

# Issuer Composition and Stock Market Growth

*Djeneba Doumbia*

*Imtiaz Ul Haq*

*Valentina Saltane*



**WORLD BANK GROUP**

International Finance Corporation

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## Abstract

Does issuer composition change as stock markets grow, and, if so, how? An increase in market capitalization may be driven by growth on the intensive or extensive margin. Such growth may also influence the level of market concentration and diversity among listed firms. Using a novel dataset, this paper examines how the number, concentration, and sectoral diversity of issuers change as domestic stock markets grow, with a focus on low- and middle-income countries. The results show that an increase in stock market

capitalization tends to be associated with only growth on the intensive margin. Greater market activity, however, is linked to entry of new issuers and for low- and middle-income countries, also to marginally lower market concentration. However, there is no evidence that sectoral diversity changes with market size or activity. These findings have important implications for firm financing as stock markets may not necessarily become more inclusive as they grow.

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**Djeneba Doumbia<sup>1</sup>**

The World Bank

**Imtiaz Ul Haq**

International Finance Corporation

**Valentina Saltane**

The World Bank

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## 1. Introduction

Capital markets are a crucial source of external financing for local firms to grow. Many firms, especially in low- and middle-income countries, often tend to rely on bank borrowing, which is typically more restrictive in terms of amount, tenor, and risk tolerance. There is also little flexibility in the type of financing available via banks, often limited to traditional debt loans, which may not meet the more specific financing needs of firms. As a result, many firms may be unable to access much needed financing, hence limiting the rate and quality of firm growth.

Capital markets can play a critical role in addressing this financing gap as they are better positioned to cater to a wider range of financing needs through a variety of instruments spanning equity, quasi-equity, debt, and derivatives. Past literature suggests that stock markets tend to be better at improving liquidity and trading idiosyncratic risk (Levine, 1997). By facilitating trading of securities in secondary markets, capital markets reduce liquidity risk by allowing investors to access their savings if needed, while allowing firms permanent access to capital. This encourages channeling of capital into otherwise illiquid investments such as long-term bonds and equity, expanding the investible universe. Stock markets also allow better trading and reduction of idiosyncratic risk (through diversification) across firms, industries, and sectors. This enables investors to pursue high-risk investments which may otherwise go unfunded, as well as encourage issuer diversity due to demand for uncorrelated investments. Furthermore, capital markets also tend to attract a broader pool of investors, which have varying investment horizons, risk appetites and investment objectives. These factors can potentially encourage a wider range of issuers to participate in stocks markets as they grow.

However, it is not clear to what extent stock markets have attracted a broader range of firms as they have grown. There is limited empirical evidence on how issuer composition has evolved on this front. Stock market growth may result from growth at either an extensive (i.e., new issuers participating in the market) or an intensive margin (i.e., existing issuers raising further financing). There are some studies (Brown et al., 2017; Manganelli and Popov, 2015; Cortina et al., 2018) suggesting stock markets attract firms that may be otherwise unable to raise funds. However, there is no systematic evidence of the change in issuer composition across countries as stock market activity expands (Didier et al., 2016).

This study addresses this knowledge gap and contributes to the existing literature by examining how issuer composition evolves as stock markets grow. In particular, the paper examines whether growth is driven by an intensive or extensive margin. Furthermore, it investigates if new entrants differ from existing issuers. If stock markets are working effectively to address a variety of financing needs, then one may expect greater diversity in issuers with growth. While issuer diversity can be measured along several dimensions, this study focuses on sectoral diversity due to data availability. Lastly, increasing participation of firms, diverse or not, in the stock market

may not necessarily translate to improved access to financing if market concentration remains high. Hence, this study also examines if and how concentration changes as markets grow.

Understanding issuer composition is important to gauge how effective capital markets are in meeting the range of financing needs across the economy. Additionally, a more inclusive market can be beneficial in itself, providing further motivation to study the topic. For example, it can help to improve capital market resilience (Xing, 2004). Volatility in the market may increase if there are only a handful of dominant firms or if listed firms are concentrated in just a few sectors. Lack of a broad and diverse issuer base also makes capital markets less attractive to investors as it becomes more difficult to achieve low-cost diversification - one of the key advantages of capital markets. Moreover, it has implications for the real economy as research shows that equity markets are essential in providing financing to more innovative and high-growth firms as well as longer-term projects (Didier et al., 2020; Bae et al., 2021). When stock markets are restrictive, such firms and projects are unable to get funding, which in turn stifles innovation and productivity in the economy.

This paper studies the relationship between stock market growth and changes in issuer composition. Stock market growth is captured along two dimensions: market size (proxied by stock market capitalization) and market activity (proxied by trading activity and stock turnover ratio). We study the relationship of these market growth indicators with different aspects of issuer composition, which include the number of listed firms, issuer concentration, and sectoral diversity. Additionally, we examine the number and average size of initial and seasoned equity offerings to understand how equity issuances change as stock markets grow.

Our paper relies on a novel dataset assembled by the International Finance Corporation (IFC) that captures stock market data from over 150 countries for the period 2015-2020. We employ a cross-country fixed effects panel to uncover relationships between stock market growth and issuer composition. Our results show that stock market capitalization, often the most popular headline indicator for stock market development, does not necessarily reflect broader firm participation. Instead, a growing stock market tends to be related to an increase in the number and size of seasoned equity offerings, indicating growth at the intensive margin. Greater trading activity, however, is associated with entry of new issuers in the stock market.

These findings also hold for a subsample of only low- and middle-income countries. For this group, the paper additionally finds that higher stock turnover is related to lower market concentration, though the magnitude is marginal. This result is of particular relevance given that less developed markets are more likely to be dominated by a few firms. Such markets are also more likely to have a high concentration of listed firms in a handful of industries. Additionally, we examine the sectoral diversity of equity issues but do not find any evidence that this improves as stock markets increase in size and activity. It is important to note that our results do not capture causal

relationships but rather associations between these important variables. Nevertheless, it offers preliminary evidence and builds motivation for further research.

This paper contributes to the existing literature on capital market development by shedding light on how issuer composition changes as stock markets grow. Our findings have important implications for policy makers seeking to improve access to financing for firms. A broad and diverse set of issuers reflects a well-functioning stock market, one that is able to meet various financing needs in the underlying economy. As our results show, however, this may not naturally follow capital market growth. Our findings therefore highlight the need to go beyond headline growth indicators to ensure stock markets are more inclusive on the issuer side. On this front, it may be worth focusing on market liquidity, especially in low- and middle-income countries. For sectoral diversity, however, our results suggest the need to have more targeted measures that go beyond market size and liquidity.

The remainder of the paper is structured as follows. Section 2 provides a literature review. Section 3 and section 4 describe the data and methodology, respectively. Section 5 presents empirical results and section 6 provides concluding remarks.

## **2. Literature review**

Empirical research examining the relationship between issuer composition and stock market growth is limited. There is some related research, however, that studies aspects of issuer composition. For example, Bae et al. (2021) use three decades of stock market capitalization data of firms listed on domestic stock exchanges in 47 countries to examine the relationship between stock market concentration and a number of economic outcomes, such as competition, innovation, and economic growth. Their results indicate that highly concentrated stock markets, especially those dominated by a small number of large and successful firms, are associated with less efficient capital allocation, sluggish initial public offerings and innovation activity, as well as slower economic development.

