Internationalization and Stock Market Liquidity

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Abstract

What is the impact of internationalization (firms raising capital and trading in international markets) on the liquidity of the remaining firms in domestic markets? To address this question, we assemble a panel database of more than 2,700 firms from 45 emerging economies over the period 1989-2000, constructed from annual and daily data. First, we find evidence of migration. There is a reduction in the domestic trading of firms that cross-list or issue depositary receipts in foreign public exchanges as trading migrates from domestic to international markets. Second, there are liquidity spillovers within markets. Aggregate domestic trading activity is associated with the liquidity of individual firms in the same market. The evidence is consistent with the view that when firms cross-list or issue depositary receipts in public international markets, the domestic trading activity of their shares falls, hurting the liquidity of the remaining firms in their home market.

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I. Introduction

This paper analyzes the impact of firms from emerging economies that internationalize by issuing depositary receipts, cross-listing, or raising capital in international equity markets on the liquidity of the remaining firms in the domestic stock market. Although an extensive literature finds that internationalization helps these "international firms," researchers are only beginning to assess the ramifications of internationalization on "domestic firms," those firms that do not internationalize.[1] To evaluate the cross-firm distributional effects of internationalization, we first test whether internationalization is related to the trading activity of international firms. We then study whether the trading activity of international firms is associated with the liquidity of domestic firms. In particular, we examine whether there are externalities in markets: Is aggregate domestic trading activity related to the liquidity of individual firms trading in the same market?

The literature provides conflicting predictions about the relation between internationalization and the liquidity of domestic firms. Consider the two-part "migration and spillover" mechanism. "Migration" means that internationalization induces a shift in the trading of international firms out of the domestic market and into international financial centers. This may occur because major international markets have lower information and transaction costs (Chowdhry and Nanda, 1991; Lang, Lins, and Miller, 2003), lower settlement risk (Velli, 1994), or more efficient pricing of risk (Patro, 2000). "Spillover" means that the aggregate trading in a market influences the liquidity of individual equities. Using data from the United States, Chordia, Roll, and Subrahmanyam (2000) find

[1] Some papers examine the volume and liquidity of international firms in domestic markets, e.g., see Hargis (1998), Noronha, Sarin, and Saudagaran (1996), and Pulatkonak and Sofianos (1999). Other researchers study the impact of internationalization on stock prices and the cost of capital, e.g., see Alexander, Eun, and Janakiramanan (1988), Errunza and Miller (2000), Foerster and Karolyi (1999), and Miller (1999). A related line of research analyzes the effect of internationalization on asset size, growth, financing constraints, and the financial structure of firms that issue depositary receipts or cross-list, e.g., see Pagano, Roell, and Zechner (2002), and Schmukler and Vesperoni (2005). Finally, Doige, Karolyi, and Stulz (2004) and Levine and Schmukler (2005) examine whether internationalization increases the market value of these internationalizing firms.

that liquidity is not simply an asset specific attribute; rather, an individual asset's liquidity co-moves with aggregate market liquidity. Spillovers could occur because of fixed costs associated with operating a market, like running brokerage firms and clearing and settling transactions. With spillovers, therefore, a drop in the domestic trading of international firms (from migration) could increase the per-trade cost of domestic stock transactions and reduce the liquidity of domestic firms. Combined, migration and spillovers imply that cross-listing or issuing depositary receipts in public international stock markets hurts the liquidity of domestic firms.

Other papers, however, question the migration and spillover channel. Hargis (2000) argues that cross-listing can transform a segmented equity market with low liquidity into an integrated market with high trading activity and liquidity. Alexander, Eun, and Janakiramanan (1987) and Domowitz, Glen, and Madhavan (1998) hold that internationalization stimulates domestic trading of international firms by increasing market integration.[2] Moreover, Halling, Pagano, Randl, and Zechner (2005) argue that foreign trading of European firms declines after an initial increase, with liquidity returning to the domestic market (the "flow-back" effect). Also, if internationalization improves transparency, this could increase the domestic trading of international firms with positive spillover effects for the rest of the domestic market (Hargis and Ramanlal, 1998). It is also legitimate to question whether the finding of spillovers in the U.S. market generalizes to emerging stock exchanges. Thus, the existence of both migration and spillovers remain open empirical questions.

To study the effects of internationalization, we assemble liquidity and trading indicators on more than 2,700 firms from across 45 emerging market countries, covering the period 1989-2000. To measure trading activity, we use yearly turnover, which equals the value of a firm's transactions in a

[2] Indeed, Fernandes (2003) uses the first ADR issuance for 27 countries to date the beginning of international financial liberalization and shows that this date is a useful indicator of integration. Specifically, domestic stock exposure to world factors increases and there is a drop in expected returns of domestic shares after the first ADR issuance. Also, see Stapleton and Subrahmanyam (1977).

market divided by the firm's market capitalization. Turnover, and similar trade-based indicators, are frequently used to proxy for liquidity since (i) many countries do not have bid-ask spread information (especially time series data),[3] (ii) it is difficult to collect the daily data for such a large panel of firms and countries, and (iii) past research identifies a strong link between turnover and firm performance, industrial expansion, and national growth.[4] Nevertheless, since turnover does not directly measure trading costs or the price impact of transactions, we interpret turnover less as a precise measure of liquidity and more a as a general index of trading activity.

We also compute two indicators of liquidity, which are constructed from daily data. First, Amihud's (2002) illiquidity index, which equals the ratio of a stock's absolute returns to its value traded. Hasbrouck (2005) finds that, within the class of price-impact liquidity estimates, Amihud's (2002) illiquidity index is the most reliable proxy of trading costs. Second, we compute the proportion of days in a year when there are no changes in the price of a security. Since researchers have used liquidity measures based on this zero return index in recent studies (Bekaert, Harvey, and Lundblad, 2005a; Lesmond, 2005; Lesmond, Ogden, and Trzcinka, 1999), we use it to assess further the relation between internationalization and the liquidity of domestic firms.

The results are consistent with migration. When a firm cross-lists or issues depositary receipts in a public international exchange (e.g., the New York Stock Exchange, the London Stock Exchange, or NASDAQ), the domestic trading of its shares tends to fall as trading migrates to the international market. However, firms that raise capital abroad without providing an easy vehicle for having their

[3] Also, some research argues that turnover can be a better proxy for liquidity than bid-ask spreads due to problems with measuring spreads. From a theoretical perspective, Amihud and Mendelson (1986) and Stoll (1978a) suggest a direct link between trading costs and trading volume and holding periods, respectively. Empirically, Atkins and Dyl (1997) and Stoll (1978b) confirm these predictions. Petersen and Fialkowski (1994) demonstrate the problems with computing accurate bid-ask spreads. Consequently, a large number papers use turnover and volume-based proxies of liquidity (e.g., Brennan, Chordia, and Subrahmanyam, 1998; Datar, Naik, and Radcliffe, 1998; Haugen and Baker, 1996; Rouwenhorst, 1999).

[4] In terms of theory, Bencivenga, Smith, and Starr (1995) and Levine (1991) model the link between trading activity and both firm and national growth. Empirically, Beck and Levine (2002, 2004), Demirguc-Kunt and Maksimovic (1998), and Levine and Zervos (1998a) demonstrate the importance of turnover for explaining firm performance, industrial expansion, and national economic growth.

shares traded internationally, tend to experience an increase, not a decrease, in domestic trading activity.[5] Thus, when firms allow their shares to be traded in major, public stock exchanges, trading migrates out of the domestic and into the international market.

The results are also consistent with spillovers: An individual stock's liquidity is closely related to aggregate trading activity in its market. The aggregate domestic turnover of international firms is positively associated with the turnover of domestic firms and negatively associated with both the Amihud and zero-return illiquidity indexes for domestic firms. Importantly, the positive relation between the liquidity of an individual domestic firm's stock and the aggregate trading of international firms in the domestic market holds when controlling for many time-varying country traits, country dummy variables, firm-specific characteristics, and the trading activity of that country's firms in international markets. Overall, the results are consistent with the migration and spillover view. Consistent with migration, cross-listing and issuing depositary receipts are associated with a drop in the turnover of international firms in their domestic markets and an increase in their turnover abroad. Consistent with spillovers, the drop in the turnover of international firms in the domestic market is associated with a drop in the liquidity of domestic firms.

