. In a closely related study, Cornelli et al. (2021) identified some global patterns and driving forces of FinTech equity funding. However, they overlooked the possible impacts of several critical factors, including domestic money supply, globalisation, regulatory frameworks and communication technology. The existing literature has yet to offer a comprehensive understanding of what affects FinTech equity funding. We attempt to address this gap by investigating the determinants of the number and flows of FinTech equity funding deals using data from 57 countries in 2010–2020.

Our research bears significance on multiple fronts. First, the global FinTech landscape is dynamic, with different regions emerging as hotbeds at different times; currently, the US leads, but Africa and East Asia are anticipated to become future hubs due to strong local demand for digital financial services. It is important to determine whether equity funding aligns with global expectations or reveals alternative trends. Second, many countries, despite their business potential, are unwelcoming to VCs, which hampers the development of a startup innovation culture and ecosystem. To support a market-driven FinTech innovation ecosystem through VC funding, it is essential to understand the association between macroeconomic conditions, financial systems, regulatory environments and FinTech funding. Third, we are the first to examine the determinants of FinTech equity funding at both the global level and regional levels, as well as amongst different income groups and economic cooperations,

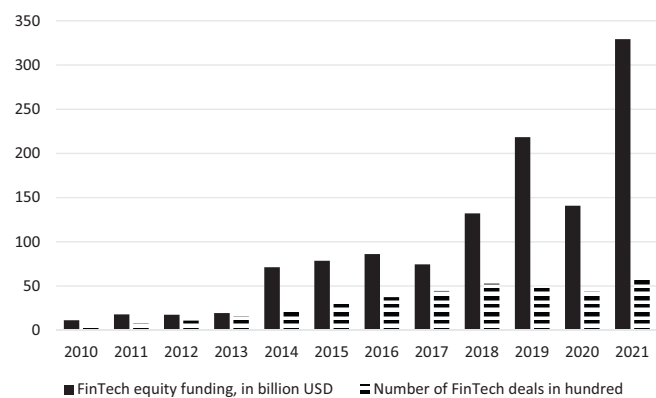


FIGURE 1 | Trends in FinTech equity funding and number of FinTech deals.
Source: Calculated based on Cornelli et al. (2021).

which makes an original contribution to the literature, shedding light on the factors that significantly deter or encourage funding supplied by VCs in a comprehensive way. Finally, our study further contributes by assessing the potential effects of various factors related to global and local macroeconomics, financial and regulatory environments, infrastructure and technology.

The remainder of the study is organised as follows. We briefly review the literature in Section 2, followed by Section 3 where we showcase our conceptual framework. We describe the data and methodology in Section 4. We then discuss the main and additional results in Section 5. Finally, Section 6 concludes the study.

2 | Literature Review

2.1 | Startups and VC Investments

Sourcing external finance is a major challenge for FinTechs due to limited information transparency, a lack of tangible and intangible collaterals and the high uncertainty about the venture's potential success (Comeig, Fernández-Blanco, and Ramírez 2015; Hasan et al. 2023; Lahr and Mina 2016; Lee and Shin 2018). VCs are one of the best alternatives for startups when traditional funding sources close their doors, as discussed earlier.

Many factors influence the nature and degree of VC investments. Félix, Pires, and Gulamhussen (2013) examine 23 European countries and find that gross domestic product (GDP) drives VC financing, as stronger economies attract more startups due to better business prospects and higher chances of entrepreneurial success. This is in line with Audretsch and Acs (1994) who report that economic growth positively impacts startup activities and VC investments, which increases VC activities. Gompers et al. (1998) suggest that increased expenditure on (R&D) boosts VC activities. Enterprises relying on external finance spend more on R&D and benefit from government support (Hyytinen and Toivanen 2005). Additionally, improved financial development, economic freedom and efficient payment systems also significantly motivate VC activities (Herck Giaquinto and Bortoluzzo 2020). Tykvoá (2018) proposes that stock market performance is an essential driver of

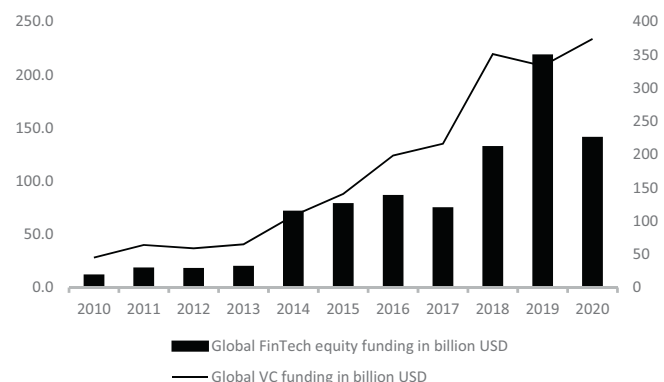


FIGURE 2 | Trends in global VC and FinTech equity funding. The left y-axis is for global Fintech equity financing, whilst the right y-axis is for VC financing.
Source: Calculated based on Cornelli et al. (2021) and KPMG Enterprise's Venture Pulse Reports Q4'16, and Q4'23 Reports.

VC financing. Black and Gilson (1999) show that a strong VC sector in a well-established stock market ensures a viable and consistent exit strategy.

2.2 | Factors Influencing the Rise of FinTechs

Kostin, Fendel, and Wild (2022) show that Germany has more FinTech startups seeking equity fundraising compared to Russia, which has a less developed investment sector and lower average funding levels. Cumming and Schwienbacher (2018) find that the absence of a significant financial center or strong regulatory enforcement attracts more FinTech VC investments. Groh and Wallmeroth (2016) and Nofsinger and Wang (2011) note that external startup financing is higher when legal protections, such as intellectual property rights, safeguard borrowers and lenders. Claessens et al. (2018) report high demand for FinTech startups and credits in advanced economies. Additionally, financial policies are crucial for shaping the financial innovation ecosystem, especially for emerging economies (Zeng, Abedin, and Lucey 2024). Navaretti, Calzolari, and Pozzolo (2017) discovered that FinTech adoption is likely to be higher in countries with higher credit and bank assets to GDP ratio and less stringent banking regulations. Countries with more difficult access to credit have a greater number of FinTechs (Haddad and Hornuf 2019).

Information technology infrastructure and labor forces are fundamental accelerators for developing a FinTech-friendly ecosystem and the rise of FinTechs (Haddad and Hornuf 2019; Suryono, Budi, and Purwandari 2020). Feyen et al. (2021) suggest that network capacity (e.g., for internet subscribers) is essential in financial transactions, as the network's value increases with more active users. The growth of information and communication technology products is crucial in making financial services more attractive (Iman 2020; Luo et al. 2022). Moreover, innovation, infrastructural development, legal systems, systematic tax systems and the investment climate play vital roles in FinTech market development.

Prior studies (e.g., Edler and Fagerberg 2017; McCann and Ortega-Argiles 2013) emphasise the importance of innovation capacity in determining enterprise success, as new expertise boosts business creation. Since many FinTech businesses rely on emerging technologies such as artificial intelligence, computer hardware and software and mobile technology, local research capabilities in these sectors are critical (Cornelli et al. 2021). New technologies or services face significant challenges, including intense market competition, legal uncertainties, negotiations with outsiders, rapid fundraising and threats from established firms (Abedin and Hajek 2023; Yang and Aldrich 2017). Without safeguards for innovative firms and with more confidence placed in known partners, these enterprises may be vulnerable and face financial difficulties (Morse, Fowler, and Lawrence 2007).

To this far, we reviewed the relationship between the rise of FinTech and VCs, factors influencing VC investments and the overall FinTech system. We showed that the literature has not explained how the specific alternative financing (i.e., FinTech equity financing) is affected. Therefore, we aim to fill this gap.

3 | Conceptual Framework

FinTech equity funding, (i) the flow (size) of fundraising and (ii) the number of FinTech deals, may be influenced by five groups of factors, namely (i) economic development, (ii) financial progress, (iii) regulatory environment, (iv) innovation and communication technology and (v) economic and trade openness (Figure 3).