Literature on how issuer composition evolves as capital markets develop in low- and middle-income countries is even scarcer. There is some evidence that issuer composition is related to countries' economic development, with Beck et al. (1999) finding that high-income countries tend to have deeper, more active, and more diverse stock markets. Country-specific studies include Black et al. (2012), who find that the initial increased diversification of issuers in Australia's capital markets, especially in the case of a sectoral shift from non-financial corporations to bank issuers, was largely induced by the 1980s deregulation of the banking system followed by the introduction of a floating exchange rate and abolition of capital controls. Post 1980s, the uptake of private issuances was mostly driven by increased issuance of bonds by commercial banks. In the

context of the Chilean capital market, Cifuentes et al. (2002) argue that debt issuer diversification in the country occurred largely due to a favorable macroeconomic environment, which made it more attractive to issue local currency denominated debt. Another important factor was found to be the expansion of the institutional investor base, especially pension funds and insurance firms, that provided stable demand for existing and future local issuers. Moreover, regulatory reforms aimed at deepening local capital markets improved market liquidity and attracted SME participation.

Some literature (Brown et al., 2017; Manganelli, 2010; Cortina et al., 2018) is suggestive of capital market expansion at the extensive margin, as capital markets attract firms that are otherwise unable to raise funds. These may include firms that are younger, smaller, riskier, those with high research and development expenses, lower traditional collateral, and greater financial constraints. For instance, a number of studies show that countries with greater capital market development have a higher share of younger, smaller, and innovative listed firms compared to more bank-based countries (Didier et al., 2020). Cortina et al. (2018) find that with the growth in capital-raising activity in the Arab region, an increasing number of firms have been using equity, bond, and syndicated loan markets to obtain financing.

Some evidence suggests that financial development leads to greater diversity in the real economy. For instance, Manganelli and Popov (2015) studied whether international differences in financial market depth can be mapped to country variations in sectoral diversification. Their results show that more developed credit markets are associated with faster convergence to the optimally diversified benchmark. Analyses with measures of stock market and bond market depth yield similar results. However, there is no systematic evidence of the change in either equity or bond issuer composition across countries as capital market activity expands (Didier et al. 2016).

There is mixed evidence that issuer composition in other capital markets, such as that for bonds, varies across different levels of market development. Tendulkar (2015) finds that emerging markets with relatively large corporate bond markets exhibit higher issuer diversity across the financial and non-financial split, though financial issuers typically continue to dominate issuances. Similarly, Abraham et al. (2021) find that growth in domestic bond financing in East Asia was accompanied by an expansion on the extensive margin, which was driven by smaller firms using capital markets to obtain financing. However, Shimizu (2018) finds that corporate bond issuers in Asian capital markets tend to exhibit low sectoral diversity even in more developed corporate markets, with banking and infrastructure being the most represented sectors.

### **3. Data**

To analyze the relationship between issuer composition and stock market growth, this paper uses a novel dataset assembled by the International Finance Corporation (IFC) on capital markets. This

unique global dataset provides comprehensive coverage for more than 50 market indicators grouped into five main thematic areas - government and corporate bonds, equity, institutional investors, and sustainability over the period 2015-2020. The construction methodology of the IFC capital markets database includes data collection from both primary and secondary sources. Primary data was collected through desk research using reports of local stock exchanges, stock market regulators, central banks, and other reports on country specific stock markets published by independent bodies. Most of the secondary data collection came from a commercial data provider – Refinitiv – as well as from other prominent sources such as the World Federation of Exchanges (WFE), Organization for Economic Cooperation and Development (OECD), African Development Bank (AfDB), the World Bank Group (WBG), and Asian Development Bank (ADB).

Our sample covers over 150 countries across the globe in the period 2015-2020. In addition to the IFC’s capital markets database, the paper leverages the World Bank’s World Development Indicators (WDI), the World Governance Indicators (WGI) and the International Country Risk Guide (ICRG) databases.

### ***Capturing issuer composition***

The study relies on the following variables from the IFC capital market database that capture changes in issuer composition:

- *Total number of listed firms* – measured by the total number of companies listed on a stock market. This captures the market depth, indicative of the barriers to entry for public stock markets.
- *Share of listed domestic firms* – measured by the share of domestic companies listed on a local stock market as a portion of the total firms listed. A higher share of listed domestic companies suggests that markets are more accessible for local firms.
- *Sectors* – data are also classified across seven sectors: financials, agriculture, extractives, manufacturing, construction, utilities, others.
- *Share of market capitalization of the top 10 largest domestic companies* – captures the level of market concentration. A higher value indicates that the stock market is highly concentrated with a few large firms accounting for a higher share of the total value of market capitalization.



To further understand extensive and intensive growth, we breakdown issuances into the number and average issuance size. For this purpose, we also include the following:<sup>2</sup>

- *Average IPO issuance size* – defined as the average size (in USD) of new equity listings on a stock market by companies that have previously not been listed on the stock market.
- *Number of Seasoned Equity Offerings (SEOs)* – defined as the total number of equity issuances on the stock market by companies that have previously been listed on a stock market. This captures growth on the extensive margin.
- *Average SEO issuance size* – defined as the average size (in USD) of equity listings on a stock market by companies that have previously been listed on the stock market.

### ***Measuring stock market growth***

We measure stock market growth along two dimensions: market size and activity. Market size is measured by equity market capitalization as a share of GDP with a larger value indicating a larger market. Market activity reflects liquidity in the market (Levine and Zervos, 1996) and is captured via two variables: total value traded and stock market turnover ratio. The former is measured as the stock market total value traded as a share of GDP. The latter is a ratio which divides total value of shares traded by the total stock market capitalization. Definitions and summary statistics for our dependent and independent variables of interest are included in Table A-7 and Table A-8 in the annex.

### ***Main control variables***

The paper controls for macroeconomic and political factors that may impact the development of stock markets and potentially issuer composition. This subsection discusses the main control variables and theoretical underpinnings of their inclusion in our analysis.

- *Foreign direct investment (FDI), net inflows (% of GDP)* – is used as a proxy for international financial integration (Edison et al., 2002; and Taghizadeh-Hesary et al., 2019). As capital markets of emerging economies grow and provide higher returns, FDI has become a large proportion of the total investment in these markets, leading to greater depth and liquidity. For instance, Claessens et. al. (2001) find that FDI is positively correlated with stock market capitalization as well as stock value traded.
- *Domestic credit to private sector by commercial banks (% of GDP)* – refers to the financial resources provided to the private sector by financial institutions through loans that must be repaid. A well-functioning banking sector is often viewed as a precursor to the development of stock markets. Research has found that investors are more likely to invest

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<sup>2</sup> The number of IPOs is primarily captured by the first difference of total number of listed firms, so this is not included additionally.

in a company's securities when it has a good and long-standing track record of bank borrowing (Rojas-Suaraz, 2014). Some studies find a positive relationship between domestic credit to the private sector as a share of GDP and stock market capitalization as a share of GDP (e.g., Bayraktar, 2014; and Ho et al., 2019). Moreover, the availability of financing across sectors influences how sectoral allocation in the real economy is linked to that in equity issuances.

- *Sectoral value added* – captured by three indicators: agriculture, industry, and services value added as a share of GDP. We include these controls as cross-country differences in the structure of an economy may be reflected in the sectoral diversity of equity issuances in capital markets.
- *Political stability and absence of violence/terrorism* – is used as a proxy for political stability. Stable political institutions and the absence of violence are a prerequisite for the development of capital markets. Various studies find a positive link between a stable political environment/low political risk and stock market development (Bayar, 2016; Barna, and Nachescu, 2018; and BIS, 2019).
- *Investment profile* – assesses factors affecting the risk to investment via three dimensions: viability of contracts, repatriation of profits and payment delays. Previous studies found that factors influencing investment decisions such as contract enforcement, investor protection, shareholder rights, predictable insolvency procedures can support capital market development (Acharya et al., 2019; and Claessens et al., 2002).
- *Economic risk rating* – assesses a country's current economic strengths and weaknesses. It has been widely established that macroeconomic stability promotes capital market development (e.g., Bayraktar, 2014; Ho, 2019; and De la Torre et. al., 2008).