Although this paper focuses on assessing the migration-spillover channel, we find that internationalization is negatively associated with the liquidity of domestic firms beyond migration and spillovers. When assessing the robustness of the migration-spillover effect, we control for firm size and country characteristics. One control variable equals the fraction of total trading of a country's stocks (domestic and international) occurring in international markets, which is strongly,

[5] For instance, firms that raise money through private placements in the U.S. by means of Rule 144A can only trade among qualified institutional buyers on the PORTAL system. Firms that issue Level I ADRs trade on the over-the-counter market (OTC), which is not an organized market or exchange, but rather a network of securities dealers. These markets tend to provide less liquidity than public exchanges and therefore are less likely to generate migration of trading abroad. Therefore, we analyze these types of listings separately from cross-listings and capital raisings in major public exchanges and confirm that they have different effects on the domestic trading of international firms.

negatively related to the liquidity of domestic firms. Thus, not only is there a close connection between the aggregate domestic trading of international firms and a domestic firm's liquidity, but the share of trading occurring in international markets is independently linked to the liquidity of domestic firms. This result may be explained by investors focusing on diversifying country-specific risk. If it is more desirable to trade securities in major financial centers and if investors are concerned about country-specific risk, then when some firms from a country internationalize, investors will shift their trading of that country's risk characteristics (as embodied in both international and domestic firms) to the international market.[6] Although we do not rule out alternative explanations, the results strongly indicate that there is a negative relation between a domestic firm's liquidity and the proportion of trading of that country's firms in international markets, which exists independently of the migration-spillover channel.

Our research has both political economy and market microstructure implications. First, we find that international financial integration can have distributional implications. Firms that internationalize win: internationalization boosts the total trading of international firms and they grow after internationalizing (Levine and Schmukler, 2005). But, domestic firms lose. The liquidity of their shares falls as other firms internationalize their trading activity. Thus, different firms are likely to have very different views about public policies related to internationalization. Second, we find evidence of spillovers in stock markets around the world, which confirms evidence from the U.S. (Chordia, Roll, and Subrahmanyam, 2000). This has potential implications for markets in an era of globalization. The prevalence of spillovers represents a powerful force encouraging liquidity to concentrate in a few major financial centers, domestically or abroad.

[6] As noted, investors may prefer to trade in international public stock markets because of transaction cost, settlement risk, and efficiency considerations. Indeed, there is evidence that U.S. investors prefer ADR over non-ADR stocks (see, for example, Aggarwal, Klapper, and Wysocki, 2005; Bradshaw, Bushee, and Miller, 2004; and Edison and Warnock, 2004).

This paper's assessment of the impact of internationalization on the turnover and liquidity of domestic firms is related to a large literature on internationalization. First, research analyzes the impact of market integration on economic growth, investment, and asset pricing.[7] In this paper, we do not focus on financial integration broadly defined. Rather, we examine the impact of the decision of one set of firms to internationalize on the liquidity of those firms that do not internationalize.[8] Second, as noted above, an extensive literature studies the effects of internationalization on international firms. Although we contribute to this work by assessing the connections between internationalization and the trading activity of international firms using our new database, the focus of our research is different. We concentrate on examining the link between internationalization and domestic firms.

Our work builds on two aggregate assessments of financial integration. Moel (2001) and Karolyi (2004) find a negative association between the fraction of a country's stocks that issue American Depositary Receipts (ADRs) and domestic market turnover. Our research makes several contributions. First, we use firm-level data, follow firms through time, and examine what happens to firms when they internationalize. Second, by using daily data for each firm, we compute direct measures of liquidity and assess what happens to the liquidity of individual domestic firms as other firms internationalize. Third, we dissect a two-step mechanism through which internationalization may influence domestic stocks; in particular, we test for both (i) migration and (ii) spillovers. Fourth, we substantially expand the country coverage. Our data cover 45 countries, while Karolyi (2004) and Moel (2001) study 12 countries and 28 countries respectively. Fifth, besides examining firms that internationalize by issuing depositary receipts in New York, we also examine (i) firms that issue

[7] See, for example, Bekaert and Harvey (1995, 2000), Bekaert, Harvey, and Lundblad (2003, 2004), Henry (2000), and Levine and Zervos (1998a,b).

[8] Various publications have voiced concerns of markets becoming illiquid (e.g., Bovespa, 1996; Federation des Bourses de Valeurs, 2000; Financial Times, 1998; and Latin Finance, 1999 and 2004; and The Economist, 2000).

depositary receipts in other countries and (ii) firms that cross-list and/or raise capital in New York and other financial centers. Sixth, we collect and incorporate time-varying data on the international trading activities of international firms. This allows us to identify more confidently the independent link between internationalization and domestic firm liquidity.

The rest of the paper is organized as follows. Section II describes the data. Section III discusses the econometric methodology and presents the results. Section IV concludes.

II. Data

To assess the connection between internationalization and the liquidity of domestic stocks, we construct a novel dataset using (i) firm-level data on trading and liquidity in the domestic market, (ii) data on the international activity of firms, including stock trading in international markets and dates of cross-listings, depositary receipts issuances, and capital raisings in international equity markets, (iii) firm-level data on firm attributes, and (iv) country-level data on turnover, macroeconomic, institutional, and financial conditions. Since the data come from various sources, we match the firm-level variables on domestic stock market trading and liquidity, the firm-level balance sheet information, the data on the international equity market activities of each firm, and country-level characteristics.

We use daily data from Datastream to construct firm-level measures of liquidity for a broad cross-section of almost 1,000 firms, across 31 countries, over 12 years, totaling more than 1,570,000 firm-day observations. To measure firm-level liquidity, we construct Amihud's (2002) illiquidity index and the share of zero-return days. Section III defines these two illiquidity variables. After

constructing these measures at a daily frequency, we aggregate and calculate the liquidity measures on a yearly basis to match the other data.[9]

As a measure of trading activity, which is also frequently used by researchers as a proxy for liquidity, we employ turnover, which equals the total value of a firm's value traded divided by its market capitalization. The data come from the Standard & Poor's Emerging Markets Data Base (EMDB), formerly collected by the International Finance Corporation (IFC) of the World Bank.[10] The EMDB provides data on domestic market capitalization and domestic value traded in current U.S. dollars by firm. Although the EMBD is one of the most comprehensive databases on firm-level trading of equities around the world, the EMDB focuses on emerging markets and does not include 100 percent of local firms (i.e., while varying by country, the EMDB typically covers about 70 percent of market capitalization).[11] We have sufficient data to compute turnover for 2,714 firms.

Furthermore, we collect more data on the international equity market activities of firms than past studies to provide a more accurate categorization of firms. While most papers focus only on the ADR market and ignore internationalization in equity markets beyond the U.S., we consider a much broader array of international equity markets. The data for identifying and dating each firm's international activities come from different sources.

We start with data from the Bank of New York. Besides the bank's standard database (the Complete Depositary Receipt Directory) that contains information on current depositary receipt

[9] We require that a firm have a minimum of 50 daily observations within a year to compute the illiquidity measures. Also, for the Amihud illiquidity ratio, we eliminate daily observations with absolute returns over 50 percent (following Lesmond, 2005) and remove the top and bottom one percent of the daily observations before computing the yearly measure.

[10] In cross-checking with country sources, the EMDB is very accurate, but for Argentina, we discovered that the EMDB is inconsistent over time. Thus, unlike previous studies, we circumvent this problem by collecting the data directly from the Buenos Aires Stock Exchange.

[11] We work with emerging economies because (i) policymakers and analysts from these countries increasingly express concerns that despite the reform efforts, internationalization is hurting their domestic stock markets and (ii) for these countries, we were able to compile comparable data on domestic stock market activity from a centralized source, the Emerging Markets Database.

activities, the Bank of New York gave us access to their historical databases and reports on (i) depositary receipt program initiation dates, (ii) termination dates (if any), (iii) capital raisings, and (iv) trading activity. These data form a comprehensive database on ADR and Global Depositary Receipt (GDR) programs. The historical data start in January 1956, but the vast majority of programs begins after 1980.