Economic development plays a significant role in determining credit facilities (Félix, Pires, and Gulamhussen 2013), and has a favourable effect on startup activities (Haddad and Hornuf 2019), which in turn stimulates VC investment. With strong economic growth, more funds from VC and private equity (PE) become available for investments in businesses counting on external capital for expansion. Economic development also enhances investor confidence, resulting in a larger consumer base, higher disposable income and a growing middle class, thereby creating more opportunities for FinTech businesses. Consequently, it fosters more entrepreneurial success (Audretsch and Acs 1994; Gompers et al. 1998). Overall, we expect:

H1. *Economic development has a significant positive impact on FinTech equity funding.*

A country's FinTech fund market may be affected by its financial openness level. Easily accessible capital through the stock market might lead startups to forego alternative financing. Furthermore, regions with abundant and reputed traditional banking facilities may benefit less from VC and alternative finance as investors may favour and shift focus to more established and traditional banking over FinTech firms for security and reliability, reducing investments in FinTechs (Fallanca, Forgione, and Otranto 2020; Herck Giaquinto and Bortoluzzo 2020; Oyebowale 2020; Basdekis et al. 2022). Therefore, we propose:

H2. *Financial openness has a significant negative impact on FinTech equity funding.*

Countries enforce their own regulations to combat various forms of cybercrime, which can affect the growth of FinTechs in both positive and negative ways (Claessens et al. 2018;

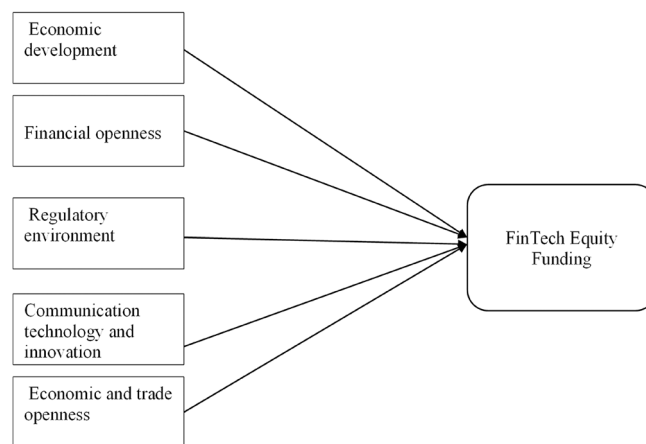


FIGURE 3 | Conceptual framework.

TABLE 1 | Description summary of variables.

Variables	Definition	Measurement scale	Expected impact on FinTech equity funding and FinTech deals
FinTech equity funding (<i>FTEF</i>)	Equity investment in FinTech firms	Total volume of FinTech equity funding in USD	N/A
FinTech equity funding per capita	Per capita investment of FinTech equity funding	Total volume of FinTech equity funding as a percentage of the total population	N/A
FinTech deal (<i>FD</i>)	Number of FinTech agreements held	Total number of FinTech deals in a country	N/A
FinTech equity funding per deal	Per agreement investment in FinTech equity funding	Total volume of FinTech equity funding as a percentage of total FinTech deals	N/A
Gross domestic product (<i>GDP</i>)	Value in money for all the finished goods and services made in a country during a specific period	Total value of completed products and services produced in a nation within a specific period in USD	Positive (+)
Domestic credit to the private sector (<i>DCPS</i>)	Financial firms offer financial resources to the private sector	Domestic credit to the private sector as a percentage of GDP	Negative (−)
Regulatory quality (<i>RQ</i>)	The government's capacity to develop and implement solid policies and laws	Worldwide Governance Indicators	Positive/ Negative (+/−)
Global innovation index (<i>GII</i>)	Rating of countries based on their ability and competence at fostering new ideas	Input and output sub-indicators average	Positive/ Negative (+/−)
Globalisation index (<i>GI</i>)	Establishing long-distance links between people, products, information and money across continents	A composite measure of globalisation's economic, social and political elements.	Positive (+)
Stock market return (<i>SMR</i>)	Increase in the yearly average index of the stock market	Price appreciation plus dividends as a percentage of the stock's initial price.	Negative (−)
ICT goods export (<i>ICTGE</i>)	Export of information and communication technology goods	ICT goods exports as a percentage of total goods exports	Positive (+)
Internet subscribers (<i>IS</i>)	Individuals who have been on the web in the last 3 months	Individuals using the internet as a percentage of the population	Positive (+)

Cumming and Schwienbacher 2018; Navaretti, Calzolari, and Pozzolo 2017). Investors may be reluctant to allocate funds to FinTech companies operating within tightly regulated industries due to concerns about prospective regulatory changes or enforcement measures that could impact the company's operational activities and financial performance. Stringent rules can also stifle innovation in the FinTech sector (Hashimy and Sandner 2020). Startups may be cautious about pursuing product development or market expansion if they anticipate regulatory hurdles. Nevertheless, FinTech companies that adhere closely to strict regulations can enhance their image with

investors (Cornelli et al. 2020; Cornelli et al. 2024). Hence, we propose:

H3. *Regulatory environment has a significant impact on FinTech equity funding.*

Edler and Fagerberg (2017) and McCann and Ortega-Argiles (2013) identify that innovation capability is crucial to FinTech equity fundraising as new information improves firm creation. Besides, advances in telecommunications infrastructure are vital for the FinTech industry's growth due

TABLE 2 | Summary statistics.

Variables	Obs	Mean	Std. Dev.	Min	Max
FTEF	559	1,548,000,000	7,923,000,000	10,000	114,500,000,000
lnFTEF	559	17.452	3.084	9.21	25.464
FD	592	54.492	179.439	1	1837
lnFD	592	2.518	1.582	0	7.516
FTEFPC	627	31.852	128.346	0	1587.816
lnFTEFPC	559	0.301	3.086	-9.11	7.37
FTEFPD	559	14,450,382	42,584,167	3333.333	666,700,000
lnFTEFPD	559	14.813	2.023	8.112	20.318
GDP	627	1,265,000,000,000	2,847,000,000,000	9,036,000,000	21,430,000,000,000
lnGDP	627	26.726	1.528	22.924	30.696
DCPS	585	87.486	51.007	10.247	258.45
RQ	616	0.792	0.864	-1.074	2.261
GII	456	44.506	11.709	20.1	68.4
GI	570	74.774	10.726	49.598	90.906
SMR	605	7.55	18.293	-49.67	153.379
ICTGE	561	7.416	10.495	0.0000643	56.645
IS	576	67.308	24.763	2.9	100

Abbreviations: DCPS= domestic credit to private sector, FD= FinTech deal, FTEF= FinTech equity funding, FTEFPC= FinTech equity funding per capita, FTEFPD= FinTech equity funding per deal, GDP= gross domestic product, GI= globalisation index, GII= global innovation index, ICTGE= ICT goods export, IS= internet subscribers, lnFD= natural log of FinTech deal, lnFTEF= natural log of FinTech equity funding, lnFTEFPC= natural log of FinTech equity funding per capita, lnFTEFPD= natural log of FinTech equity funding per deal, lnGDP= natural log of gross domestic product, RQ= regulatory quality, SMR= stock market return.

to the need for reliable and fast internet connections (Feyen et al. 2021; Suryono, Budi, and Purwandari 2020). The proliferation of global connectivity amplifies the growth prospects of FinTech enterprises, attracting investors interested in exploring avenues for global expansion. Thus, we develop the following hypothesis:

H4. *Communication technology and innovation significantly impact FinTech equity funding.*

Through globalisation, the increased market reach of FinTech businesses enhances their development potential, rendering them more appealing to investors in search of international diversity and greater profits (Aluko and Opoku 2022). Moreover, the development and export of ICT goods such as computers, smartphones and other peripheral devices help develop a FinTech ecosystem (Iman 2020). Information and communication technology products enable FinTech companies to leverage data analytics and business intelligence, giving them valuable insights into customer behaviour, market trends and overall business performance. FinTech firms that utilise ICT products to provide easily accessible and user-friendly financial solutions are strategically positioned to secure investments. Based on these arguments, we argue:

H5. *Economic and trade openness positively impacts FinTech equity funding.*

4 | Methodology

4.1 | Data

We use panel data from 57 countries covering the period from 2010 to 2020, depending on data availability. Panel sample estimation process and the list of sample countries are in Appendices A and C. Table 1 provides the details of the variables used. The size of FinTech equity funding (in USD) and the total number of FinTech deals were collected from the Bank for International Settlements. The data on GDP, private sector credit growth, stock market returns, the number of internet subscribers and ICT goods exports were from the World Bank's World Development Indicators. Data on regulatory quality and global innovation level of each country were from World Intellectual Property Organisation's Worldwide Governance Indicators and Global Innovation Index, respectively. We measure each country's globalisation level using KOF Globalisation Index.

Table 2 presents the descriptive statistics of variables in the full-sample. Descriptive statistics of sub-samples can be found in Appendix B, Tables B1–B7.

Table 3 shows a correlation matrix amongst variables. The flows of FinTech equity funding and the number of FinTech agreements are highly correlated with GDP, global innovation index and domestic credit to the private sector, whilst *per capita*

TABLE 3 | Correlation matrix.