Table A-9 and Table A-10 in the annex provide definitions, data sources and summary statistics of these variables.

#### 4. Methodology

To answer the main research question, the paper relies on the following panel regression model as the basis of the empirical strategy:

$$IssuerComposition_{it} = \beta StockMarket_{it-1} + \delta X_{it-1} + \alpha_i + \mu_t + \varepsilon_{it} \quad (1)$$

Where  $IssuerComposition_{it}$  is a vector of variables capturing the composition of issuers in the equity market in country  $i$  at time  $t$ . These include, as defined previously: total number of listed firms, share of domestic firms (as percentage of total listed firms in domestic market), and a concentration indicator (share of market capitalization of top 10 largest domestic companies). To further break down intensive and extensive growth, we also include as the outcome variables in

equation (1) the following variables: average issuance size of IPOs, number of SEOs, and average issuance size of SEOs.  $StockMarket_{it-1}$  represent measures of stock market growth – based on market size and activity/liquidity – at time  $t - 1$ . All the dependent and the main independent variables are in logarithmic form.  $\beta$  is our coefficient of interest.  $X$  is a set of control variables (see below for more details) that include net FDI inflows in percent of GDP, political stability and absence of violence, investment profile, as well as economic risk rating. Political stability is added as a control in models (1)-(3) and (7)-(9), while the investment profile variable is included as the alternative control in models (4)-(6) and (10)-(12).

Furthermore, economic risk rating is used as a third alternative to political stability and investment profile, results for which are reported in the Annex. The definitions of the different variables and data sources are presented in Section 3. All explanatory variables as well as all the controls are lagged by one year.<sup>3</sup> Country-specific effects are indicated by  $\alpha_i$ ;  $\mu_t$  is time-specific effects; and  $\varepsilon_{it}$  is the time-varying error term. The incorporation of country and year fixed effects allow to purge estimates from the effect of unobservable global trends and unobservable country-specific time-invariant institutional influences; it also allows to isolate the within-country effect of stock market development. Note that the results are interpreted as conditional correlations rather than causal effects, as data limitations do not allow controlling for all unobservable variables.

In addition, this paper examines the relationship between sectoral diversity in the stock market and stock market growth as explained by equation (2):

$$SectorDiversity_{it} = \beta StockMarket_{it-1} + \delta X_{it-1} + \alpha_i + \mu_t + \varepsilon_{it} \quad (2)$$

$SectorDiversity_{it}$  stands for a vector of two indicators measuring the sectoral diversity and both indicators are in logarithm. First, we rely on a diversity GINI coefficient that is based on the same concept as the income GINI coefficient commonly found in literature (equation (3)).

$$Diversity\ GINI_t = \frac{n}{2(n-1)} \left( \sum_{i=1}^n \left| \frac{1}{n} - w_{i,t} \right| \right) \quad (3)$$

Where  $n$  is the number of sectors (seven in our case: financials, agriculture, extractives, manufacturing, construction, utilities, others) and  $w_{i,t}$  is the proportion of equity issuances (by amount raised) in a certain sector in year  $t$ .

$Diversity\ GINI_t$  measures the dispersion of the underlying variable from a uniform distribution. Note that a uniform distribution is only used as a reference point to calculate dispersion across sectors (similar to GINI coefficient's application in measuring income inequality); the paper does not assume that this would be an expected or desirable distribution. In this paper, we examine how equity issuances (both IPOs and SEOs) are dispersed over seven industry sectors by measuring the

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<sup>3</sup> We also use two-year lags for robustness checks (results unreported) and observe that results remain qualitatively similar.

Euclidean distance from an equal weighting across the sectors. Our GINI coefficient reflects the area under the Lorenz curve of the actual distribution and the line of equality. The lower its value, the more equally equity issuances are distributed across sectors. A value of zero indicates that equity issuances are equally distributed across the seven sectors while a value of one indicates completely unequal distribution (i.e., all issuances are concentrated in one sector only).

As an alternative measure, we also compare the distribution across financial versus non-financial sectors by using a second sectoral diversity indicator defined as the proportion of issuances (by amount raised) in the non-financial sector (equation (4)).

$$Proportion_{non-financial} = \frac{Issuances_{non-financial}}{Issuances\ in\ all\ sectors} \quad (4)$$

## 5. Empirical results

To understand how issuer composition changes in capital markets, we examine the relationship between the three explanatory variables that capture stock market growth - stock market capitalization as percent of GDP, stock market turnover ratio and stock market total value traded as a percent of GDP – with six outcome variables capturing various dimensions of issuer composition: total number of listed firms; share of listed domestic firms; IPO average issuance size; number of SEOs; SEO average issuance size; and share of market capitalization of top 10 largest domestic companies.

The paper analyzes these relationships in the context of a global sample (columns (1)-(6) in following tables) as well as for a subsample of only low- and middle-income countries (columns (7)-(12) in tables). Capital markets in developing countries tend to follow different growth trajectories from those in developed countries and hence merit separate analysis (as discussed in Section 2).

### *Intensive and extensive growth*

We begin by examining if stock market growth is driven by the extensive or intensive margin. For this purpose, we employ the panel regression in equation (1) with three alternative outcome variables: total number of listed firms, share of listed domestic firms and share of listed foreign firms. Results are presented in Tables 1, 2 and 3 respectively. Columns (1)-(12) refer to the various specifications outlined in the previous section.

The paper does not find that market size, as proxied by equity market capitalization as a share of GDP, is related to an increase in the number of total firms. The coefficient related to equity market capitalization is positive but not significant (Table 1). This suggests that more firms do not necessarily enter the stock market as market capitalization increases. Instead, such growth may be driven by either existing issuers raising further financing or increasing asset prices. The lack of

association also implies that market size is likely to be unrelated to the share of domestic firms listed in the local stock markets, given the lack of new entrants. This is confirmed by the results in Table 2.

However, an expansion in market activity is linked to increased participation in stock markets. In particular, greater total value traded (as percent of GDP) has a significant association with an increase in the number of listed firms, implying the entry of new firms into the stock market. Such evidence of growth at the extensive margin holds for the global sample as well as the LMIC subsample. We do not find systematic evidence that the share of domestic firms in the local market changes with market size or activity. While Table 2 reflects a positive and significant relationship with stock market turnover, this does not hold in our robustness check (Table A-1 and A-2) when we introduce an alternative control for the macroenvironment, namely economic risk rating.

Conversely, we find some evidence of growth on the extensive margin. One explanation could be that as stock markets expand, transaction costs decrease which allow for smaller scale issuers to enter the market. To test for this, we run equation (1) using average IPO issuance size as the outcome variable. However, we fail to find that average IPO issuance size changes significantly with either market size or activity.