We augment this information on dating the initiation of international equity market activities with data from Euromoney, the London Stock Exchange (LSE), NASDAQ, and the New York Stock Exchange (NYSE). Euromoney provides the dates when firms raise equity capital in international markets, including cross-listings and issuance of global depositary receipts, which substantively enhances the accurate categorization of firms as international or domestic. The Euromoney database covers 8,795 cross-border equity issuance and cross-listing operations from 5,665 firms in 86 countries over the period January 1983 - April 2001. LSE, NASDAQ, and NYSE provide information on listing dates by foreign corporations.

Consistent with our objective of assembling a broad database on internationalization, we classify firms as international if they ever (i) issue depositary receipts, (ii) cross-list, or (iii) raise equity capital through private or public placements abroad. In the time-series dimension, a firm becomes international from the first time it issues a depositary receipt, cross-lists, or raises capital abroad. If it then de-lists, it is considered domestic again. Cross-listings, depositary receipts, and capital raisings on major public exchanges clearly involve ongoing trading of domestic firms in foreign countries. However, private capital raisings or cross-listings on over-the-counter (OTC) markets are different because they do not provide firms with an easy vehicle for having their shares traded abroad. Thus, while the issuance of depositary receipts and cross-listing on public exchanges may involve the two effects discussed in the Introduction (migration and spillovers), cross-listings on

OTC markets and private capital raisings are less likely to generate migration. Therefore, we analyze these types of listings separately from cross-listings and capital raisings in public exchanges and confirm that they have a different relation with the domestic trading of international firms.

We use balance sheet information on each firm to control for firm-specific characteristics that may influence liquidity. For simplicity, in the results discussed below, we present the regressions controlling for firm size only, but the results are robust to controlling for other firm traits, e.g., sales growth and industry dummy variables. We obtain these data from the Worldscope database (Thomson Financial Company).

Regarding the country-level trading variables, we compute aggregate domestic turnover from firm-level turnover data. Additionally, we control for trading abroad. To do so, we use data on ADR trading. The dataset comes from the Bank of New York, providing the value traded in U.S. dollars at the firm level. We then aggregate these data to obtain country-level measures. Data from the LSE and the Frankfurt Stock Exchange (FSE) on the trading of depositary receipts and cross-listed firms are not available for our entire time span and, thus, are not included in our dataset. This underestimates the amount of trading abroad, but it is unlikely to systematically bias the results in any particular direction.

We include an assortment of country-level control variables. In particular, we use gross domestic product (GDP) per capita as a measure of countries' overall economic development. Moreover, as the legal and institutional environments have been found to matter for financial development, we include the law and order index, as reported by the International Country Risk Guide service, as an independent variable. We also control directly for a country's stock market development by including the aggregate market capitalization as a percentage of GDP. Finally, since we analyze the impact of firms' decisions to internationalize, it is important to control for the stock

market openness. Therefore, we include two alternative measures of stock market liberalization. The first one is a dummy variable which equals one after a country liberalizes its stock market, and zero otherwise. The data for dating the liberalization of stock markets come two sources: Bekaert, Harvey, and Lundblad (2005), who present official liberalization dates, and Vinhas de Souza (2005), who constructs an index of the extent of stock market liberalization for Eastern European countries. We combine these two sources to get the widest possible coverage. The second stock market liberalization variable comes from Edison and Warnock (2003) and measures the degree of market integration by estimating the availability of a country's equities to foreigners.

The final dataset covers the period 1989 to 2000, with over 9,000 firm-year observations, from 45 emerging economies (as classified by the EMDB). To control for the effects of possible outliers and data entry errors, we eliminate year observations when the dependent variable in a regression is more than three standard deviations away from the country mean. Appendix Table 1 lists the countries included in the study and the number of domestic and international firms per country used for the dependent variables and to compute the aggregate turnover measures.[12] The table also has summary statistics of the liquidity and trading variables. Appendix Table 2 provides additional information on the data sources.

III. Methodology and Results

This section examines a two-step mechanism through which firms that access international equity markets may affect the liquidity of firms that do not internationalize. The first part of this test involves testing for migration. Does the trading of a firm's stock migrate from the domestic to the international market after it internationalizes? Second, we test for spillovers. Does aggregate trading

[12] The difference in the number of firms used in the regressions and those used to calculate the aggregate measures is explained by the availability of data on the firm- and country-level characteristics included in the regressions.

activity in a market influence the liquidity of individual shares traded in that market? Evidence affirming both migration and spillovers is consistent with the view that when a firm cross-lists or issues a depositary receipt, this exerts a negative influence on the liquidity of other firms trading in the domestic market.

A. Migration

A.1. Migration: Cross-listing and Issuing Depositary Receipts

We first examine what happens to the trading of a firm in the domestic market after it cross-lists, issues a depositary receipt, or raises capital in an international public exchange. That is, we examine only firms that create a mechanism to have their shares easily traded in a major international financial market. In this way, we restrict the sample to firms for which substantial migration is feasible. We estimate the following specification,

$$T^{I}_{j,c,t} = \gamma_1 \times ID_{j,c,t} + \gamma_2 \times A_{\bar{j},c,t} + \theta' C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t}\,. \qquad (1)$$

The regressions include country and year effects (n_c and τ_t respectively), though these are not reported in the tables. The regressions are estimated using clustered Newey-West standard errors, reported in brackets. These standard errors are robust to heteroskedasticity and since the errors are clustered at the firm level, the estimation does not assume that each firm-observation is independent, which allows for autocorrelation within firms.

$T^{I}_{j,c,t}$ is the logarithm of one plus the turnover ratio of international firm j from country c in year t, where the turnover ratio equals the total value traded of firm j's stock during year t divided by firm j's market capitalization.[13] The superscript I designates that it is an international firm, which is a firm that issues a depositary receipt, cross-lists, or raises capital abroad at some point in the sample.

[13] We use this transformation because the total value traded is sometimes zero. An alternative measure of trading activity is the number of shares traded in one year divided by the number of shares outstanding. This alternative abstracts from price changes. But, it is impossible to aggregate usefully across different stocks to obtain country-level activity measures, which we need to assess spillovers.

As noted, we further restrict the sample in Table 1 to firms that cross-list or issue depositary receipts in public exchanges.

$ID_{j,c,t}$ is a dummy variable that equals zero if firm j from country c during year t has not yet internationalized. It equals one in the year the firm internationalizes and remains one thereafter unless the firm de-lists or ends its depositary receipt program. In defining the internationalization dummy, we use the firm's first internationalization activity. Thus, if a firm first issues a private placement abroad and later cross-lists in an international public exchange, this firm is not included in the Table 1 regressions. If the estimated coefficient on ID is negative (i.e., if $\gamma_1<0$), then this indicates that when a firm internationalizes its turnover in the local market tends to fall.

$A_{j,c,t}$ equals the logarithm of the total assets (in U.S. dollars) of firm j from country c in year t. Since research suggests that large, liquid firms tend to internationalize and since we want to capture the independent relation between internationalization and local activity, we control for firm size.

$C_{c,t}$ is a set of time-varying country characteristics. First, we include the average turnover of domestic firms (in logarithms). Since we are testing whether the domestic trading activity of international firms changes when a firm internationalizes, we include the trading activity of other firms in the domestic market to control for the myriad of factors shaping aggregate domestic trading activity. This helps identify the connection between a firm's decision to internationalize and its domestic trading activity. Furthermore, including the average turnover of domestic firms provides information on the relation between the domestic activity of an individual firm, $T^I_{j,c,t}$, and aggregate market activity. In particular, a positive coefficient on the average turnover of domestic firms indicates that an individual firm's domestic trading activity is positively associated with aggregate trading in the market.

Second, we include two alternative measures of the openness of each country's stock exchanges. The stock market liberalization dummy equals zero before a country liberalizes and one after a country formally allows foreign investors to invest in domestic equities. The Edison and Warnock (2003) liberalization measure is the ratio of the market capitalization of the S&P/IFC Investable Index over the total market capitalization of each country.[14] This index provides a quantitative measure of the availability of the country's equities to foreigners. We include these indicators in the analyses to control for the possibility that national policies toward stock market liberalization will affect both domestic trading activity and internationalization decisions.