Variables	lnFTEF	lnFD	lnFTEFPC	lnFTEFPD	lnGDP	DCPS	RQ	GII	GI	SMR	ICTGE	IS
lnFTEF	1.000											
lnFD	0.835	1.000										
lnFTEFPC	0.820	0.606	1.000									
lnFTEFPD	0.909	0.529	0.805	1.000								
lnGDP	0.641	0.706	0.195	0.454	1.000							
DCPS	0.429	0.372	0.497	0.380	0.288	1.000						
RQ	0.282	0.245	0.661	0.248	-0.047	0.546	1.000					
GII	0.464	0.425	0.727	0.393	0.200	0.646	0.882	1.000				
GI	0.254	0.233	0.576	0.215	0.048	0.391	0.820	0.825	1.000			
SMR	-0.165	-0.177	-0.196	-0.121	-0.016	-0.147	-0.157	-0.118	-0.106	1.000		
ICTGE	0.174	0.120	0.194	0.178	0.012	0.441	0.174	0.229	-0.060	-0.118	1.000	
IS	0.273	0.244	0.629	0.236	0.012	0.503	0.792	0.796	0.815	-0.137	0.125	1.000

Abbreviations: DCPS = domestic credit to the private sector; GI = globalisation index; GII = global innovation index; ICTGE = ICT goods export; IS = internet subscribers; lnFD = natural log of FinTech deal; lnFTEF = natural log of FinTech equity funding; lnFTEFPC = natural log of FinTech equity funding per capita; lnFTEFPD = natural log of FinTech equity funding per deal; lnGDP = natural log of Gross domestic product; RQ = regulatory quality; SMR = stock market return.

FinTech equity funding is mainly correlated with the global innovation index, regulatory quality, globalisation, number of internet subscribers and domestic credit to the private sector.

The two-sample *t*-tests (Table 4) compare the distribution of FinTech equity funding across different groups. We find unequal variances in all panels except for Asia and Europe concerning FinTech deals, demonstrating considerable regional variations in the distribution and structure of FinTech equity capital and transactions. Besides, funding flows and agreements are more prominent in developed and Organisation for Economic Co-operation and Development (OECD) countries compared to developing and non-OECD countries, respectively.

4.2 | Model Specification

We use estimation specifications (1) and (2) to explore factors affecting FinTech equity funding flow and the number of FinTech equity deals, respectively. We include the lag of the FinTech Equity Fundings (FTEF) and FinTech Deals (FD) in Equations (1) and (2) as investors typically feel more confident and secure to invest in locations showing favourable previous-year trends. For example, locations showing slow investment growth in the immediate previous years may signal a poor investment environment and discourage current investment.

$$\begin{aligned} \ln FTEF_{it} = & a + b_1 \ln FTEF_{i,t-1} + b_2 \ln GDP_{it} + b_3 DCPS_{it} \\ & + b_4 RQ_{it} + b_5 GII_{it} + b_6 GI_{it} + b_7 SMR_{it} \\ & + b_8 ICTGE_{it} + b_9 IS_{it} + \sum_{j=1}^q \varphi_j CFE_{dumj} \\ & + \sum_{j=1}^r g_j YFE_{dumj} + e_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} \ln FD_{it} = & a + b_1 \ln FD_{i,t-1} + b_2 \ln GDP_{it} + b_3 DCPS_{it} + b_4 RQ_{it} \\ & + b_5 GII_{it} + b_6 GI_{it} + b_7 SMR_{it} + b_8 ICTGE_{it} \\ & + b_9 IS_{it} + \sum_{j=1}^q \varphi_j CFE_{dumj} + \sum_{j=1}^r g_j YFE_{dumj} + e_{it} \end{aligned} \quad (2)$$

where subscripts *i* and *t* represent individual country *i* and year *t*, respectively. φ and g are the coefficients for the country fixed effect (FE) dummy CFE_{dum} and year FE dummy YFE_{dum} , respectively. The definitions of variables are provided in Table 1.

We employ the one-step difference generalized method of moments (Diff-GMM) introduced by Arellano and Bond (1991), a dynamic estimator widely used by similar studies in finance and economics literature (e.g., Bellardini et al. 2022; Haddad and Hornuf 2019; Luo et al. 2022) for panel data with small *T* (i.e., number of years) and large *N* (i.e., number countries) (Roodman (2009). GMM models use the lag of the dependent variable as an instrument by default to mitigate endogeneity arising from both omitted variable bias and simultaneity (Ullah, Akhtar, and Zaefarian 2018; Wintoki, Linck, and Netter 2012; Zhao, Li, et al. 2022). Some of our independent variables, such as regulatory quality, stock market performance, bank loans and ICT goods export, might also suffer from endogeneity problems. Hence, we use the lag values of the suspected endogenous variables as instruments to deal with possible omitted variable bias (Hansen 1982). Besides, country and year FE are implemented throughout the analysis to account for heterogeneity arising from individuals and time periods, respectively (Uddin, Mollah, and Ali 2020). The validity of the instruments is confirmed using Sargan overidentification and second-order autocorrelation tests (Cuadros-Solas et al. 2024; Zhao, Li, et al. 2022).

5 | Analysis

5.1 | Estimation Process

Given that economic, political and social factors vary from country to country, funding might vary significantly across location, income bracket and cross-border trade (Cornelli et al. 2020). Hence, we use several panels to isolate the factors that influence the flow of FinTech equity capital and the volume of FinTech deals. Details are given in Appendix A to save space.

TABLE 4 | Two-sample *t*-test.

Region	Variables	Asia	Europe	Developed	OECD
		<i>t</i> -stat			
Europe	FTEF	-0.188			
	FD	0.030			
RoW	FTEF	-1.804*	-1.716*		
	FD	-2.247**	-2.273**		
Developing	FTEF			2.557**	
	FD			3.363***	
Non-OECD	FTEF				2.617***
	FD				3.464***

Note: Significance level: ***1%, **5% and *10%. FTEF and FD refer to FinTech equity funding and FinTech deals, respectively.

Source: Authors' computations.

TABLE 5 | Estimations on FinTech equity funding and FinTech deals in global, developed and developing countries.

Variables	World-level			Developed countries			Developing countries		
	lnFTEF	lnFD	lnFTEF	lnFD	lnFTEF	lnFD	lnFTEF	lnFD	
lnFTEF L1.	-0.3261*** (0.1141)		-0.1888 (0.1137)		-1.2942*** (0.1085)		-0.1256 (0.2844)		
lnFD L1.		0.2789** (0.1242)		0.3236** (0.1247)					
lnGDP	3.9441** (1.6222)	-0.0063 (0.3781)	3.6259* (2.0561)	0.1162 (0.5787)	6.4884** (2.7945)		0.7543 (0.7495)		
DCPS	-0.1351** (0.0583)	-0.0257** (0.0122)	0.0048 (0.0149)	0.0048 (0.0053)	0.2842*** (0.0772)		0.0374 (0.0230)		
RQ	-4.5516* (2.3012)	-0.6966 (0.8825)	-1.2792 (1.9449)	0.1694 (0.5708)	0.6622 (2.2397)		-0.5841 (0.6288)		
GII	-0.2142* (0.1069)	-0.0802*** (0.0293)	0.0538 (0.1161)	0.0012 (0.0350)	-0.5425** (0.2224)		-0.1316*** (0.0410)		
GI	0.4464* (0.2254)	0.0866 (0.0525)	0.6308* (0.3664)	0.2632*** (0.0927)	-0.0436 (0.1591)		-0.0371 (0.0725)		
SMR	-0.0344*** (0.0079)	-0.0060* (0.0033)	-0.0177* (0.0089)	-0.0022 (0.0028)	-0.0129 (0.0108)		-0.0031 (0.0031)		
ICTGE	0.4120* (0.2327)	0.1251* (0.0637)	0.2752* (0.1604)	0.1201* (0.0631)	-1.4700** (0.6656)		-0.0734 (0.2448)		
IS	0.0774** (0.0315)	0.0356*** (0.0096)	0.1019** (0.0451)	0.0302** (0.0135)	0.1582*** (0.0419)		0.0588*** (0.0188)		
No. of countries	57	57	34	34	23	23	23		
No. of observations	241	271	152	164	89	89	107		
No. of groups	51	51	31	31	20	20	20		
AR (1)	-2.32**	-3.11***	-2.79***	-2.87***	-2.01**		-0.41		
AR (2)	0.72	1.37	0.92	1.56	-1.29		-0.83		
Sargan test	168.17***	221.74***	131.02***	134.42***	14.67		103.38***		
Hansen test	44.38	46.77	23.48	25.68	12.97		13.86		

(Continues)

TABLE 5 | (Continued)

Variables	World-level		Developed countries		Developing countries	
	<i>lnFTEF</i>	<i>lnFD</i>	<i>lnFTEF</i>	<i>lnFD</i>	<i>lnFTEF</i>	<i>lnFD</i>
No. of instruments	51	51	30	30	17	17
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Significance level: ***1%, **5% and *10%. Figures in parentheses indicate robust standard errors.