**Table 1. Total Number of Listed Firms**

	Full sample			Full sample			Low- and Middle-Income Countries			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stock Market Capitalization (% of GDP)	0.073 (0.052)			0.047 (0.037)			0.026 (0.021)			0.055 (0.034)		
Stock Market Total Value Traded (% of GDP)		0.078*** (0.026)			0.086*** (0.028)			0.090*** (0.027)			0.092*** (0.028)	
Stock Market Turnover Ratio			0.020 (0.033)			0.046* (0.026)			0.032 (0.025)			0.020 (0.024)
Foreign Direct Investment, net inflows (% of GDP)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)	0.000 (0.001)	-0.005 (0.009)	-0.010 (0.009)	-0.001 (0.009)	0.003 (0.008)	-0.013 (0.009)	-0.003 (0.007)
Political Stability and Absence of Violence	-0.019 (0.143)	-0.074 (0.145)	-0.066 (0.129)				0.011 (0.0962)	0.012 (0.1)	-0.056 (0.0914)			
Investment Profile				-0.012 (0.019)	-0.016 (0.015)	-0.016 (0.016)				0.033 (0.025)	0.022 (0.025)	0.031 (0.025)
Constant	4.595*** (0.217)	5.069*** (0.068)	5.133*** (0.091)	4.940*** (0.284)	5.246*** (0.192)	5.300*** (0.160)	4.429*** (0.124)	4.852*** (0.084)	4.677*** (0.096)	4.134*** (0.303)	4.673*** (0.248)	4.554*** (0.232)
Country Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	584	555	613	544	535	580	277	242	269	262	239	260
R-squared	0.036	0.02	0.007	0.021	0.022	0.011	0.089	0.131	0.076	0.123	0.145	0.084

*Note:* The table reports fixed effects panel regressions using 5 years of data. The outcome variable is total number of listed firms. FDI net flows as percentage of GDP, political stability and absence of violence/terrorism, as well as investment profile are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table 2. Share of Domestic Listed Companies**

	Full sample			Full sample			Low- and Middle-Income Countries			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stock Market Capitalization (% of GDP)	-0.138 (0.749)			-1.630 (1.103)			-0.678 (0.573)			-1.286 (0.930)		
Stock Market Total Value Traded (% of GDP)		-0.289 (0.624)			-0.492 (0.734)			-0.417 (0.608)			-0.491 (0.654)	
Stock Market Turnover Ratio			0.948* (0.553)			1.138* (0.658)			0.925 (0.643)			0.897 (0.753)
Foreign Direct Investment, net inflows (% of GDP)	0.0259** (0.0124)	0.0111 (0.0177)	0.0120 (0.0166)	0.0239** (0.0113)	0.0155 (0.0163)	0.0144 (0.0149)	0.121 (0.265)	0.414 (0.317)	0.143 (0.218)	0.0174 (0.287)	0.453 (0.331)	0.198 (0.204)
Political Stability and Absence of Violence/Terrorism	6.290 (4.156)	6.678 (4.576)	7.219* (3.892)				0.960 (1.698)	1.318 (2.112)	2.685 (1.749)			
Investment Profile				-1.180** (0.463)	-0.416 (0.271)	-0.517* (0.278)				-1.193* (0.660)	-0.0588 (0.291)	-0.368 (0.398)
Constant	90.77*** (5.566)	90.83*** (1.600)	85.97*** (1.476)	110.6*** (9.573)	96.05*** (3.694)	91.54*** (3.004)	92.53*** (5.140)	93.12*** (1.597)	88.66*** (1.668)	106.3*** (10.42)	93.06*** (2.531)	90.87*** (2.685)
Country Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	607	577	636	567	557	603	293	256	284	278	253	275
R-squared	0.086	0.05	0.016	0.054	0.06	0.029	0.076	0.148	0.104	0.099	0.157	0.113

*Note:* The table reports fixed effects panel regressions using 5 years of data. The outcome variable is total share of listed domestic firms (as percentage of total listed firms in domestic stock market). FDI net flows as percentage of GDP, political stability and absence of violence/terrorism, as well as investment profile are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table 3. IPO Average Issuance Size**

	Full sample			Full sample			Low- and Middle-Income Countries			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stock Market Capitalization (% of GDP)	-0.610 (0.430)			-0.660 (0.415)			-0.760 (0.652)			-0.754 (0.646)		
Stock Market Total Value Traded (% of GDP)		-0.087 (0.465)			-0.072 (0.459)			0.557 (0.646)			0.581 (0.591)	
Stock Market Turnover Ratio			0.168 (0.463)			0.203 (0.455)			-0.223 (0.324)			-0.209 (0.326)
Foreign Direct Investment, net inflows (% of GDP)	-0.006 -0.011	-0.005 -0.011	-0.005 -0.012	-0.003 -0.01	-0.004 -0.011	-0.003 -0.011	-0.217 (0.296)	-0.265 (0.287)	-0.292 (0.301)	-0.218 (0.297)	-0.251 (0.290)	-0.290 (0.304)
Political Stability and Absence of Violence	0.356 (0.825)	0.155 (0.783)	0.169 (0.722)				0.123 (1.430)	-0.177 (1.303)	-0.307 (1.296)			
Investment Profile				-0.306 (0.237)	-0.154 (0.262)	-0.248 (0.231)				-0.004 (0.368)	0.164 (0.358)	0.022 (0.338)
Constant	22.29*** (1.755)	20.13*** (1.364)	19.36*** (1.552)	25.36*** (2.788)	21.51*** (2.785)	21.52*** (2.500)	23.47*** (2.695)	19.41*** (1.877)	21.32*** (1.507)	23.40*** (3.834)	18.23*** (3.195)	21.32*** (2.857)
Country Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	295	240	261	292	237	258	110	103	108	110	103	108
R-squared	0.052	0.047	0.043	0.060	0.049	0.049	0.104	0.107	0.110	0.104	0.110	0.109

*Note:* The table reports fixed effects panel regressions using 5 years of data. The outcome variable is IPO average issuance size in millions USD. FDI net flows as percentage of GDP, political stability and absence of violence/terrorism, as well as investment profile are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.



We now turn to an examination of intensive growth by studying seasoned equity offerings. Given lack of new entrants in the market, earlier results suggest that increases in market capitalization may stem from existing issuers raising further financing (i.e. SEOs), though this may not necessarily be the case as increasing asset prices can also be a driver. To test for this, we run equation (1) with the outcome variable as number of SEOs (Table 4) and average SEO issuance size (Table 5), in line with previous analyses.

We find that market size, proxied by market capitalization as percent of GDP, is positively and significantly correlated to both the number and size of SEOs. As stock markets grow, not only do public firms issue more stock but do so at greater scale. Both these relationships provide strong evidence for growth at the intensive margin as stock markets grow in size. These results hold for both the global sample as well as the LMIC subsample.<sup>4</sup> Interestingly, we find that total value traded (as percentage of GDP) is also related to greater number of SEOs (though not issuance size). This suggests that market activity is associated with growth both at the extensive and intensive margins. Finally, we observe that stock market turnover ratio is related to reduction in average SEO issuance size.

So far, our results show that growing market size is associated with growth on the intensive margin, through an increase in the number of SEOs as well as their issuance size. On the other hand, expansion in market activity tends to be related to growth at both the intensive and extensive margins. Stock market total value traded drives these results for market activity. These results hold for the global sample as well as the LMIC subsample. Stock market turnover ratio, however, appears to matter less for LMICs; it affects the average SEO issuance size only for the global sample. All these results hold in our robustness checks (see Tables A-1 to A-5 in Annex), where we introduce an alternative control for the macroenvironment, namely economic risk rating.

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<sup>4</sup> Estimates remain qualitatively similar if we instead interact GDP income level dummies with variables of interest (results unreported).