Third, the regressions in Table 1 include a measure of the share of total trading of a country's stocks that occurs abroad. In particular, $\log(1 + (\text{Value Traded Abroad/Total Value Traded}))_{c,t}$ equals the logarithm of one plus the value traded abroad of country c's international firms in year t divided by the total value traded in all markets of country c's international and domestic firms in year t. Thus, we control for the relation between the degree to which a country's firms are traded abroad and the domestic trading of a firm's shares. This provides greater power in assessing the independent relation between a firm's decision to internationalize and the trading of its shares on the local market.

Finally, we control for the country's level of economic, financial, and legal development as measured by GDP per capita, domestic stock market capitalization divided by the country's GDP, and the overall level of law and order in the economy. Thus, we want to evaluate the relation between a firm's decision to internationalize and its domestic trading activity while holding constant country, financial, and legal development.

[14] Edison and Warnock (2003) calculate a smoothed measure that takes into account asymmetric shocks to investable and non-investable stocks, which would lead to changes in the ratio of market capitalization. They convert this variable into a capital control measure by taking one less the adjusted ratio. To be consistent with the stock market liberalization dummy, we converted their capital control measure into a liberalization index by subtracting one from it.

Table 1 provides evidence consistent with migration. Firms that cross-list or issue depositary receipts tend to experience a drop in domestic trading activity. Across the different specifications, the internationalization dummy (ID) enters with a negative and significant (at the five percent level) coefficient. Critically, we find that a firm's domestic trading activity falls after it cross-lists or issues a depositary receipt in an international public exchange even when controlling for aggregate trading activity in the domestic market, liberalization of the domestic market, firm size, a number of country characteristics, as well as country and year dummy variables. The size of the coefficient in regression 5 of Table 1 indicates that the average firm experiences a fall of its domestic turnover of about 20 percent after cross-listing or issuing a depositary receipt in an international public exchange.[15] Thus, internationalization is associated with a substantive drop in domestic trading.

Furthermore, Table 1 indicates a strong positive association between the average level of trading activity by domestic firms in the market and the domestic turnover of the firm that internationalizes. Average turnover of domestic firms enters positively and significantly in all of the regressions. This shows that the domestic trading activity of an individual firm is positively linked to aggregate trading in the market even after controlling for country and year effects, many time-varying country effects, as well as the size of the firm. The effect is also economically relevant. The size of the coefficient in regression 5 of Table 1 indicates that an individual international firm's domestic turnover tends to rise by more than five percent when there is an increase in the average turnover of domestic firms of 10 percent.[16] After controlling for the internationalization dummy and average

[15] To compute this, note that the dependent variable in these regressions is the logarithm of one plus the domestic turnover of international firms. Since the coefficient on the internationalization dummy is -0.07, the estimated relation indicates that internationalization is associated with a seven percent drop in one plus the domestic turnover of international firms. Given that the average domestic turnover for the sample of international firms included in regression 5 is 0.56, this implies that internationalization into a public stock exchange is associated with a 20 percent drop in the domestic turnover of the average firm.

[16] To see this, note that the coefficient in regression 5 in Table 1 indicates that a rise in one plus the average turnover of domestic firms of five percent is associated with an increase in one plus the domestic turnover of international firms of 2.1 percent. Given that the average turnover of domestic firms in these regressions is 0.91, this means that an 11 percent

turnover, however, the other variables add little explanatory power. The only exceptions are the size of the stock market (market capitalization/GDP) and to a lower extent the rule of law tradition in the country (law and order). As expected, market size and the rule of law are positively linked with domestic market trading activity.

A.2. Migration: Private Placements and Level I ADRs

As a robustness check, we examine firms that internationalize in a manner that does not provide a mechanism for their shares to be easily traded on an international public exchange. These are firms, therefore, for which migration is much more costly. Thus, if migration is driving the earlier results in Table 1, we should not observe a negative coefficient on the internationalization dummy when examining this sub-sample of firms where migration is less likely. More specifically, we examine firms that internationalize (i) through private placements in international markets or (ii) by cross-listing on the U.S. over-the-counter (OTC) market through Level I ADR programs. While trading of Level I ADRs on the OTC, for example, is possible through securities dealers, this arrangement does not provide the ease and low cost of trading on a major public exchange.[17] Similarly, while private placements under rule 144A in the U.S. are traded on the electronic PORTAL system among qualified institutions, internationalization in this manner does not provide a vehicle for firms to have their shares as widely and inexpensively traded as in a major public stock market. For comparison purposes, therefore, we examine this subset of firms for which migration will tend to be more costly than for those that internationalize through cross-listing or issuing depositary receipts in a public exchange. As above, in defining the date of internationalization, we use the firm's

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increase in this variable leads to a six percent increase in the domestic turnover of international firms, where the average domestic turnover of international firms is about 0.56.

[17] Specifically, Level I ADRs are quoted on the Pink Sheets Electronic Quotation Service and/or the OTC Bulletin Board for use by a network of security dealers that make markets in the particular securities.

first internationalization activity. In terms of estimation, we use the same specification and econometric techniques as in equation (1).

As shown in Table 2, internationalization that does not provide a vehicle for trading shares abroad on organized exchanges is not associated with a reduction in the turnover of the firm's shares in the local market. That is, the internationalization dummy does not enter negatively and significantly. Rather, we find that raising capital through private placements abroad or cross-listing on the U.S. OTC market through Level I ADRs tends to boost the trading of the firm's shares in the domestic market. This could represent a signaling effect, as investors in emerging markets increase their trading of firms that access capital in major financial centers. Although we do not identify the reasons underlying the positive relation between internationalization and domestic turnover for these firms, this result highlights our early findings on migration. When firms from emerging markets internationalize in a way that allows their shares to be traded abroad, they tend to experience a drop in trading activity in their own markets.

These results also suggest that the migration results are not driven by reverse causality, whereby firms internationalize to flee from deteriorating domestic markets. As already noted when discussing the Table 1 regressions, we control for domestic market conditions. Thus, the domestic trading of international firms tends to fall following internationalization in international public exchanges even when conditioning on the activity in the domestic market. Moreover, the Table 2 regressions show that firms that internationalize without providing a mechanism to have their shares traded in public markets abroad experience an increase, not a decrease, in domestic trading activity, which runs counter to the fleeing argument. Furthermore, Claessens, Klingebiel, and Schmukler (2005) show that firms from countries with good economic and institutional fundamentals are more likely to access international capital markets, which also runs counter to the view that firms from

countries with poor local environments are the one that internationalize. Thus, these robustness tests and related findings provide further support to the migration channel.

A.3. Migration: Additional Evidence and Comments

We provide additional evidence on the size of the migration effect and on the total trading activity of firms that internationalize by examining a subset of firms with detailed trading data in both domestic and international markets. Specifically, for firms that internationalize by issuing Level II and III American Depositary Receipts, we have data on the trading of their shares in both their local market and in New York. For these firms, we assess the degree to which trading actually shifts abroad after internationalization and what happens to the total trading of a firm's shares. We use the same basic specification provided in equation (1), except that the dependent variable in Table 3 is total turnover of international firm j from country c in year t ($TT^{I}_{j,c,t}$) and the dependent variable in Table 4 is the fraction of total turnover of international firm j from country c in year t that takes place in New York ($T^{I}_{j,c,t} / TT^{I}_{j,c,t}$).

Tables 3 and 4 show that (i) the total turnover of a firm soars after it internationalizes and (ii) the proportion of total trading that occurs in the local market plummets. Specifically, the coefficients in Table 3 show that the total turnover of international firms increases by around 35 percent following internationalization.[18] Recall from Table 1 that the domestic turnover of international firms tends to fall after internationalization. Indeed, the estimated coefficients on the internationalization dummy in Table 4 indicate that one plus the proportion of domestic trading of an international firm falls by about 25 percent following internationalization. Since this ratio equals two before

[18] Following the same method as above for illustrating the economic magnitudes of these estimated relations, the estimated coefficient indicates that one plus the total turnover ratio of firm j from country c in year t rises by about 18 percent following internationalization. This increase is large given that the average value of the total turnover of international firms included in these regressions is about 1.04, which means that for the average firm, total turnover rises by 35 percent after it internationalizes.

internationalization (by definition), these estimates imply that the percentage of domestic trading of international firms falls to about 50 percent after a firm issues a Level II or III ADR.