Abbreviations: DCPS = domestic credit to private sector, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnGDP = natural log of Gross domestic product, RQ = regulatory quality, SMR = stock market return.

5.2 | Results for the World, Developed and Developing Economies

Table 5 reveals that FinTech equity funding flows are significantly negatively affected by their one-period lags for the world panel and developing economies covering all countries. Some unsuccessful FinTech equity investment initiatives by investors in the recent past might have a detrimental influence on their decision or willingness to present FinTech investments. Similarly, recent failed attempts in the past may make it difficult for fund seekers to acquire funding in the current period. Furthermore, overinvestment or overcommitment, high inflation rate, fears of a forthcoming recession and capital rationing by VCs in the immediate previous year may also reduce subsequent investments (Chen and Deng 2011). However, for FinTech deals, the results differ across world level, developed and developing economies. For world level and developed economies, the number of FinTech equity funding deals is significantly and positively affected by their previous year's values. Developed economies' thriving economic and regulatory climate, conducive to innovation, increases the number of FinTech deals, which may explain the flourishing ecosystem of FinTech startups in these countries over the last decade (Barnfield 2020; Lehr, Büttgen, and Bartsch 2021). For developing economies, we find a significantly negative effect of the previous year's funding flows on that of the current year. Unlike in developed countries, VCs often face more challenges and uncertainties whilst investing in startups in developing countries, pertaining to the economy and open innovation regulation, technology, cost and bureaucracy.

Table 5 reports that GDP positively affects FinTech equity funding flows across all estimations. FinTech equity funding increases by 3.94%, 3.63% and 6.49% for the world level, developed and developing countries, respectively, when GDP increases by 1%. This indicates that FinTech equity projects may represent attractive investment choices for VCs in countries with higher levels of economic growth or economy size because these countries are likely to offer a greater and expanding market and business opportunities. Therefore, our results are consistent with the existing literature (e.g., Claessens et al. 2018; Haddad and Hornuf 2019; Herck Giaquinto and Bortoluzzo 2020). The results further suggest that increases in domestic private-sector lending have a substantially negative impact on FinTech equity funding at the global level. Specifically, at the global level, a 1% increase in domestic credit to the private sector decreases the FinTech equity funding flows and deals by 0.14% and 0.03%, respectively, indicating that greater availability of private sector loans by conventional banks might make VC funding less attractive to firms because VC funding requires firms to sell their ownership to outside investors (Besley and Brigham 2008; Gitman and Zutter 2015; Haddad and Hornuf 2019). This is likely due to conventional financial institutions and other industries having an advantage in fund allocation over VC private fund providers, thanks to their physical branches and established customer trust. Thus, VC activities could be limited to countries where private-sector lending dominates the financing market. Nevertheless, in developing economies, increased domestic private-sector lending significantly boosts FinTech equity funding flows, contrary to full-sample results (i.e., a 1% increase in domestic private-sector lending increases the FinTech funding flows by 0.28%). One plausible reason is that the availability of

TABLE 6 | Estimations on FinTech equity funding and FinTech deals in Europe, Asia and the Rest of the World (RoW).

Variables	Europe			Asia			RoW		
	<i>lnFTEF</i>	<i>lnFD</i>	<i>lnFTEF</i>	<i>lnFD</i>	<i>lnFTEF</i>	<i>lnFD</i>	<i>lnFTEF</i>	<i>lnFD</i>	
<i>lnFTEF</i> L1.	-0.2295* (0.1327)		-0.9983** (0.3915)		-1.4880*** (0.2824)		-1.5355 (0.9964)		
<i>lnFD</i> L1.		0.3107** (0.1491)		-0.6625** (0.2867)					
<i>lnGDP</i>	3.1906 (2.3937)	0.1871 (0.4649)	20.3309*** (4.7129)	9.5000 (5.7386)	22.9100** (8.6685)	8.7918* (4.5120)			
<i>DCPS</i>	-0.0119 (0.0278)	0.0126 (0.0073)	0.0483 (0.0444)	0.0443 (0.0308)	0.2308* (0.1115)	0.0240 (0.0328)			
<i>RQ</i>	-1.9446 (2.3904)	-0.2819 (0.6292)	17.1188* (8.3560)	16.3703* (8.6007)	-5.9579 (12.3873)	-7.5552 (4.6282)			
<i>GII</i>	-0.0267 (0.1451)	0.0152 (0.0478)	-0.2370 (0.2163)	-0.1447 (0.1389)	-1.3767*** (0.4301)	-0.6084** (0.2271)			
<i>GI</i>	0.7684 (0.5175)	0.3008*** (0.1013)	-0.2703 (1.1281)	-0.6858 (0.7822)	2.0832** (0.8429)	1.1791* (0.6498)			
<i>SMR</i>	-0.0196** (0.0089)	-0.0037 (0.0025)	-0.0013 (0.0175)	0.00009 (0.0086)	-0.0960* (0.0505)	-0.0388 (0.0231)			
<i>ICTGE</i>	-0.1273 (0.4378)	0.1116 (0.0922)	0.1291 (0.4609)	0.1547 (0.3346)	2.5907 (2.9949)	0.9685 (1.0488)			
<i>IS</i>	0.1070 (0.0707)	0.0584** (0.0246)	-0.0401 (0.0952)	-0.0205 (0.0420)	-0.1271 (0.1281)	-0.0069 (0.0617)			
No. of countries	23	23	17	17	17	17			
No. of observations	113	125	71	82	57	64			
No. of groups	23	23	15	15	13	13			
<i>AR</i> (1)	-2.37**	-2.65***	-1.57	-0.35	-0.11	-0.89			
<i>AR</i> (2)	1.25	1.54	-1.32	-0.59	-1.27	-0.39			
Sargan test	97.16***	98.41***	10.33	6.13	1.22	1.55			
Hansen test	19.00	17.76	8.99	7.73	6.67	1.85			

(Continues)

TABLE 6 | (Continued)

Variables	Europe		Asia		RoW	
	<i>lnFTEF</i>	<i>lnFD</i>	<i>lnFTEF</i>	<i>lnFD</i>	<i>lnFTEF</i>	<i>lnFD</i>
No. of instruments	23	23	14	14	13	13
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Significance level: ***1%, **5% and *10%. Figures in parentheses indicate robust standard errors.

Abbreviations: DCPS = domestic credit to the private sector, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnGDP = natural log of Gross domestic product, RQ = regulatory quality, SMR = stock market return.

domestic private-sector lending is often considered an indicator of a country's financial development level (Herck Giaquinto and Bortoluzzo 2020). Foreign investors, including VCs, are likely to be more attracted to developing economies with higher financial development. Since traditional lenders like banks primarily support well-established enterprises (Gaies et al. 2021), greater availability of and accessibility to domestic lending in developing countries could complement VC funding by ensuring the financial flexibility of the invested startups over their lifecycle. This positive relationship highlights the mutually beneficial link between conventional and innovative financing channels. As traditional banking systems expand their lending operations, FinTech platforms can leverage this growth to boost investment and capital allocation in the economy.

Our result shows that the flows of FinTech equity funding are negatively affected by regulatory quality at the global level, whilst no significant effect is found for the number of FinTech deals. Additionally, we find no evidence of a significant effect of regulatory stringency when separately examining developed and developing economies. This reflects the variable's overall weaker influence on FinTech equity funding. However, the significance of the flow of equity funding is plausible because regulatory stringency could hamper or block open innovation culture and consequently slowdown the pace of innovative FinTech products and solutions (Pelkmans and Renda 2016). Given that the FinTech sector is heavily driven by financial innovation leveraging technology, countries with stricter financial regulations could create greater uncertainty and cost, subsequently discouraging potential innovators from investment and entry into the market (e.g., Claessens et al. 2018; Cumming and Schwienbacher 2018; Navaretti, Calzolari, and Pozzolo 2017; Zarrouk, El Ghak, and Bakhouché 2021). The economic importance of the FinTech industry resides in its impact on capital allocation decisions and investor behaviour caused by the regulatory landscape.

Global innovation appears to affect FinTech equity funding negatively. The result is consistent across FinTech funding flows and deals at the global level and for developing countries. This is somewhat counterintuitive because FinTech funding is likely to flow more to countries with greater capacity and success in innovation, which could be due to the inherently risky nature of innovation. Countries with higher global innovation levels are likely to have a more liberal and competitive market, leading to a higher failure rate (Parrilli and Radicic 2021). FinTechs are typically vulnerable to financial difficulties and fail because of a lack of protection for newly founded firms and a preference for working with well-known partners (Coussement et al. 2024). Furthermore, investments may dry up more easily, putting startups at risk of bankruptcy and failure. There is no assurance of a positive return if companies cannot develop new products in sufficient quantities at a sufficiently low cost (e.g., Hai et al. 2022; Morse, Fowler, and Lawrence 2007; Pisano and Teece 2007; Saliba de Oliveira et al. 2018). VCs will critically analyse environments before deciding to invest their funds (Yang et al. 2021). The arguments hold more strongly for developing economies because they often lack adequate regulatory protection and policy support for innovation-driven enterprises and solutions (Yang and Aldrich 2017).