**Table 4. Number of SEOs**

	Full sample			Full sample			Low- and Middle-Income Countries			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stock Market Capitalization (% of GDP)	0.364** (0.147)			0.372** (0.143)			0.577** (0.255)			0.571** (0.242)		
Stock Market Total Value Traded (% of GDP)		0.335** (0.133)			0.337** (0.142)			0.335* (0.18)			0.370* (0.188)	
Stock Market Turnover Ratio			0.069 (0.101)			0.075 (0.111)			0.056 (0.121)			0.087 (0.139)
Foreign Direct Investment, net inflows (% of GDP)	-0.001 (0.001)	-0.001 (0.001)	0 (0.001)	0 (0.001)	-0.001 (0.001)	0 (0.001)	0.053 (0.069)	0.081 (0.078)	0.078 (0.071)	0.046 (0.072)	0.08 (0.079)	0.076 (0.074)
Political Stability and Absence of Violence	-0.145 (0.313)	-0.166 (0.326)	-0.181 (0.319)				-0.391 (0.522)	-0.654 (0.523)	-0.711 (0.537)			
Investment Profile				-0.014 (0.067)	-0.012 (0.089)	-0.015 (0.084)				-0.027 (0.171)	0.049 (0.171)	0.012 (0.167)
Constant	1.889*** (0.557)	2.609*** (0.299)	3.260*** (0.293)	2.002** (0.811)	2.715*** (0.747)	3.384*** (0.675)	0.506 (0.976)	1.776*** (0.524)	2.177*** (0.558)	1.069 (1.665)	1.807 (1.372)	2.520** (1.212)
Country Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	368	296	322	359	290	316	150	135	145	147	135	145
R-squared	0.09	0.122	0.091	0.084	0.112	0.081	0.11	0.14	0.112	0.107	0.124	0.092

*Note:* The table reports fixed effects panel regressions using 5 years of data. The outcome variable is total number of SEOs in a year. FDI net flows as percentage of GDP, political stability and absence of violence/terrorism, as well as investment profile are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table 5. SEO Average Issuance Size**

	Full sample			Full sample			Low- and Middle-Income Countries			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stock Market Capitalization (% of GDP)	0.829*** (0.287)			0.882*** (0.280)			0.962* (0.524)			1.076** (0.514)		
Stock Market Total Value Traded (% of GDP)		-0.028 (0.302)			-0.034 (0.308)			0.197 (0.575)			0.263 (0.511)	
Stock Market Turnover Ratio			-0.397* (0.211)			-0.453** (0.227)			-0.243 (0.316)			-0.236 (0.288)
Foreign Direct Investment, net inflows (% of GDP)	0.002 -0.004	0.005 -0.005	0.004 -0.005	0.002 -0.004	0.004 -0.005	0.003 -0.005	-0.032 (0.252)	0.006 (0.269)	-0.019 (0.257)	-0.025 (0.237)	0.019 (0.252)	-0.007 (0.240)
Political Stability and Absence of Violence	-0.192 (0.357)	-0.297 (0.376)	-0.098 (0.365)				-0.607 (0.556)	-0.610 (0.615)	-0.626 (0.575)			
Investment Profile				0.147 (0.141)	0.078 (0.155)	0.215 (0.169)				0.304 (0.239)	0.334 (0.258)	0.305 (0.232)
Constant	17.52*** (1.190)	20.80*** (0.822)	21.86*** (0.650)	15.99*** (1.726)	20.11*** (1.309)	20.10*** (1.417)	16.62*** (2.283)	19.80*** (1.608)	20.72*** (1.178)	14.35*** (2.800)	17.55*** (2.083)	18.84*** (1.584)
Country Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	364	292	318	355	286	312	147	132	142	144	132	142
R-squared	0.040	0.031	0.032	0.046	0.031	0.042	0.095	0.065	0.066	0.107	0.075	0.074

*Note:* The table reports fixed effects panel regressions using 5 years of data. The outcome variable is SEO average issuance size in million USD. FDI net flows as percentage of GDP, political stability and absence of violence/terrorism, as well as investment profile are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

### *Sectoral diversity*

The participation of new firms in equity markets as trading activity increases warrants a closer examination of the type of new firms entering the market. We are particularly interested in exploring the sectoral allocation of listed firms as capital markets grow. It is not uncommon for public listings in less developed markets to be concentrated in a few sectors, especially the financial sector. A more diverse allocation across sectors is reflective of growth at the extensive margin and can help make capital markets more resilient (Xing, 2004). We test for the relationship between our indicators of capital market growth and sectoral diversity of issuers. We measure the latter via two indicators based on all equity issuances in a market in any particular year. The first is the proportion of non-financial sector issuances and the second is a ‘Diversity GINI’ that captures allocation across seven sectors (financials, agriculture, extractives, manufacturing, construction, utilities, others). The Diversity GINI is calculated as outlined in Section 4. A panel regression with country fixed effects is estimated as per equation (2). The model includes controls for factors that may influence the sectoral division in listed firms, including macroeconomic factors (net inflows of FDI and domestic credit by banks) and sectoral allocation in the underlying economy (i.e., value added by agriculture, industry, and service sectors as percent of national GDP).

Table 6 presents results where the dependent variable is the proportion of non-financial sector issuance. Results are reported for specifications that include all controls, both for the global sample as well as only LMICs. We find that an increase in market capitalization is not related to more participation by non-financial firms. For market activity, we find the coefficient signs are positive but only total value traded is significant, that too for only the global sample.

Table 7 exhibits results where the dependent variable is the Diversity GINI coefficient. A lower value of the GINI coefficient reflects more equitable distribution across the seven sectors. As before, it presents results from specifications including the complete set of controls. Broadly in line with the results in Table 6, we fail to find evidence that stock market growth, either in size or activity, is related to greater sectoral diversity among issuers.

### *Market concentration*

Lastly, we examine if and how the level of market concentration in the stock market changes. This is important as an increase in the number of participating firms in the stock market, even if diverse across sectors, may not necessarily translate to improved access to financing if market concentration remains high. For our paper, we measure stock market concentration as the share of market capitalization of the top 10 domestic companies, which we use as the outcome variable in equation (1) for the analysis in this section.

**Table 6. Proportion of Non-financial Sector Issuance**

	Full Sample			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Stock Market Capitalization (% of GDP)	-0.342 (0.338)			-0.495 (0.402)		
		1.582** (0.721)			1.580 (1.001)	
Stock Market Total Value Traded (% of GDP)			0.101 (0.0917)			0.0816 (0.104)
Stock Market Turnover Ratio						
Domestic credit to private sector by banks (% of GDP)	-1.975 (2.532)	-1.818 (2.962)	-0.210 (2.702)	3.351 (3.359)	3.070 (4.394)	4.125 (3.591)
Agriculture, forestry, and fishing, value added (% of GDP)	-0.736 (2.483)	0.174 (2.794)	-0.486 (2.664)	2.645 (5.248)	1.441 (7.218)	4.542 (5.546)
Manufacturing, value added (% of GDP)	3.619 (6.018)	3.680 (6.701)	5.703 (6.254)	6.115 (8.650)	0.0644 (12.14)	7.795 (8.799)
Services, value added (% of GDP)	7.563 (10.48)	6.716 (12.46)	6.215 (11.04)	-2.017 (13.58)	-16.32 (25.35)	-1.974 (15.16)
Foreign direct investment, net inflows (% of GDP)	0.245 (0.262)	0.242 (0.375)	0.0859 (0.286)	0.126 (0.420)	0.413 (0.481)	0.137 (0.449)
Constant	-39.16 (57.34)	-38.55 (65.47)	-46.50 (59.38)	-28.29 (75.74)	49.70 (138.9)	-40.55 (82.76)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	344	263	310	170	132	164
R-squared	0.539	0.533	0.540	0.554	0.513	0.551

*Note:* The table reports fixed effects panel regressions using 5 years of data. The outcome variable is the proportion (based on amount raised) of equity issuances from the non-financial sector in a year (as percentage of total issuances in that year). Control variables are: Domestic credit to private sector by banks (as percentage of GDP), FDI net flows as percentage of GDP, and the Value added (as percentage of GDP) by the agriculture (including forestry and fishing), manufacturing and services sector. Both country and year fixed effects are included. One-year lags are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. All variables are described in Table A-7 and Table A-9 in the annex.