These findings are consistent with migration. After controlling for many factors, we find that firms that internationalize by allowing their shares to be traded in major financial centers tend to experience a drop in the domestic market trading activity of their shares and a rise in total trading activity, as trading migrates abroad. Also consistent with migration, firms that internationalize without establishing a vehicle to have their shares traded internationally in major public exchanges do not experience a drop in their domestic market trading.

In these analyses, we focused on trading activity, not liquidity, for two reasons. First, we are assessing a possible two-step mechanism linking internationalization with the liquidity of domestic firms. The first step involves migration: Does a firm's domestic trading activity fall after it internationalizes? Consequently, we examine trading, not liquidity. Second, it is conceptually difficult to measure the liquidity of a stock that is traded in more than one market. The majority of the trading could occur in New York, for example, where the price is established. In this case, there may be no link between trading and prices in the local market. Therefore, it would be inappropriate to conclude that the local market is more or less liquid based on price-impact liquidity measures. Thus, given our objectives in this paper, we first tested for migration by examining trading. Having found evidence consistent with migration, we now examine the second part of the migration-spillover mechanism: Does the domestic trading of firms that have internationalized influence the liquidity of domestic firms?

B. Spillovers

This section evaluates whether the aggregate trading of international firms in the domestic market affects the trading activity and liquidity of individual domestic firms. To conduct this test, we

begin by examining whether the trading activity of a domestic equity varies with the aggregate domestic trading activity of international firms. Then, we use two specific measures of liquidity to assess whether the liquidity of a domestic equity varies with the aggregate domestic trading activity of international firms. Finding that trading activity and liquidity of individual domestic firms are positively associated with the aggregate trading activity of international firms in the local market after controlling for firm and country factors would constitute evidence of spillovers.

B.1. Spillovers: Trading Activity

In Table 5, we assess whether the turnover ratio of domestic firm j from country c in year t ($T^{D}_{j,c,t}$) is related to the aggregate domestic turnover of public international firms from country c in year t ($T^{I}_{c,t}$). In testing for spillovers, we only examine the domestic trading activity of international firms that are traded in public markets abroad, as the evidence presented above shows that the domestic turnover of these firms tends to fall following internationalization. Thus, $T^{I}_{c,t}$ does not include the domestic trading activity of firms that internationalized through private placements or through the OTC market.[19] The following specification is estimated:

$$T^{D}_{j,c,t} = \gamma_1 \times T^{I}_{c,t} + \gamma_1 \times A_{j,c,t} + \theta' C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t} . \quad (2)$$

As in the migration regressions, we estimate the standard errors by clustering at the firm level, include country and year dummy variables, and allow for non-spherical disturbances. Furthermore, we incorporate the same time-varying firm and country characteristics discussed and defined in the subsection on migration. By conditioning on these variables, the goal is to identify the independent relation between the trading of international firms in the local market and the trading activity (and later liquidity) of individual domestic firms.

[19] The results hold when using the domestic turnover of all international firms. This supports the basic principle of spillovers: the aggregate activity of a market influences the liquidity of individual shares.

The results are consistent with large spillovers. The coefficient on $T^{I}_{c,t}$ enters positively and significantly at the one percent level in all of the specifications in Table 5. The spillover effects are economically relevant. The size of the coefficient in regression 5 of Table 5 implies that the average domestic firm will experience a five percent reduction in its turnover when the average domestic turnover of international firms falls by 12 percent.[20] Thus, the estimated coefficients suggest an economically large relation between the trading of an individual domestic firm and the aggregate trading of international firms on the local market.

We find these spillover effects when controlling for many country and firms characteristics. In particular, after conditioning on country and year dummy variables, the size of the domestic firm, the level of economic development, the size of the local stock market, the degree to which the rule of law exists in the country, and indicators of stock market liberalization, we find evidence consistent with spillovers. Furthermore, we control for the fraction of total trading that occurs in international financial centers, which captures additional information about the aggregate appeal of trading in the international market relative to the domestic market. Nevertheless, we continue to find an independent relation between the trading of a domestic firm and domestic trading of international firms, which is consistent with spillovers. Furthermore, the estimated size of the spillover effect does not vary much when using various combinations of these control variables.

The estimated coefficients on the other regressors in Table 5 also provide useful information. The fraction of trading that occurs in international financial centers enters negatively and significantly. Even when controlling for many country traits and while controlling for the domestic trading of international firms, we find that the fraction of trading activity that occurs abroad is

[20] The coefficient shows that a five percent increase in one plus the average domestic turnover of international firms leads to an increase of almost three percent in one plus the turnover of domestic firms. Given that the average domestic turnover of international firms (in this regression) is 0.70 and the average turnover of domestic firms is 1.4, these implies that that the average domestic firm's stock will experience a five percent reduction in its turnover when the average domestic turnover of international firms falls by 12 percent.

negatively associated with the domestic trading activity of domestic firms. While it is impossible to pin one interpretation to the coefficient on this variable, the results suggest that something beyond the migration and spillover channel links internationalization and domestic markets. For example, the results indicate that as New York becomes a more important trading place for Mexican stocks (relative to the total trading of Mexican stocks), the turnover of domestic Mexican stocks declines. Thus, according to this measure, internationalization is associated with a drop in the trading of domestic firms, even after controlling for local market conditions.

Finally, note that the logarithm of total assets enters negatively in these regressions. This is because assets are very highly correlated with market capitalization, and the dependent variable (turnover) has market capitalization in its denominator. In the tables below where we examine specific measures of liquidity, we find a positive relation between firm size and liquidity.

B.2. Spillovers: Amihud Illiquidity Index

Next, we examine the impact of internationalization on the liquidity of domestic equities, using daily data to compute Amihud's (2002) illiquidity index. Liquidity is a complex concept that is not observed directly. While many authors use turnover as a proxy for liquidity, turnover does not directly measure trading costs or the price impact of transactions. Bid-ask spread measures of trading costs do not exist for the bulk of our sample, so we compute a price-impact measure. Since Hasbrouck (2005) finds that, within the class of price-impact liquidity estimates, Amihud's (2002) illiquidity index is the most reliable proxy of trading costs, we start with this measure.

Amihud's (2002) illiquidity index is defined as the average ratio of absolute return to trading value. Based on daily data, the illiquidity ratio is defined as follows

$$I_{j,c,t} = \frac{1}{D_{j,c,t}} \sum_{d=1}^{D_{j,c,t}} \frac{\left|\Delta P_{j,c,d,t}\right|}{V_{j,c,d,t}}. \qquad (3)$$

Where $I_{j,c,t}$ is the illiquidity ratio of firm j from country c in year t, $\Delta P_{j,c,d,t}$ is the percent change in the stock price of firm j from country c on day d of year t, $V_{j,c,d,t}$ is the value traded of firms' j stock from country c on day d of year t, and $D_{j,c,t}$ is the number of days for which the ratio can be calculated for firm j from country c in year t.[21] The illiquidity index relates the absolute value of price movement to the value of equity transactions. Put differently, for a dollar denominated equity, the illiquidity index is interpreted as the percent price response to one dollar worth of trading, so that higher values signify less liquidity. This measure follows Kyle's (1985) concept of liquidity, the response of price to order flow. To examine spillovers from the domestic trading of international firms to the liquidity of domestic firms, we use the same specification as in equation (2), except now the dependent variable is Amihud's illiquidity index ($I^{D}_{j,c,t}$).[22]

The results presented in Table 6 provide additional evidence for spillovers. Average turnover of public international firms in the domestic market (measured in logarithms) enters negatively and significantly at the one percent level in all of the illiquidity regressions. This suggests that less domestic trading of international firms is associated with a drop in the liquidity (higher Amihud illiquidity index) of domestic firm shares. Again, these results hold when conditioning on a wide assortment of information. Furthermore, the spillover effects from the domestic trading of international firms to the liquidity of domestic stocks are relevant, though not enormous. The size of the coefficient in regression 5 of Table 6 suggests that the illiquidity index of the typically domestic firm will jump by about two percent when the domestic turnover of international firms falls by 10 percent.[23] Since internationalization is associated with a drop in the domestic turnover of the average

[21] This index is multiplied by 10^6.
[22] In our sample, this illiquidity measure is correlated with turnover. For domestic firms, the simple correlation coefficient is -0.34 (significant at the one percent level), that is, as turnover increases illiquidity decreases.
[23] Following the illustrative examples above, the regression estimates suggest that a five percent decrease in one plus the average domestic turnover of international firms is associated with an increase of one percent in one plus the Amihud

internationalizing firm of about 20 percent (Table 1), these estimates suggest a non-negligible link between internationalization and the liquidity of domestic firms.