We find that globalisation affects the flows of FinTech equity funding significantly and positively. The results are

broadly consistent across the global and developed economies (see Table 5) and in line with past studies (e.g., Aluko and Opoku 2022). The impact appears to be more consistent and stronger for developed economies, which could be attributed to the presence of more open and free-flowing markets, as well as a larger base of globally oriented entrepreneurs, typically found in developed nations, compared to developing economies (Potrafke 2015). A more globalised economy has a greater level of market and border openness, offering investors more control over their investment flows and taking business operations to a global level and enabling FinTech firms to obtain funds more easily, due to greater access to more investors and financing options.

We find consistent evidence that stock market returns affect FinTech equity funding significantly and negatively. At the global level, a 1% increase in stock market return decreases FinTech equity funding flows and deals by 0.03% and 0.01%, respectively. For developed economies, a 1% increase in stock market return decreases the funding flows by 0.02%. There could be two possibilities. First, investors might be more inclined towards investing in equity markets offering higher returns instead of putting money into high-risk startups or early-stage ventures such as FinTechs (Firth 1977; Özen and Tetik 2019). Second, a high return-generating market could also offer opportunities for many FinTechs with a successful business history to opt for public equity offerings instead of

TABLE 7 | Estimations on FinTech equity funding and FinTech deals on OECD and non-OECD countries.

Variables	OECD		Non-OECD	
	<i>lnFTEF</i>	<i>lnFD</i>	<i>lnFTEF</i>	<i>lnFD</i>
lnFTEF L1.	-0.2035* (0.1003)		-1.1588*** (0.1545)	
lnFD L1.		0.3752*** (0.1251)		-0.0753 (0.2642)
lnGDP	4.3865* (2.1764)	0.2660 (0.4255)	8.5959*** (2.6522)	0.5188 (0.9011)
DCPS	0.0105 (0.0213)	0.0061 (0.0051)	0.0100 (0.1479)	-0.0454 (0.0396)
RQ	-2.0640 (2.1473)	-0.1555 (0.5688)	-0.2263 (3.1160)	-0.4821 (0.8295)
GII	0.0958 (0.3104)	-0.0973 (0.0684)	-0.4774** (0.1944)	-0.1501** (0.0666)
GI	0.6998* (0.3763)	0.2160** (0.0962)	0.4453 (0.2638)	0.0387 (0.1184)
SMR	-0.0222** (0.0080)	-0.0016 (0.0027)	-0.0462** (0.0187)	-0.0155* (0.0087)
ICTGE	0.1615 (0.2549)	0.1024 (0.0646)	0.1349 (0.2056)	0.1324** (0.0594)
IS	0.0963** (0.0351)	0.0251** (0.0110)	0.1078* (0.0559)	0.0541** (0.0199)
No. of countries	31	31	26	26
No. of observations	149	162	92	109
No. of groups	30	30	21	21
AR (1)	-2.75***	-2.93***	-0.58	-0.51
AR (2)	1.26	1.64	-1.63	-1.49
Sargan test	126.65***	114.44***	16.87	79.83***
Hansen test	23.28	25.17	10.85	15.17
No. of instruments	27	27	19	20
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Note: Significance level: ***1%, **5% and *10%. Figures in parentheses indicate robust standard errors.

Abbreviations: DCPS = domestic credit to private sector, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnGDP = natural log of Gross domestic product, RQ = regulatory quality, SMR = stock market return.

TABLE 8 | Estimations on FinTech equity funding per capita and FinTech equity funding per deals in global, developed and developing countries.

Variables	World-level			Developed countries			Developing countries		
	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>	<i>lnFTEFFC</i>	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>	<i>lnFTEFFC</i>	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>	<i>lnFTEFFC</i>
<i>lnFTEFPC</i> L1.	-0.3359*** (0.1042)	-0.3749*** (0.0980)	-0.2019* (0.1155)				-1.2768*** (0.1405)		
<i>lnFTEFPD</i> L1.									
<i>lnGDP</i>	3.6756** (1.5341)	4.2589*** (1.3793)	4.1343* (2.0272)		3.5062* (1.7355)		6.3028* (3.2546)		6.7875** (2.5233)
<i>DCPS</i>	-0.0913** (0.0410)	-0.0968** (0.0470)	0.0088 (0.0163)		-0.0014 (0.0123)		0.3510** (0.1513)		0.1707** (0.0814)
<i>RQ</i>	-4.8924** (2.1975)	-4.6088** (2.2668)	-0.8504 (1.9742)		-1.8485 (1.7060)		1.7439 (2.8377)		-0.5245 (1.8469)
<i>GII</i>	-0.2001* (0.1037)	-0.1133 (0.0891)	0.0650 (0.1290)		0.0839 (0.0985)		-0.4869* (0.2650)		-0.3578* (0.2052)
<i>GI</i>	0.4170** (0.2065)	0.2895 (0.1878)	0.6303* (0.3243)		0.3149 (0.2781)		-0.0027 (0.2100)		0.1359 (0.2561)
<i>SMR</i>	-0.0368*** (0.0072)	-0.0224*** (0.0061)	-0.0180* (0.0089)		-0.0101 (0.0081)		-0.0119 (0.0115)		-0.0125 (0.0098)
<i>ICTGE</i>	0.3634* (0.2048)	0.1763 (0.1741)	0.2180 (0.1334)		0.1189 (0.1114)		-2.0784* (1.0952)		-1.1891** (0.5413)
<i>IS</i>	0.0705** (0.0304)	0.0038 (0.0236)	0.0975** (0.0456)		0.0325 (0.0332)		0.1657*** (0.0538)		-0.0047 (0.0504)
No. of countries	57	57	34		34		23		23
No. of observations	241	241	152		152		89		89
No. of groups	51	51	31		31		20		20
AR (1)	-2.63***	-3.25***	-2.57**		-3.14***		-1.96**		-1.81
AR (2)	0.55	0.02	0.79		0.27		-0.99		-1.66
Sargan test	173.14***	180.68***	131.19***		128.38***		14.87		26.62***
Hansen test	46.97	43.27	23.93		23.57		13.48		13.65

(Continues)

TABLE 8 | (Continued)

Variables	World-level		Developed countries		Developing countries	
	lnFTEFPD	lnFTEFPD	lnFTEFPD	lnFTEFPD	lnFTEFPD	lnFTEFPD
No. of instruments	51	51	30	30	19	18
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Significance level: ***1%, **5% and *10%. Figures in parentheses indicate robust standard errors. Abbreviations: DCPS = domestic credit to the private sector, GI = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFTEFPD = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of Gross domestic product, RQ = regulatory quality, SMR = stock market return.

going to the VCs. Consequently, these may lead to a reduction in financing flows for the FinTech industry. Nevertheless, they show no significance for developing countries. This might be attributed to the underdeveloped nature of stock markets in developing nations.

As expected, our results show that ICT goods export significantly and positively affect FinTech equity funding at the global level and in developed economies, consistent with past studies (Iman 2020; Luo et al. 2022). A 1% increase in ICT goods export increases the FinTech equity funding flows (deals) globally and for developed countries by 0.41% (0.13%) and 0.28% (0.12%), respectively. Generally, Greater ICT exports create more opportunities to develop and sell FinTech products globally, benefiting developed countries with lower trade costs and better market access. Robust ICT export industries are crucial for advancing and expanding the FinTech ecosystem by providing essential technology resources and skills to support FinTech firms. However, for developing nations, the association is significantly negative—1.47% reduction in FinTech equity funding flows for a 1% increase in ICT goods export—which could be attributed to the dominance of ICT goods and services exports by technology and ICT-enabled companies funded by alternative and traditional sources (e.g., banks).

We also show that the number of internet subscribers has a significantly positive effect on FinTech equity funding. Results are broadly consistent across all estimations for the flows of equity funding and the number of funding deals. A 1% increase in internet subscribers increases the FinTech funding flows (deals) at the global level, for developed and developing countries, by 0.08% (0.04%), 0.10% (0.03%) and 0.16% (0.06%), respectively. Communication networks are essential for the development and success of FinTech companies as they are basically technology companies offering financial products, services and solutions through digital channels (Cornelli et al. 2020). Increased internet access allows more people to use FinTech platforms for financing, payments and other financial activities, so the FinTech market expands (e.g., Feyen et al. 2021; Haddad and Hornuf 2019; Suryono, Budi, and Purwandari 2020). This is economically significant as it enhances financial inclusion and broadens access to financial services.