**Table 7. Diversity Gini Coefficient**

	Full Sample			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Stock Market Capitalization (% of GDP)	0.027 (0.021)			0.027 (0.021)		
Stock Market Total Value Traded (% of GDP)		-0.032 (0.037)			-0.039 (0.051)	
Stock Market Turnover Ratio			0.004 (0.012)			0.005 (0.014)
Domestic credit to private sector by banks (% of GDP)	0.128 (0.102)	0.166 (0.135)	0.146 (0.114)	0.130 (0.101)	0.031 (0.180)	0.055 (0.132)
Agriculture, forestry, and fishing, value added (% of GDP)	0.225* (0.121)	0.064 (0.160)	0.184 (0.142)	0.328 (0.208)	0.539 (0.346)	0.368 (0.273)
Manufacturing, value added (% of GDP)	-0.417 (0.286)	-0.427 (0.363)	-0.501 (0.330)	-0.515** (0.255)	-0.291 (0.569)	-0.600 (0.376)
Services, value added (% of GDP)	-0.391 (0.250)	-0.346 (0.428)	-0.483 (0.361)	-0.0699 (0.258)	0.819 (1.481)	-0.039 (0.795)
Foreign direct investment, net inflows (% of GDP)	0.012 (0.013)	0.018 (0.022)	0.021 (0.017)	0.03 (0.024)	0.04 (0.040)	0.037 (0.035)
Constant	1.954 (1.710)	2.048 (2.530)	2.670 (2.195)	0.797 (1.701)	-3.512 (7.740)	1.128 (4.230)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	399	287	334	204	143	174
R-squared	0.668	0.633	0.642	0.707	0.625	0.646

*Note:* The table reports fixed effects panel regressions using 5 years of data. The outcome variable is the Diversity GINI, estimated as outlined in Section 4. Control variables are: Domestic credit to private sector by banks (as percentage of GDP), FDI net flows as percentage of GDP, and the Value added (as percentage of GDP) by the agriculture (including forestry and fishing), manufacturing and services sector. Both country and year fixed effects are included. One-year lags are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table 8. Share of Market Capitalization of the Top 10 Largest Domestic Companies**

	Full Sample			Full Sample			Low- and Middle-Income Countries			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stock Market Capitalization (% of GDP)	0.083 (0.09)			0.147 (0.151)			0.097 (0.1)			0.176 (0.159)		
Stock Market Total Value Traded (% of GDP)		0.002 (0.057)			0.002 (0.058)			-0.045 (0.049)			-0.048 (0.053)	
Stock Market Turnover Ratio			-0.010 (0.022)			-0.016 (0.032)			-0.0420* (0.025)			-0.0561* (0.031)
Foreign Direct Investment, net inflows (% of GDP)	0.00130* (0.001)	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)	0.022 (0.017)	0.011 (0.009)	0.005 (0.0073)	0.024 (0.017)	0.011 (0.009)	0.005 (0.007)
Political Stability and Absence of Violence	0.068 (0.075)	0.030 (0.043)	0.045 (0.048)				0.094 (0.097)	0.042 (0.048)	0.079 (0.062)			
Investment Profile				0.035 (0.041)	-0.013 (0.014)	0.012 (0.025)				0.100 (0.074)	0.009 (0.025)	0.054 (0.048)
Constant	3.587*** (0.372)	3.985*** (0.151)	4.083*** (0.0812)	3.018*** (0.888)	4.098*** (0.156)	3.971*** (0.2)	3.552*** (0.436)	4.105*** (0.136)	4.252*** (0.116)	2.400** (1.159)	4.007*** (0.128)	3.790*** (0.306)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	402	380	441	383	375	429	248	191	245	234	191	238
R-squared	0.083	0.04	0.034	0.135	0.042	0.035	0.112	0.114	0.048	0.217	0.113	0.072

Note: The table reports fixed effects panel regressions using 5 years of data. The outcome variable is share of market capitalization of the top 10 largest domestic companies. FDI net flows as percentage of GDP, political stability, and absence of violence/terrorism, as well as investment profile are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

Table 8 presents these results. We find that market concentration is not related to any of the three market growth variables for the global sample. The coefficients of the stock market total value traded to GDP and equity market capitalization to GDP variables are positive, albeit not significant. Conversely, the coefficients of stock market turnover ratio are negative, but also not statistically significant. For LMICs, however, it is significant, implying that greater share turnover in the market is related to lower concentration in less developed markets. Note, though, that the magnitude of the association is marginal in economic terms. Results are similar when we use an alternative control for the macroenvironment in a country as a robustness check (Table A-6 in the Annex).

## **6. Concluding remarks**

The paper examines how issuer composition changes as stock markets grow, focusing on low- and middle-income countries. Specifically, we study whether such growth is associated with new firms listing in the stock market, the sectoral diversity of issuers and the market concentration among issuers. To investigate these relationships, we use a novel IFC dataset that includes data on various measures of stock market growth (size and activity) and issuer composition (number, concentration, and sectoral diversity) for over 150 countries for the period 2015-2020.

Our results show that stock markets may not necessarily become more inclusive as they grow. Specifically, we find that stock market capitalization, often the most popular headline indicator for market development, tends not to be associated with new equity issuances. Instead, a growing stock market is related to an increase in the number and size of seasoned equity offerings, indicating growth at the intensive margin. Greater trading activity, however, is associated with a higher number of issuances both by existing and new issuers.

These findings hold for low- and middle-income countries. The paper additionally finds that higher stock turnover is related to lower market concentration in these countries. This result is of particular relevance given that less developed markets are more likely to be dominated by a few firms. These markets are also more likely to have a high concentration of listed firms in a few industries. Moreover, the paper does not find any evidence that sectoral diversity of equity issues improves as equity markets increase in size and liquidity.

Our findings have important implications for policy makers seeking to improve access to financing for firms. Participation of a broad and diverse set of issuers reflects a well-functioning stock market, which is able to meet various financing needs in the underlying economy. As our results show, however, this may not naturally follow capital market growth. Our findings therefore highlight the need to go beyond headline growth indicators to ensure stock markets are more



inclusive on the issuer side. On this front, it may be worth focusing on market liquidity, especially in low- and middle-income countries. Our results also contribute to understanding the role of market liquidity in the relationship between stock market development and economic growth, as documented by past literature (Levine and Zervos, 1998). For sectoral diversity, however, our results suggest the need for more targeted measures that go beyond market size and liquidity.

This paper addresses a gap in the literature by providing evidence on how issuer composition evolves as equity markets grow. However, more work is needed to uncover causal relationships on this front. Avenues for further research also include exploring various dimensions of issuer diversity, beyond sectoral, for a more nuanced understanding of how issuer composition evolves. This may include firm size, riskiness and age, among other characteristics. From a policy perspective, it is also useful to unpack drivers of changes in issuer composition, including the role of macro, institutional, and regulatory factors. Issuer composition can be vital to gauge the effectiveness of capital markets in meeting a variety of financing needs across the economy, and hence should be a primary focus in capital market development.

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## Annex A

**Table A-1. Total Number of Listed Companies**

	Full sample			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Stock Market Capitalization (% of GDP)	0.046 (0.036)			0.055 (0.035)		
Stock Market Total Value Traded (% of GDP)		0.086*** (0.028)			0.094*** (0.027)	
Stock Market Turnover Ratio			0.0454* (0.027)			0.025 (0.024)
Foreign Direct Investment, net inflows (% of GDP)	0.000 (0.000)	-0.001 (0.001)	0.000 (0.001)	0.003 (0.009)	-0.014 (0.010)	-0.004 (0.007)
Investment Profile	-0.009 (0.021)	-0.014 (0.018)	-0.015 (0.018)	0.033 (0.025)	0.022 (0.025)	0.031 (0.025)
Economic Risk	-0.003 (0.007)	-0.002 (0.007)	-0.001 (0.007)	-0.001 (0.006)	0.006 (0.009)	0.005 (0.009)
Constant	5.022*** (0.333)	5.308*** (0.254)	5.321*** (0.256)	4.179*** (0.364)	4.460*** (0.403)	4.383*** (0.432)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	544	535	580	262	239	260
R-squared	0.021	0.022	0.011	0.123	0.15	0.087