We also find that the illiquidity of a domestic stock is positively associated with the share of trading occurring in international markets. This holds even when controlling for local market conditions, including the domestic trading of international firms. Thus, while the results in Table 6 support the hypothesis of spillovers, the results also indicate that as trading abroad increases in relative terms, the liquidity of domestic firms falls. This effect is independent of spillover effects.

B.3. Spillovers: Zero Return Illiquidity Measures

We finally consider an additional measure of the illiquidity of domestic stocks. $ZR^{D}_{j,c,t}$ equals the fraction of trading days in a year t when a firm's stock (firm j from country c) experienced zero returns. As mentioned in the Introduction, the literature has recently used illiquidity measures based on the proportion of zero-return days.[24] Although there is greater theoretical appeal to using price-impact liquidity measures, such as the Amihud ratio employed above, we use this additional measure of liquidity as a robustness check.[25]

The results in Table 7 are consistent with spillovers. The domestic trading of international firms is negatively associated with illiquidity. In particular, there is a negative and significant (at the one percent level) relation between the proportion of days with zero returns and the logarithm of one plus the average turnover of public international firms in the domestic market. Thus, a reduction in

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illiquidity ratio of domestic firms. Given that the average domestic turnover of international firms for the sample included in this specification is 0.72 and the average illiquidity index for domestic firms is 0.81, this means that the illiquidity of domestic firms tends to rise by two percent when there is a 12 percent decrease in domestic trading of international firms.

[24] Lesmond, Ogden, and Trzcinka (1999) argue that if the value of information is insufficient to outweigh the costs associated with transacting, then market participants will choose not to trade, resulting in an observed zero return. Therefore, the proportion of zero returns is associated with transaction costs. In our data, the proportion of zero-return days is positively correlated with the Amihud measure and negatively correlated with turnover, with the correlations being 0.24 and -0.15, respectively, and in both cases significant at the one percent level.

[25] We also created an additional indicator of liquidity, equal to the fraction of trading days in year t when a firm's stock (firm j from country c) experienced zero trading, that is zero returns and no trading activity. Holding other things constant, more days with no trading suggests less liquidity. When we use this as the dependent variable, we find very similar results.

the domestic trading of international firms is associated with an increase in the number days that domestic firms experience zero returns. Moreover, confirming previous results, when trading abroad as a share of total trading increases, the proportion of zero return days by domestic firms increases, i.e. domestic firms become more illiquid.

IV. Conclusion

In this paper, we find evidence consistent with the two-part migration-spillover view of internationalization. When a firm cross-lists or issues depositary receipts in an international public exchange (e.g., the NYSE), trading of the firm's shares tends to migrate out of the domestic market and into the international market. Specifically, the domestic trading activity of international firms falls after they internationalize. Furthermore, there are externalities – spillovers – in stock markets. The liquidity of individual domestic firms is positively associated with the aggregate domestic trading activity of international firms even when controlling for domestic market conditions, country characteristics, and firm traits. Thus, the evidence supports the view that firms that cross-list or issue depositary receipts in major public exchanges facilitate the migration of trading out of the domestic market, which hurts the liquidity of domestic firms.

The estimated effects suggest that internationalization is associated with important distributional effects. Firms that internationalize experience a substantial increase in the total (domestic plus international) trading of their shares. However, the migration of their trading out of the domestic market and into international markets is tied to a substantive drop in the liquidity of domestic firms. Thus, internationalization is associated with large distributional changes to liquidity across firms. These effects are relevant because, as shown by Amihud and Mendelson (1986), firm

liquidity influences the cost of capital. It would be valuable for future research to investigate whether domestic firms receive countervailing benefits from the internationalization process.

We also document liquidity spillovers in markets around the world. These spillover effects represent a powerful force for the consolidation of trading within a few markets. This consolidation may occur both within a country and across international markets. This paper has shown that for international firms from emerging economies the relevant market might lie outside the borders of their home markets. On the other hand, Halling, Pagano, Randl, and Zechner (2005) find that for European cross-listed firms the relevant market is within their home country. These differences suggest that markets of different sizes and quality may have different "gravitational pulls" on the trading activity of cross-listed firms. More research is needed to understand the determinants and implications of these different equilibria.

Finally, besides showing that the migration-spillover mechanism is robust to numerous sensitivity tests, we also find that it is not the only channel linking internationalization and the liquidity of domestic firms. In particular, the proportion of trading occurring on international exchanges increases significantly after each firm internationalizes. Moreover, the aggregate share of trading abroad is negatively associated with the liquidity of domestic firms. Thus, even when controlling for the migration-spillover channel and domestic market conditions, a domestic firm's liquidity is negatively linked with the proportion of trading from the same country that takes place aboard. While considerably more research is needed to understand this additional connection between internationalization and the liquidity of domestic firms, the findings are consistent with arguments that investors seeking to hold country-specific risk shift their trading of a country's stocks to lower cost, lower risk international markets when firms from that country internationalize. This reduces trading in the domestic market with negative repercussions on the liquidity of domestic firms.

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Table 1

Domestic Trading Activity of International Firms: Publicly Listed Firms

The dependent variable is the logarithm of one plus the turnover ratio in domestic markets of firms that internationalize by allowing their shares to be traded on a major international exchange. The internationalization date represents the date of their first international activity. The internationalization dummy (ID) equals one on and after the year when a firm becomes international and zero otherwise (it becomes zero if a firm is delisted). The regressions include country and year dummies, though they are not reported in the table. Clustered Newey-West standard errors are in brackets. These standard errors are robust to heteroskedasticity and since the errors are clustered at the firm level, the estimation does not assume that each firm observation is independent, which allows for autocorrelation within firms. *, **, *** mean significance at ten, five, and one percent, respectively. The estimated equation is the following:

$$T^{I}_{j,c,t} = \gamma_1 \times ID_{j,c,t} + \gamma_1 \times A_{j,c,t} + \theta' C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t}$$

Dependent Variable: Log (1+Domestic Turnover)	(1)	(2)	(3)	(4)	(5)
Internationalization Dummy$_{j,c,t}$	-0.064 **	-0.063 **	-0.067 ***	-0.066 ***	-0.071 ***
	[0.025]	[0.026]	[0.025]	[0.025]	[0.025]
Log of Total Assets$_{j,c,t}$	-0.012	-0.008	-0.004	-0.008	-0.004
	[0.008]	[0.008]	[0.007]	[0.008]	[0.007]
Log (1+ Average Turnover of Domestic Firms)$_{c,t}$	0.417 ***	0.435 ***	0.427 ***	0.384 ***	0.423 ***
	[0.050]	[0.053]	[0.057]	[0.053]	[0.053]
Stock Market Liberalization Dummy$_{c,t}$		0.000	0.000		-0.017
		[0.038]	[0.037]		[0.040]
Log of (1+Value Traded Abroad/Total Value Traded)$_{c,t}$			0.051	-0.028	0.079
			[0.101]	[0.107]	[0.098]
Stock Market Liberalization				0.107	
Edison and Warnock (2003) Measure$_{c,t}$				[0.065]	
Log of GDP per capita$_{c,t}$					-0.019
					[0.059]
Market Capitalization / GDP$_{c,t}$					0.127 ***
					[0.039]
Law and Order$_{c,t}$					0.029 *
					[0.017]
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	1,477	1,380	1,351	1,351	1,348
Number of Firms	260	232	231	229	231
R-squared	0.51	0.51	0.48	0.49	0.49

Table 2

Domestic Trading Activity of International Firms: Private Placements and Level I ADRs