The Sargan and Hansen tests for all estimations suggest that our instruments are valid. The robustness of models is verified by the Arellano–Bond test results. AR(2) autocorrelations are absent, indicating no overidentifying limitations.

5.3 | Results for Europe, Asia and the Rest of the World

Table 6 shows the results for Europe, Asia and RoW samples, which are qualitatively consistent with previous full-sample results. For Europe and Asia, the number of FinTech equity funding deals is affected by the countries' previous years' deals in a significantly positive and negative way, respectively. However, for funding flows, we find a significantly negative effect of the lag effect. This may result from the

TABLE 9 | Estimations on FinTech equity funding per capita and FinTech equity funding per deals in Europe, Asia and the Rest of the World (RoW).

Variables	Europe			Asia			RoW		
	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>	<i>lnFTEFPC</i>	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>
<i>lnFTEFPC</i> L1.	-0.3031* (0.1497)	-0.3189** (0.1145)	-1.0064** (0.3936)	-0.6691** (0.2839)	-1.4857*** (0.2771)	-1.3729*** (0.2044)			
<i>lnFTEFPD</i> L1.									
<i>lnGDP</i>	2.9784 (2.0568)	4.0074* (2.1080)	20.0347*** (4.6574)	0.3132 (7.1283)	22.2924** (8.6401)	12.4037* (6.7399)			
<i>DCPS</i>	-0.0079 (0.0288)	-0.0169 (0.0243)	0.0487 (0.0445)	0.0159 (0.0490)	0.2294* (0.1103)	0.1772* (0.0900)			
<i>RQ</i>	-2.1150 (2.3399)	-1.7662 (2.3829)	17.1540* (8.3588)	2.8954 (8.5779)	-5.7217 (12.2165)	1.2681 (9.3302)			
<i>GII</i>	-0.0250 (0.1637)	-0.0058 (0.1270)	-0.2318 (0.2162)	-0.1136 (0.1910)	-1.3461*** (0.4258)	-0.7053** (0.3002)			
<i>GI</i>	0.6665 (0.4583)	0.4305 (0.4132)	-0.2607 (1.1178)	3.5665*** (1.1227)	2.0276** (0.8154)	0.8898* (0.4855)			
<i>SMR</i>	-0.0189* (0.0097)	-0.0098 (0.0079)	-0.0010 (0.0175)	0.0035 (0.0173)	-0.0944* (0.0497)	-0.0612 (0.0391)			
<i>ICTGE</i>	-0.1045 (0.4408)	-0.0848 (0.3598)	0.1200 (0.4627)	-0.0711 (0.1417)	2.4915 (2.9606)	1.3978 (2.2652)			
<i>IS</i>	0.1235* (0.0661)	0.0035 (0.0493)	-0.0403 (0.0956)	-0.1369 (0.1320)	-0.1275 (0.1243)	-0.1044 (0.0664)			
No. of countries	23	23	17	17	17	17			
No. of observations	113	113	71	71	57	57			
No. of groups	23	23	15	15	13	13			
<i>AR</i> (1)	-2.00**	-2.92***	-1.57	-0.36	-0.09	-0.04			
<i>AR</i> (2)	0.85	0.60	-1.32	-1.89	-1.27	-1.47			
Sargan test	95.34***	92.92***	10.31	13.02**	1.27	2.05			
Hansen test	20.48	18.77	8.99	7.28	6.74	9.29			

(Continues)

TABLE 9 | (Continued)

Variables	Europe			Asia			RoW		
	InFTEFPC	InFTEFPD	InFTEFPC	InFTEFPD	InFTEFPC	InFTEFPD	InFTEFPC	InFTEFPD	
No. of instruments	23	23	14	15	13	13	13	13	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Note: Significance level: ***1%, **5% and *10%. Figures in parentheses indicate robust standard errors. Abbreviations: DCPS = domestic credit to the private sector, GI = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, InFTEFPC = natural log of FinTech equity funding per capita, InFTEFPD = natural log of FinTech equity funding per deal, InGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

rising competition for VC investments in Europe, leading to an increasing number of deals and aggregate flows falling. Nevertheless, given that most of the countries in Asia are developing countries, previous failures in FinTech operations or agreements may negatively affect the current FinTech deals. We confirm the significant positive effects of GDP on the Asia and RoW panels. A 1% increase in GDP increases the funding flows and number of deals in RoW by 22.91% and 8.79%, respectively. In Asian countries, the funding flow increases by 20.33% when there is a 1% increase in GDP.

Similarly, for developing economies in RoW, we find that a 1% increase in domestic credit to the private sector increases FinTech equity funding flows by 0.23%. Contrary to the full-sample results, a 1% increase in regulatory quality increases the FinTech funding flows and number of deals in Asia by 17.12% and 16.37%, respectively. This signifies that regulation in the FinTech sector is creating trust amongst Asian investors.

Similar to the full-sample and developing countries' results, we find a significant and negative effect of global innovation on the FinTech agreements and funding flows in the RoW panel.

Furthermore, we find that the globalisation index significantly and positively affects FinTech equity funding for European countries and RoW. However, in the European panel, these results are significant for the number of FinTech deals, and the impact appears more consistent and stronger for the RoW panel. Our results are consistent because most economies included in the Europe and RoW panels are developed and more globalised, whilst higher globalisation may grant a country better access to global financial markets and investment opportunities. Results further suggest that stock market returns significantly and negatively affect the flows of FinTech equity funding in European countries and RoW. In Europe and RoW, a 1% increase in stock market return reduces the FinTech equity funding flows by 0.02% and 0.10%, respectively. Finally, in Europe, a 1% increase in internet subscribers boosts FinTech deals by 0.06%, highlighting the significance of digital connectivity in expanding people's access to investment opportunities and financial services.

5.4 | Results for OECD and Non-OECD Panels

Results of OECD and non-OECD panels (Table 7) are generally consistent with previous full-sample results. For OECD countries, the number of FinTech equity funding deals is significantly and positively affected by the previous years' values. However, across both the OECD and non-OECD panels, we find a significantly negative effect of the previous years' funding flows on that of the current year. Similar to the result at the global level, this could be caused by the high frequency of deals resulting from the increased rivalry for investment in the VC sector. We confirm significant positive effects of GDP for both OECD and non-OECD nations, with a 1% increase in GDP increasing the flow of funding by 4.39% and 8.60%, respectively. Nevertheless, contrary to the full-sample results, we find that increases in domestic private sector lending and regulatory quality do not substantially impact flows of FinTech equity funding in any of the panels. Similar to the results for global and developing countries, the global innovation index significantly and

negatively affects FinTech equity funding. The results are consistent for both the flows of FinTech funding and the number of funding deals at the non-OECD level. A 1% increase in global innovation reduces the funding flows and the number of deals by 0.48% and 0.15%, respectively. We further notice that globalisation only significantly and positively affects OECD countries' FinTech equity funding. Stock market returns significantly and negatively affect the FinTech equity funding in both OECD and non-OECD nations. In the non-OECD panel, a 1% rise in stock market returns reduces FinTech funding flows by 0.05% and funding deals by 0.02%, whilst in OECD nations, it decreases funding flows by 0.02%. Whilst the ICT goods export has a significantly positive impact on the number of FinTech agreements

in non-OECD countries only (0.13% deals increase for a 1% ICT goods export increase), the number of internet subscribers significantly and positively affects FinTech funding, and the impact appears more consistent and stronger for the non-OECD panel. For the OECD (non-OECD) panel, a 1% increase in internet subscribers increases the FinTech equity funding flows and deals by 0.10% (0.11%) and 0.03% (0.05%), respectively.

5.5 | Robustness Check

We perform robustness tests considering two alternative dependent variables (i.e., FinTech equity funding *per capita* and

TABLE 10 | Estimations on FinTech equity funding per capita and FinTech equity funding per deals on OECD, and non-OECD.