Note: The table reports fixed effects panel regressions using 5 years of data. The outcome variable is the total number of listed firms. FDI net flows (as percentage of GDP), investment profile and economic risk are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table A-2. Share of Domestic Listed Companies**

	Full sample			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Stock Market Capitalization (% of GDP)	-1.645 (1.111)			-1.273 (0.908)		
Stock Market Total Value Traded (% of GDP)		-0.519 (0.750)			-0.501 (0.649)	
Stock Market Turnover Ratio			1.067 (0.684)			0.879 (0.716)
Foreign Direct Investment, net inflows (% of GDP)	0.0230** (0.0107)	0.0133 (0.0160)	0.0119 (0.0147)	0.0105 (0.304)	0.463 (0.324)	0.203 (0.200)
Investment Profile	-1.111** (0.465)	-0.292 (0.285)	-0.375 (0.292)	-1.205* (0.673)	-0.0589 (0.290)	-0.365 (0.394)
Economic Risk	-0.0641 (0.181)	-0.131 (0.164)	-0.144 (0.157)	0.0579 (0.210)	-0.0361 (0.124)	-0.0208 (0.0852)
Constant	112.3*** (11.08)	99.76*** (6.951)	95.67*** (6.381)	104.4*** (11.04)	94.31*** (5.371)	91.59*** (4.253)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	544	535	580	262	239	260
R-squared	0.055	0.033	0.033	0.202	0.071	0.078

Note: The table reports fixed effects panel regressions using 5 years of data. The outcome variable is the total share of listed domestic firms (as percentage of total listed firms in domestic stock market). FDI net flows (as percentage of GDP), investment profile and economic risk are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table A-3. IPO Average Issuance Size**

	Full sample			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Stock Market Capitalization (% of GDP)	-0.736*			-0.973		
	(0.412)			(0.617)		
Stock Market Total Value Traded (% of GDP)		-0.218			0.395	
		(0.466)			(0.585)	
Stock Market Turnover Ratio			0.018			-0.483
			(0.476)			(0.351)
Foreign Direct Investment, net inflows (% of GDP)	0	0.001	0.001	-0.173	-0.228	-0.278
	-0.01	-0.011	-0.011	(0.272)	(0.254)	(0.263)
Investment Profile	-0.345	-0.193	-0.283	-0.097	0.092	-0.055
	(0.238)	(0.262)	(0.229)	(0.393)	(0.386)	(0.360)
Economic Risk	0.144	0.203	0.212*	0.255	0.270	0.280*
	(0.122)	(0.124)	(0.121)	(0.157)	(0.168)	(0.163)
Constant	20.49***	14.51***	14.34***	15.92***	9.744	12.94**
	(5.059)	(5.399)	(5.017)	(5.564)	(6.504)	(5.650)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	292	237	258	110	103	108
R-squared	0.075	0.085	0.087	0.166	0.181	0.182

Note: The table reports fixed effects panel regressions using 5 years of data. The outcome variable is the IPO average issuance size in millions USD. FDI net flows (as percentage of GDP), investment profile and economic risk are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table A-4. Number of SEOs**

	Full sample			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Stock Market Capitalization (% of GDP)	0.360** (0.138)			0.544** (0.225)		
Stock Market Total Value Traded (% of GDP)		0.326** (0.123)			0.386* (0.188)	
Stock Market Turnover Ratio			0.042 (0.103)			0.078 (0.134)
Foreign Direct Investment, net inflows (% of GDP)	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	0.049 (0.064)	0.081 (0.074)	0.076 (0.069)
Investment Profile	-0.047 (0.071)	-0.038 (0.093)	-0.041 (0.088)	-0.058 (0.183)	0.032 (0.181)	-0.007 (0.181)
Economic Risk	0.058** (0.023)	0.046* (0.024)	0.049** (0.024)	0.047 (0.034)	0.027 (0.039)	0.028 (0.039)
Constant	0.127 (1.086)	1.205 (0.866)	1.847** (0.77)	-0.224 (1.782)	0.955 (1.521)	1.704 (1.214)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	359	290	316	147	135	145
R-squared	0.116	0.131	0.103	0.123	0.129	0.098

Note: The table reports fixed effects panel regressions using 5 years of data. The outcome variable is the total number of SEOs in a year. FDI net flows (as percentage of GDP), investment profile and economic risk are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.



**Table A-5. SEOs Average Issuance Size**

	Full sample			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Stock Market Capitalization (% of GDP)	0.888*** (0.284)			1.091* (0.574)		
Stock Market Total Value Traded (% of GDP)		-0.0302 (0.320)			0.248 (0.503)	
Stock Market Turnover Ratio			-0.445* (0.239)			-0.230 (0.301)
Foreign Direct Investment, net inflows (% of GDP)	0.001 -0.004	0.004 -0.005	0.002 -0.005	-0.029 (0.236)	0.012 (0.253)	-0.01 (0.239)
Investment Profile	0.162 (0.146)	0.085 (0.159)	0.222 (0.174)	0.318 (0.254)	0.355 (0.283)	0.320 (0.255)
Economic Risk	-0.026 -0.063	-0.013 -0.069	-0.013 -0.068	-0.02 (0.146)	-0.0315 (0.163)	-0.022 (0.151)
Constant	16.84*** (2.448)	20.52*** (2.355)	20.51*** (2.426)	14.89*** (4.074)	18.54*** (4.940)	19.48*** (4.412)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	355	286	312	144	132	142
R-squared	0.048	0.031	0.042	0.107	0.076	0.075

Note: The table reports fixed effects panel regressions using 5 years of data. The outcome variable is the SEO average issuance size in million USD. FDI net flows (as percentage of GDP), investment profile and economic risk are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table A-6. Share of Market Capitalization of Top 10 Largest Domestic Companies**

	Full sample			Low- and Middle-Income Countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Stock Market Capitalization (% of GDP)	0.151 (0.15)			0.177 (0.159)		
Stock Market Total Value Traded (% of GDP)		0.001 (0.058)			-0.048 (0.053)	
Stock Market Turnover Ratio			-0.018 (0.031)			-0.0568* (0.032)
Foreign Direct Investment, net inflows (% of GDP)	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)	0.024 (0.017)	0.011 (0.009)	0.005 (0.007)
Investment Profile	0.051 (0.046)	-0.005 (0.015)	0.020 (0.026)	0.100 (0.075)	0.009 (0.025)	0.054 (0.049)
Economic Risk	-0.0139** (0.006)	-0.00743* (0.004)	-0.00760* (0.004)	-0.004 (0.008)	0.000 (0.003)	-0.001 (0.003)
Constant	3.391*** (0.778)	4.313*** (0.167)	4.190*** (0.202)	2.550** (1.031)	4.018*** (0.172)	3.827*** (0.310)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	383	375	429	234	191	238
R-squared	0.154	0.056	0.043	0.217	0.113	0.072

Note: The table reports fixed effects panel regressions using 5 years of data. The outcome variable is the share of market capitalization of the top 10 largest domestic companies. FDI net flows (as percentage of GDP), investment profile and economic risk are used as controls. This analysis includes both country and year fixed effects. One-year lags (t-1) are applied to all the explanatory variables and controls. Markings \*, \*\* and \*\*\* denote significance at 10%, 5% and 1%, respectively. Robust standard errors are presented in parentheses. All variables are described in Table A-7 and Table A-9 in the annex.