The dependent variable is the logarithm of one plus the turnover ratio in domestic markets of firms that internationalize through private placements in international financial centers or by cross-listing on the U.S. over-the-counter (OTC) market through Level I ADR programs. The internationalization date represents the date of their first international activity. The internationalization dummy (ID) equals one on and after the year when a firm becomes international and zero otherwise (it becomes zero if a firm is delisted). Firms are excluded from the regressions if and when they become publicly traded in international equity markets. The regressions include country and year dummies, though they are not reported in the table. Clustered Newey-West standard errors are in brackets. These standard errors are robust to heteroskedasticity and since the errors are clustered at the firm level, the estimation does not assume that each firm observation is independent, which allows for autocorrelation within firms. *, **, *** mean significance at ten, five, and one percent, respectively. The estimated equation is the following:

$$T^{I}_{j,c,t} = \gamma_1 \times ID_{j,c,t} + \gamma_1 \times A_{j,c,t} + \theta' C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t}$$

	Dependent Variable: Log (1+Domestic Turnover)				
	(1)	(2)	(3)	(4)	(5)
Internationalization Dummy$_{j,c,t}$	0.077 ***	0.082 ***	0.065 ***	0.066 ***	0.057 **
	[0.024]	[0.025]	[0.024]	[0.024]	[0.024]
Log of Total Assets$_{j,c,t}$	-0.017 ***	-0.021 **	-0.021 ***	-0.018 **	-0.023 ***
	[0.008]	[0.009]	[0.008]	[0.008]	[0.008]
Log (1+ Average Turnover of Domestic Firms)$_{c,t}$	0.535 ***	0.556 ***	0.499 ***	0.464 ***	0.526 ***
	[0.053]	[0.056]	[0.052]	[0.051]	[0.054]
Stock Market Liberalization Dummy$_{c,t}$		-0.015	-0.037		-0.040
		[0.028]	[0.031]		[0.033]
Log of (1+Value Traded Abroad/Total Value Traded)$_{c,t}$			-0.258 **	-0.292 ***	-0.327 ***
			[0.100]	[0.093]	[0.104]
Stock Market Liberalization Edison and Warnock (2003) Measure$_{c,t}$				0.171 ***	
				[0.061]	
Log of GDP per capita$_{c,t}$					0.103 *
					[0.057]
Market Capitalization / GDP$_{c,t}$					0.142 ***
					[0.036]
Law and Order$_{c,t}$					-0.020
					[0.013]
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	1,551	1,395	1,369	1,461	1,365
Number of Firms	276	232	231	257	230
R-squared	0.53	0.55	0.53	0.50	0.54

Table 3

Total Trading Activity of International Firms: Firms with Level II and III ADRs

The dependent variable is the logarithm of one plus the total turnover ratio of international companies of firms with Level II and III ADR programs, which trade on a major U.S. exchange (Amex, NASDAQ, or NYSE). The internationalization dummy (ID) equals one on and after the year when a firm starts trading in these markets and zero otherwise (it becomes zero if a firm is delisted). The regressions include country and year dummies, though they are not reported in the table. Clustered Newey-West standard errors are in brackets. These standard errors are robust to heteroskedasticity and since the errors are clustered at the firm level, the estimation does not assume that each firm observation is independent, which allows for autocorrelation within firms. *, **, *** mean significance at ten, five, and one percent, respectively. The estimated equation is the following:

$$TT^{I}_{j,c,t} = \gamma_1 \times ID_{j,c,t} + \gamma_1 \times A_{j,c,t} + \theta' C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t}$$

Dependent Variable: Log (1+Total Turnover)	(1)	(2)	(3)	(4)	(5)
Internationalization Dummy$_{j,c,t}$	0.201 ***	0.199 ***	0.182 ***	0.183 ***	0.173 ***
	[0.046]	[0.049]	[0.051]	[0.046]	[0.052]
Log of Total Assets$_{j,c,t}$	-0.045 **	-0.038 **	-0.027 *	-0.033 **	-0.024
	[0.018]	[0.019]	[0.016]	[0.015]	[0.015]
Log (1+ Average Turnover of Domestic Firms)$_{c,t}$	0.434 ***	0.451 ***	0.423 ***	0.403 ***	0.425 ***
	[0.088]	[0.089]	[0.094]	[0.087]	[0.089]
Stock Market Liberalization Dummy$_{c,t}$		-0.061	-0.085		-0.084
		[0.060]	[0.059]		[0.069]
Log of (1+Value Traded Abroad/Total Value Traded)$_{c,t}$			0.330 **	0.253	0.411 ***
			[0.155]	[0.165]	[0.159]
Stock Market Liberalization Edison and Warnock (2003) Measure$_{c,t}$				0.026	
				[0.101]	
Log of GDP per capita$_{c,t}$					-0.226 **
					[0.092]
Market Capitalization / GDP$_{c,t}$					-0.037
					[0.083]
Law and Order$_{c,t}$					0.036
					[0.023]
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	704	663	651	662	651
Number of Firms	121	108	107	112	107
R-squared	0.55	0.54	0.51	0.53	0.52

Table 4
Migration: Firms with Level II and III ADRs

The dependent variable is the logarithm of one plus the ratio of turnover in domestic markets over the total turnover of firms with Level II and III ADR programs, which trade on a major U.S. exchange (Amex, NASDAQ, or NYSE). The internationalization dummy (ID) equals one on and after the year when a firm starts trading in these markets and zero otherwise (it becomes zero if a firm is delisted). The regressions include country and year dummies, though they are not reported in the table. Clustered Newey-West standard errors are in brackets. These standard errors are robust to heteroskedasticity and since the errors are clustered at the firm level, the estimation does not assume that each firm observation is independent, which allows for autocorrelation within firms. *, **, *** mean significance at ten, five, and one percent, respectively. The estimated equation is the following:

$$T^{I}_{j,c,t} \Big/ TT^{I}_{j,c,t} = \gamma_1 \times ID_{j,c,t} + \gamma_1 \times A_{j,c,t} + \theta C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t}$$

Dependent Variable:
Log (1+Turnover in Domestic Market / Total Turnover)

	(1)	(2)	(3)	(4)	(5)
Internationalization Dummy$_{j,c,t}$	-0.271 ***	-0.266 ***	-0.254 ***	-0.255 ***	-0.251 ***
	[0.016]	[0.017]	[0.018]	[0.018]	[0.018]
Log of Total Assets$_{j,c,t}$	0.005	0.008	0.007	0.004	0.007
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
Log (1+ Average Turnover of Domestic Firms)$_{c,t}$	0.080 ***	0.089 ***	0.069 ***	0.051 *	0.061 **
	[0.024]	[0.026]	[0.026]	[0.026]	[0.027]
Stock Market Liberalization Dummy$_{c,t}$		-0.047 *	-0.032		-0.018
		[0.026]	[0.020]		[0.022]
Log of (1+Value Traded Abroad/Total Value Traded)$_{c,t}$			-0.262 ***	-0.302 ***	-0.352 ***
			[0.071]	[0.073]	[0.074]
Stock Market Liberalization				0.050	
Edison and Warnock (2003) Measure$_{c,t}$				[0.038]	
Log of GDP per capita$_{c,t}$					0.117 ***
					[0.042]
Market Capitalization / GDP$_{c,t}$					0.078 **
					[0.031]
Law and Order$_{c,t}$					-0.036 ***
					[0.010]
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	696	655	643	654	643
Number of Firms	121	108	107	112	107
R-squared	0.62	0.63	0.63	0.63	0.65

Table 5
Trading Activity of Domestic Firms

The dependent variable is the logarithm of one plus the turnover ratio of domestic companies. The regressor $T^{I}_{c,t}$ equals the logarithm of 1 plus the average domestic turnover of international firms that are traded in major public exchanges abroad. The regressions include country and year dummies, though they are not reported in the table. Clustered Newey-West standard errors are in brackets. These standard errors are robust to heteroskedasticity and since the errors are clustered at the firm level, the estimation does not assume that each firm observation is independent, which allows for autocorrelation within firms. *, **, *** mean significance at ten, five, and one percent, respectively. The estimated equation is the following:

$$T^{D}_{j,c,t} = \gamma_1 \times A_{j,c,t} + \gamma_1 \times T^{I}_{c,t} \times + \theta' C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t}$$