Variables	OECD		Non-OECD	
	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>	<i>lnFTEFPC</i>	<i>lnFTEFPD</i>
lnFTEFPC L1.	-0.2260** (0.1052)		-1.1199*** (0.1490)	
lnFTEFPD L1.		-0.3337*** (0.1010)		-1.2475*** (0.1643)
lnGDP	4.1673* (2.2109)	4.1193** (2.0975)	8.1942*** (2.5110)	8.3096*** (2.2211)
DCPS	0.0100 (0.0218)	0.0055 (0.0199)	0.0088 (0.1465)	0.0183 (0.1392)
RQ	-1.6964 (2.2521)	-2.8871 (1.9278)	-0.4579 (2.9460)	0.0265 (2.4961)
GII	0.0736 (0.2908)	0.3918 (0.2606)	-0.4805** (0.1889)	-0.3267 (0.2287)
GI	0.6323* (0.3120)	0.4250 (0.2813)	0.4289 (0.2596)	0.3944 (0.2575)
SMR	-0.0208** (0.0082)	-0.0160* (0.0083)	-0.0408** (0.0167)	-0.0231 (0.0135)
ICTGE	0.0956 (0.2485)	0.0502 (0.2011)	0.1087 (0.2028)	-0.0442 (0.2161)
IS	0.0982*** (0.0323)	0.0363 (0.0328)	0.0959* (0.0550)	-0.0253 (0.0459)
No. of countries	31	31	26	26
No. of observations	149	149	92	92
No. of groups	30	30	21	21
AR (1)	-2.57**	-2.82***	-0.38	-1.50
AR (2)	1.05	0.04	-1.65	-1.94
Sargan test	127.30***	117.30***	19.64	11.89
Hansen test	23.49	24.30	12.11	10.23
No. of instruments	27	27	20	19
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Note: Significance level: ***1%, **5% and *10%. Figures in parentheses indicate robust standard errors.

Abbreviations: DCPS = domestic credit to private sector, GI = globalization index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFTEFPC = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

FinTech equity funding *per deal*). Table 8 reports the results for the global, developed and developing economies, Table 9 reports the results for Europe, Asia and RoW and Table 10 reports the results for OECD and non-OECD panels. We do not detail the findings due to limited space. Overall, our results in this section confirm the robustness and reliability of previous results.

6 | Conclusion

Studies on the determinants of FinTech equity financing remain scarce. We fill the gap by uncovering the associations between FinTech equity funding flows/deals and different macroeconomic, regulatory, innovation, communication and trade openness-related factors. Using a dynamic panel (i.e., 1-step Diff-GMM) model on 57 nations from 2010 through 2020, we reveal various elements that could affect the evolution of FinTech equity capital and the number of FinTech deals. Results indicate that economic growth, globalisation, export of ICT goods and the number of active internet users had a favourable impact on FinTech equity financing worldwide, whilst domestic credit to the private sector, regulatory quality, global innovation and stock market returns had a negative consequence. In terms of the expansion of FinTech agreements or deals, we show that the number of FinTech agreements is positively affected by the export of ICT goods and the number of internet customers worldwide, whilst domestic credit to the private sector, global innovation and stock market returns had a negative impact at the global level.

We believe that this study addresses timely and significant issues. Entrepreneurs in FinTech firms and venture capitalists can gain insights into the factors influencing FinTech equity funding and the volume of agreements made by VC firms. Based on the findings, we propose several policy suggestions. Since FinTech equity funding thrives in a robust economic climate, nations with strong economies stand to benefit the most. To boost FinTech equity investment, nations, especially those with a healthy economy, should take appropriate steps to encourage VC firms' growth and financing. In countries with limited access to traditional banking services, setting up a FinTech equity fund and agreements can facilitate quicker financing. Underdeveloped and developing nations with limited conventional bank loans should foster an environment that supports FinTech equity funding and agreements. Authorities should implement a comprehensive policy framework to create a balanced FinTech industry whilst being mindful that overly restrictive regulations could hinder this emerging sector. Furthermore, innovations must be financing-friendly and commercially viable, and financial markets must be more internationalised. Moreover, the government should favour ICT exports, such as computers, peripherals and other ICT infrastructure equipment. Finally, internet bandwidth should be more affordable, especially in undeveloped and developing nations, to make smartphones and mobile networks more accessible to everyone.

This study certainly has limitations, and there is more work that could be done. First, we have only considered 57 countries due to limited data availability. As FinTech equity finance is still in its infancy, future research is necessary to gain a deeper understanding of FinTech equity funding with more country data. Second, this study does not address the

significance of FinTech equity capital as a potential predictor of forthcoming disruptive transformations inside the conventional banking sector. Third, traditional banks are improving their risk management techniques and adapting to borrowers' evolving needs by embracing innovation and forming collaborations with FinTechs. It will be interesting for future research to examine whether different levels of FinTech adoption might affect traditional banks' credit risk assessment and lending behaviour.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Appendix A

Details of the Estimation Process

Estimations are conducted in six stages based on data availability. First, at the worldwide level, 57 countries are considered in the sample based on Cornelli et al. (2021). Second, 31 OECD member nations are considered. Third, 23 European countries and 17 Asian countries are separately considered. We also separately explore the determinants for developed and developing countries. Moreover, we investigate the variables for non-OECD nations and the RoW (other than Asia and Europe). The detailed list and distribution of the sample countries are presented in Table C1. We ensure that the estimates are not affected by too many instruments.

Appendix B

Summary Statistics of Different Categories

TABLE B1 | Summary statistics of OECD countries.

Variables	Obs	Mean	Std. Dev.	Min	Max
FTEF	313	2,246,000,000	10,250,000,000	40,000	114,500,000,000
lnFTEF	313	18.146	2.919	10.597	25.464
FD	330	75.006	230.379	1	1837
lnFD	330	2.877	1.547	0	7.516
FTEFPC	341	47.885	159.257	0	1587.816
lnFTEFPC	313	1.431	2.712	-7.04	7.37
FTEFPD	313	16,126,965	35,611,190	5714.286	394,000,000
lnFTEFPD	313	15.151	1.893	8.651	19.793
GDP	341	1,577,000,000,000	3,282,000,000,000	19,690,000,000	21,400,000,000,000
lnGDP	341	27.066	1.46	23.703	30.696
DCPS	319	101.816	43.633	23.329	216.334
RQ	341	1.329	0.482	-0.01	2.09
GII	248	51.532	8.443	30.8	68.4
GI	310	81.839	6.74	59.381	90.906
SMR	341	6.574	13.532	-26.942	71.742
ICTGE	310	5.328	5.027	0.098	27.843
IS	324	80.197	13.745	31.05	98.822

Abbreviations: DCPS = domestic credit to private sector, FD = FinTech deal, FTEF = FinTech equity funding, FTEFPC = FinTech equity funding per capita, FTEFPD = FinTech equity funding per deal, GDP = gross domestic product, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnFTEFPC = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

TABLE B2 | Summary statistics of non-OECD countries.

Variable	Obs	Mean	Std. Dev.	Min	Max
FTEF	246	660,200,000	2,782,000,000	10,000	27,950,000,000
lnFTEF	246	16.57	3.07	9.21	24.05
FD	262	28.65	69.31	1	498
lnFD	262	2.07	1.51	0	6.21
FTEFPC	286	12.74	72.46	0	957.39
lnFTEFPC	246	-1.14	2.93	-9.11	6.86
FTEFPD	246	12,312,638	50,066,680	3333	667,000,000
lnFTEFPD	246	14.38	2.10	8.11	20.32
GDP	286	892,300,000,000	2,159,000,000,000	9,036,000,000	14,700,000,000,000
lnGDP	286	26.32	1.51	22.92	30.32
DCPS	266	70.30	53.90	10.25	258.45
RQ	275	0.13	0.76	-1.07	2.26
GII	208	36.13	9.31	20.10	59.80
GI	260	66.35	8.22	49.60	84.47
SMR	264	9	23.00	-49.67	153.38
ICTGE	251	10.00	14.26	0	56.65
IS	252	50.74	25.91	2.90	100

Abbreviations: DCPS = domestic credit to private sector, FD = FinTech deal, FTEF = FinTech equity funding, FTEFPC = FinTech equity funding per capita, FTEFPD = FinTech equity funding per deal, GDP = gross domestic product, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnFTEFPC = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

TABLE B3 | Summary statistics of Asian countries.

Variable	Obs	Mean	Std. Dev.	Min	Max
FTEF	165	954,900,000	3,345,000,000	50,000	27,950,000,000
lnFTEF	165	17.52	2.94	10.82	24.05
FD	175	39.06	82.43	1	498
lnFD	175	2.35	1.63	0	6.21
FTEFPC	187	18.79	88.74	0	957.39
lnFTEFPC	165	-0.25	2.87	-7.80	6.86
FTEFPD	165	16,916,829	60,120,393	40,000	667,000,000
lnFTEFPD	165	15.03	1.86	10.60	20.32
GDP	187	1,432,000,000,000	2,750,000,000,000	27,130,000,000	14,700,000,000,000
lnGDP	187	26.90	1.42	24.02	30.32
DCPS	171	99.48	54.92	15.39	258.45
RQ	187	0.43	0.83	-0.72	2.26
GII	136	41.84	11.01	22.30	59.80
GI	170	69.52	7.77	53.16	84.47
SMR	187	6	16.45	-33.93	64.76
ICTGE	167	15.96	14.85	0	56.65
IS	171	59.75	27.50	7.50	100

Abbreviations: DCPS = domestic credit to private sector, FD = FinTech deal, FTEF = FinTech equity funding, FTEFPC = FinTech equity funding per capita, FTEFPD = FinTech equity funding per deal, GDP = gross domestic product, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnFTEFPC = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

TABLE B4 | Summary statistics of European countries.