**Table A-7. Main Variables - Definitions**

Variable Name	Source	Definition
<b>Equity market growth variables</b>		
Stock Market Capitalization (% of GDP)	IFC Capital Markets Database	Equity market capitalization is an indicator of the size of the equity market and it captures the total value of the equity market. Equity market capitalization as a share of GDP is arrived at by dividing the equity market capitalization by GDP in current USD
Stock Market Total Value Traded (% of GDP)	IFC Capital Markets Database	Stock market total value traded as a share of GDP is an indicator of equity market size and is defined as the total value of stocks traded as share of a country's total output. A ratio of over 100% indicates and overvalued stock market.
Stock Market Turnover Ratio	IFC Capital Markets Database	Stock market turnover ratio is an indicator of liquidity in the equity market indicating how easy or difficult it is to sell shares on the market. A lower ratio is desirable indicating that a larger number of shares as a proportion of the total were traded.
<b>Issuer composition variables</b>		
Share of Market Capitalization of the Top 10 Largest Domestic Companies	IFC Capital Markets Database	Share of Market Capitalization of the top 10 largest domestic companies is an indicator of market concentration. In this case top 10 companies refers to the ten companies with the highest market capitalization value. A higher value indicates that the equity market is highly concentrated with a few firms accounting for a higher share of the total value
Total Listed Companies	IFC Capital Markets Database	The total number of companies listed and available for trade on the stock market. This is an indicator of market activity. A higher number of listed companies indicates that markets are accessible, provide for an ecosystem that allows for seamless transfer of information and are well regulated
Total Listed Companies (Domestic)	IFC Capital Markets Database	The total number of companies listed and available for trade on the stock market that are domiciled in the same country as the stock exchange. A higher number of listed domestic companies indicates that markets are accessible, provide for an ecosystem that allows for seamless transfer of information and are well regulated
Number of IPOs	IFC Capital Markets Database	The total number of equity listings on the stock market by companies that have previously not been listed on the stock market.
IPOs average issuance size	IFC Capital Markets Database	The average size of equity listings on the stock market by companies that have previously not been listed on the stock market
Number of SEOs	IFC Capital Markets Database	The total number of equity listings on the stock market by companies that have previously been listed on the stock market.
SEOs average issuance size	IFC Capital Markets Database	The average size of equity listings on the stock market by companies that have previously been listed on the stock market
<b>Sectoral Diversity Variables</b>		
Non-financial Issuance Share	Calculated	This variable is a ratio of the amount (USD) of equity issues (both initial and seasoned public offerings) in the non-financial sector divided by the amount (USD) of total equity issuances in a given year.
Diversity Gini	Calculated	Diversity GINI captures the dispersion of the equity issuances (both IPOs and SEOs) over seven industry sectors by measuring the Euclidean distance from an equal weighting across the sectors. The measure reflects the area under the Lorenz curve of the actual distribution and the line of equality. The lower its value, the more equally equity issuances are distributed across sectors. A value of zero indicates that equity issuances are equally distributed across the seven sectors while a value of one indicates completely unequal distribution (i.e., all issuances are concentrated in one sector only). See Section 4 (methodology) for more details on its calculation.

**Table A-8. Main Variables - Summary Statistics**

Variable	Mean	Standard Deviation		Max		Min		Number of Observations	Number of Countries
		Between	Within	Between	Within	Between	Within		
<b>Equity Market Development Variables</b>									
Stock Market Capitalization (% of GDP)	53.440	7.202	71.396	66.316	600.259	43.320	-12.796	1280	151
Stock Market Total Value Traded as a Share of GDP	34.235	5.964	79.488	46.673	873.162	26.570	-12.438	764	86
Stock Market Turnover Ratio	28.555	9.041	43.280	33.233	447.843	0.000	-4.678	1083	130
<b>Issuer Composition Variables</b>									
Share of Market Capitalization of the Top 10 Largest Domestic Companies	60.688	6.449	22.883	73.200	103.791	53.517	-12.512	540	82
Total Listed Companies	417.816	158.177	1011.486	702.509	12475.600	288.378	-274.692	844	116
Total Listed Companies (Domestic)	385.204	137.690	969.107	632.871	12512.190	284.113	-242.667	871	116
Total Listed Companies (Foreign)	31.900	8.201	104.538	43.947	1141.445	22.476	-12.047	844	116
Number of IPOs	22.943	7.361	51.948	32.803	562.140	15.578	-9.860	488	76
IPOs average issuance size (USD Billions)	4.580	4.530	28.700	13.900	418.000	0.949	-9.360	363	74
Number of SEOs	91	43	222	157	1957	42	-66	488	76
SEOs average issuance size (USD Billions)	1870	4530	38600	12000	807000	2	-10200	442	74
<b>Sectoral Diversity Variables</b>									
Non-financial Issuance Share	0.394	0.266	0.295	1.000	1.227	0.000	-4.192	472	90
Diversity Gini	0.792	0.146	0.104	1.000	1.138	0.431	0.472	553	90

**Table A-9. Control Variables - Definitions**

Variable Name	Source	Definition
Foreign direct investment, net inflows (% of GDP)	World Development Indicators	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors and is divided by GDP.
Domestic credit to private sector by banks (% of GDP)	World Development Indicators	Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies.
Agriculture, forestry, and fishing, value added (% of GDP)	World Development Indicators	Agriculture, forestry, and fishing corresponds to ISIC divisions 1-3 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 4. Note: For VAB countries, gross value added at factor cost is used as the denominator.
Services, value added (% of GDP)	World Development Indicators	Services correspond to ISIC divisions 50-99 and they include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers as well as discrepancies arising from rescaling. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3 or 4.
Manufacturing, value added (% of GDP)	World Development Indicators	Manufacturing refers to industries belonging to ISIC divisions 15-37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Note: For VAB countries, gross value added at factor cost is used as the denominator.
Political Stability and Absence of Violence, Estimate	World Governance Indicators	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. The indicator captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. Estimate of governance (ranges from approximately - 2.5 (weak) to 2.5 (strong) governance performance)
Economic Risk Rating	International Country Risk Guide	The overall aim of the Economic Risk Rating is to provide a means of assessing a country's current economic strengths and weaknesses. In general terms, where its strengths outweigh its weaknesses, it will present a low economic risk and where its weaknesses outweigh its strengths it will present a high economic risk. Risk points are assigned to a pre-set group of factors, termed economic risk components. The minimum number of points that can be assigned to each component is zero, while the maximum number of points depends on the fixed weight that component is given in the overall economic risk assessment. In every case the lower the risk point total, the higher the risk, and the higher the risk point total, the lower the risk. The components are - GDP per capita, Real GDP growth, Annual inflation rate, Budget balance as a share of GDP, Current account as a share of GDP
Investment Profile	International Country Risk Guide	This is an assessment of factors affecting the risk to investment that are not covered by other political, economic and financial risk components. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk. The subcomponents are - contract viability, profits repatriation, and payment delays

**Table A-10. Control Variables - Summary Statistics**

Variable	Mean	Standard Deviation		Max		Min		Number of Observations	Number of Countries
		Between	Within	Between	Within	Between	Within		
Foreign direct investment, net inflows (% of GDP)	7.203	4.677	55.758	12.759	1277.076	-4.001	-1263.986	1840	187
Domestic credit to private sector by banks (% of GDP)	51.683	2.477	40.590	56.766	256.319	49.338	-2.060	2025	180
Agriculture, forestry, and fishing, value added (% of GDP)	10.958	0.455	10.834	11.622	61.460	10.279	-0.628	2094	184
Services, value added (% of GDP)	54.827	0.974	11.577	56.009	93.290	53.046	16.373	2078	182
Manufacturing, value added (% of GDP)	12.164	0.406	6.965	12.987	48.524	11.741	0.349	1993	180
Political Stability and Absence of Violence/Terrorism, Estimate	-0.106	0.008	0.984	-0.095	1.707	-0.118	-3.135	2089	190
Economic Risk Rating	34.626	2.306	5.791	36.226	49.618	27.453	5.396	1645	138
Investment Profile	8.312	0.210	1.902	7.974	0.717	8.599	12.337	1645	138