Variables	Obs	Mean	Std. Dev.	Min	Max
FTEF	225	1,029,000,000	4,452,000,000	40,000	56,980,000,000
lnFTEF	225	17.803	2.868	10.597	24.766
FD	240	38.504	86.762	1	652
lnFD	240	2.631	1.407	0	6.48
FTEFPC	253	54.062	180.948	0	1587.816
lnFTEFPC	225	1.476	2.669	-5.326	7.37
FTEFPD	225	17,681,566	40,879,127	5714.286	394,000,000
lnFTEFPD	225	15.037	1.994	8.651	19.793
GDP	253	886,600,000,000	1,001,000,000,000	9,036,000,000	3,960,000,000,000
lnGDP	253	26.672	1.561	22.924	29.008
DCPS	249	95.411	38.154	33.005	193.04
RQ	253	1.285	0.562	-0.52	2.05
GII	184	51.816	8.139	34.9	68.4
GI	230	83.752	5.665	69.511	90.906
SMR	253	6.743	14.826	-49.67	71.742
ICTGE	230	4.818	4.24	0.223	30.866
IS	250	81.231	12.408	39.82	98.822

Abbreviations: DCPS = domestic credit to private sector, FD = FinTech deal, FTEF = FinTech equity funding, FTEFPC = FinTech equity funding per capita, FTEFPD = FinTech equity funding per deal, GDP = gross domestic product, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnFTEFPC = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

TABLE B5 | Summary statistics of the Rest of the World (RoW).

Variable	Obs	Mean	Std. Dev.	Min	Max
FTEF	169	2,818,000,000	12,990,000,000	10,000	114,500,000,000
lnFTEF	169	16.92	3.42	9.21	25.46
FD	177	91.42	298.71	1	1837
lnFD	177	2.53	1.75	0	7.52
FTEFPC	187	14.87	45.53	0	348.68
lnFTEFPC	169	-0.72	3.30	-9.11	5.85
FTEFPD	169	7733845.60	14,169,077	3333.33	100,000,000
lnFTEFPD	169	14.31	2.14	8.11	18.42
GDP	187	1,609,000,000,000	4,238,000,000,000	26,560,000,000	21,400,000,000,000
lnGDP	187	26.62	1.58	24	30.70
DCPS	165	63.10	55.62	10.25	216.33
RQ	176	0.47	0.91	-1.07	2.09
GII	136	37.29	10.89	20.10	61.70
GI	170	67.88	9.91	49.60	84.25
SMR	165	10.54	23.98	-39.25	153.38
ICTGE	164	2.36	4.29	0	20.17
IS	155	53.19	25.05	2.90	96.50

Abbreviations: DCPS = domestic credit to private sector, FD = FinTech deal, FTEF = FinTech equity funding, FTEFPC = FinTech equity funding per capita, FTEFPD = FinTech equity funding per deal, GDP = gross domestic product, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnFTEFPC = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

TABLE B6 | Summary statistics of developed economics.

Variables	Obs	Mean	Std. Dev.	Min	Max
FTEF	341	2,115,000,000	9,836,000,000	40,000	114,500,000,000
lnFTEF	341	18.071	2.983	10.597	25.464
FD	359	71.173	221.621	1	1837
lnFD	359	2.777	1.606	0	7.516
FTEFPC	374	52.56	163.003	0	1587.816
lnFTEFPC	341	1.68	2.628	-6.066	7.37
FTEFPD	341	17,755,138	49,397,007	5714.286	667,000,000
lnFTEFPD	341	15.179	1.908	8.651	20.318
GDP	374	1,421,000,000,000	3,167,000,000,000	9,036,000,000	21,400,000,000,000
lnGDP	374	26.824	1.578	22.924	30.696
DCPS	341	107.411	46.39	22.289	258.45
RQ	374	1.383	0.472	-0.08	2.26
GII	272	51.996	7.953	30.8	68.4
GI	340	81.663	6.285	65.34	90.906
SMR	363	6.103	13.427	-33.929	71.742
ICTGE	338	7.32	9.744	0.002	56.645
IS	357	81.975	11.488	41	100

Source: Authors' computations.

Abbreviations: DCPS = domestic credit to private sector, FD = FinTech deal, FTEF = FinTech equity funding, FTEFPC = FinTech equity funding per capita, FTEFPD = FinTech equity funding per deal, GDP = gross domestic product, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnFTEFPC = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

TABLE B7 | Summary statistics of developing economics.

Variables	Obs	Mean	Std. Dev.	Min	Max
FTEF	218	661,800,000	2,924,000,000	10,000	27,950,000,000
lnFTEF	218	16.483	2.995	9.21	24.054
FD	233	28.79	71.679	1	498
lnFD	233	2.118	1.462	0	6.211
FTEFPC	253	1.239	3.876	0	44.158
lnFTEFPC	218	-1.857	2.451	-9.11	3.788
FTEFPD	218	9275903.6	28,204,377	3333.333	342,000,000
lnFTEFPD	218	14.24	2.07	8.112	19.649
GDP	253	1,034,000,000,000	2,272,000,000,000	26,560,000,000	14,700,000,000,000
lnGDP	253	26.582	1.441	24.003	30.32
DCPS	244	59.64	43.657	10.247	182.433
RQ	242	-0.122	0.424	-1.07	0.84
GII	184	33.435	6.371	20.1	54.8
GI	230	64.59	7.264	49.598	81.393
SMR	242	9.721	23.664	-49.67	153.379
ICTGE	223	7.562	11.563	0.0000643	49.018
IS	219	43.399	21.801	2.9	89.555

Abbreviations: DCPS = domestic credit to private sector, FD = FinTech deal, FTEF = FinTech equity funding, FTEFPC = FinTech equity funding per capita, FTEFPD = FinTech equity funding per deal, GDP = gross domestic product, GI = globalisation index, GII = global innovation index, ICTGE = ICT goods export, IS = internet subscribers, lnFD = natural log of FinTech deal, lnFTEF = natural log of FinTech equity funding, lnFTEFPC = natural log of FinTech equity funding per capita, lnFTEFPD = natural log of FinTech equity funding per deal, lnGDP = natural log of gross domestic product, RQ = regulatory quality, SMR = stock market return.

Appendix C
List of Countries Considered

TABLE C1 | List of countries considered in this research.

World Level										
Argentina	Australia	Austria	Belgium	Brazil	Canada	Chile	China	Colombia	Denmark	
Egypt	Estonia	Finland	France	Germany	Hong Kong SAR	India	Indonesia	Ireland	Israel	
Italy	Japan	Jordan	Kenya	Latvia	Lebanon	Lithuania	Luxembourg	Malaysia	Malta	
Mexico	Netherlands	New Zealand	Nigeria	Norway	Pakistan	Peru	Philippines	Poland	Portugal	
Russia	Saudi Arabia	Singapore	South Africa	South Korea	Spain	Sweden	Switzerland	Tanzania	Thailand	
Turkey	Uganda	United Arab Emirates	United Kingdom	United States	Uruguay	Vietnam				
Developed countries										
Australia	Austria	Belgium	Canada	Chile	Denmark	Estonia	Finland	France	Germany	
Hong Kong SAR	Ireland	Israel	Italy	Japan	Latvia	Lithuania	Luxembourg	Malta	Netherlands	
New Zealand	Norway	Poland	Portugal	Saudi Arabia	Singapore	South Korea	Spain	Sweden	Switzerland	
United Arab Emirates	United Kingdom	United States	Uruguay							
Developing Countries										
Argentina	Brazil	China	Colombia	Egypt	India	Indonesia	Jordan	Kenya	Lebanon	
Malaysia	Mexico	Nigeria	Pakistan	Peru	Philippines	Russia	South Africa	Tanzania	Thailand	
Turkey	Uganda	Vietnam								
Asia										
China	Hong Kong SAR	India	Indonesia	Israel	Japan	Jordan	Lebanon	Malaysia	Pakistan	
Philippines	Saudi Arabia	Singapore	South Korea	Thailand	United Arab Emirates	Vietnam				
Europe										
Austria	Belgium	Denmark	Estonia	Finland	France	Germany	Ireland	Italy	Latvia	
Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Russia	Spain	Sweden	
Switzerland	Turkey	United Kingdom								

(Continues)