	Dependent Variable: Log (1+Domestic Turnover)				
	(1)	(2)	(3)	(4)	(5)
Log of Total Assets$_{j,c,t}$	-0.078 ***	-0.076 ***	-0.075 ***	-0.081 ***	-0.076 ***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
Log (1+ Average Turnover of Public International	0.491 ***	0.576 ***	0.563 ***	0.418 ***	0.589 ***
Firms in the Domestic Market)$_{c,t}$	[0.034]	[0.036]	[0.039]	[0.041]	[0.041]
Stock Market Liberalization Dummy$_{c,t}$		-0.026	-0.012		-0.014
		[0.029]	[0.028]		[0.027]
Log of (1+Value Traded Abroad/Total Value Traded)$_{c,t}$			-0.491 ***	-0.542 ***	-0.493 ***
			[0.066]	[0.069]	[0.070]
Stock Market Liberalization				0.159 ***	
Edison and Warnock (2003) Measure$_{c,t}$				[0.030]	
Log of GDP per capita$_{c,t}$					0.318 ***
					[0.046]
Market Capitalization / GDP$_{c,t}$					-0.105 ***
					[0.020]
Law and Order$_{c,t}$					0.008
					[0.010]
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	6,027	5,704	5,518	5,487	5,496
Number of Firms	1,233	1,128	1,110	1,083	1,107
R-squared	0.53	0.55	0.53	0.50	0.53

Table 6
Liquidity of Domestic Firms: Amihud Illiquidity Ratio

The dependent variable is the logarithm of one plus the Amihud illiquidity ratio of domestic companies. The regressor $T^{I}_{c,t}$ equals the logarithm of 1 plus the average domestic turnover of international firms that are traded in major public exchanges abroad. The regressions include country and year dummies, though they are not reported in the table. Clustered Newey-West standard errors are in brackets. These standard errors are robust to heteroskedasticity and since the errors are clustered at the firm level, the estimation does not assume that each firm observation is independent, which allows for autocorrelation within firms. *, **, *** mean significance at ten, five, and one percent, respectively. The estimated equation is the following:

$$I^{D}_{j,c,t} = \gamma_1 \times A_{j,c,t} + \gamma_1 \times T^{I}_{c,t} \times + \theta' C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t}$$

Dependent Variable:
Log (1+Amihud Illiquidity Ratio)

	(1)	(2)	(3)	(4)	(5)
Log of Total Assets$_{j,c,t}$	-0.097 ***	-0.095 ***	-0.097 ***	-0.100 ***	-0.094 ***
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Log (1+ Average Turnover of Public International	-0.187 ***	-0.230 ***	-0.285 ***	-0.179 ***	-0.200 ***
Firms in the Domestic Market)$_{c,t}$	[0.024]	[0.025]	[0.033]	[0.033]	[0.034]
Stock Market Liberalization Dummy$_{c,t}$		0.035	0.026		-0.084 *
		[0.040]	[0.040]		[0.043]
Log of (1+Value Traded Abroad/Total Value Traded)$_{c,t}$			0.235 **	0.361 ***	0.427 ***
			[0.115]	[0.117]	[0.118]
Stock Market Liberalization				-0.200 ***	
Edison and Warnock (2003) Measure$_{c,t}$				[0.028]	
Log of GDP per capita$_{c,t}$					-0.259 ***
					[0.058]
Market Capitalization / GDP$_{c,t}$					-0.172 ***
					[0.014]
Law and Order$_{c,t}$					0.018
					[0.013]
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	5,649	5,343	5,143	5,282	5,140
Number of Firms	954	880	874	876	874
R-squared	0.39	0.40	0.40	0.38	0.42

Table 7
Liquidity of Domestic Firms: Proportion of Zero Return Days

The dependent variable is the logarithm of one plus the proportion of zero return days of domestic companies. The regressor $T^{I}_{c,t}$ equals the logarithm of 1 plus the average domestic turnover of international firms that are traded in major public exchanges abroad. The regressions include country and year dummies, though they are not reported in the table. Clustered Newey-West standard errors are in brackets. These standard errors are robust to heteroskedasticity and since the errors are clustered at the firm level, the estimation does not assume that each firm observation is independent, which allows for autocorrelation within firms. *, **, *** mean significance at ten, five, and one percent, respectively. The estimated equation is the following:

$$ZT^{D}_{j,c,t} = \gamma_1 \times A_{j,c,t} + \gamma_1 \times T^{I}_{c,t} \times + \theta' C_{c,t} + \delta_1 \times n_c + \delta_2 \times \tau_t + \varepsilon_{j,c,t}$$

Dependent Variable:
Log (1+Proportion of Zero Return Days)

	(1)	(2)	(3)	(4)	(5)
Log of Total Assets$_{j,c,t}$	-0.017 ***	-0.016 ***	-0.017 ***	-0.018 ***	-0.016 ***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Log (1+ Average Turnover of Public International	-0.047 ***	-0.059 ***	-0.061 ***	-0.047 ***	-0.039 ***
Firms in the Domestic Market)$_{c,t}$	[0.007]	[0.007]	[0.009]	[0.009]	[0.009]
Stock Market Liberalization Dummy$_{c,t}$		0.045 ***	0.036 ***		0.017
		[0.013]	[0.013]		[0.014]
Log of (1+Value Traded Abroad/Total Value Traded)$_{c,t}$			0.126 ***	0.170 ***	0.153 ***
			[0.041]	[0.042]	[0.041]
Stock Market Liberalization				-0.040 ***	
Edison and Warnock (2003) Measure$_{c,t}$				[0.008]	
Log of GDP per capita$_{c,t}$					-0.011
					[0.016]
Market Capitalization / GDP$_{c,t}$					-0.046 ***
					[0.004]
Law and Order$_{c,t}$					-0.005
					[0.004]
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	6,110	5,796	5,596	5,728	5,593
Number of Firms	974	899	893	893	893
R-squared	0.62	0.61	0.61	0.62	0.62

Appendix Table 1
Basic Statistics and Means

This table reports summary statistics by country. It displays the total number of firms, the number of international firms, the number of domestic firms, the sample coverage, and the sample average of the trading and liquidity variables. International companies are the ones that issue a depositary receipt, cross-list, or raise capital in international equity markets.

	Country	No. of International Firms	No. of Domestic Firms	No. of Firms in the Aggregate Measures		Sample Period	Domestic Firms						International Firms					
							Turnover in Domestic Market		Amihud Illiquidity Ratio		Proportion of Zero Return Days		Turnover in Domestic Market		Turnover in Domestic Market/Total Turnover		Total Turnover	
				Int'l. Firms	Dom. Firms		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
1	Argentina	8	8	22	9	1990 - 2000	0.40	0.29	1.67	1.57	0.51	0.28	0.27	0.27	0.44	0.40	0.45	0.31
2	Bahrain	1	14	1	12	1999 - 2000	0.11	0.13	.	.	.	.	0.05	.	.	.	.	.
3	Brazil	46	48	50	53	1989 - 2000	0.34	0.39	0.60	1.28	0.21	0.24	0.40	0.36	0.72	0.32	0.62	0.63
4	Bulgaria	1	0	0	16	1996 - 2000	.	.	.	.	.	.	0.03	0.02	.	.	.	.
5	Chile	20	33	23	36	1989 - 2000	0.09	0.10	1.12	0.88	0.51	0.31	0.14	0.11	0.44	0.32	0.42	0.31
6	China	50	78	54	200	1992 - 2000	1.59	1.97	0.75	0.80	0.54	0.20	1.40	1.48	0.73	0.24	2.15	1.38
7	Colombia	6	21	8	28	1989 - 2000	0.10	0.08	1.31	1.00	0.48	0.31	0.12	0.08	0.60	0.30	0.21	0.13
8	Croatia	2	5	3	7	1997 - 2000	0.04	0.05	.	.	.	.	0.01	0.01	.	.	.	.
9	Czech Republic	4	21	4	44	1994 - 2000	0.21	0.59	3.47	2.58	0.04	0.05	0.43	0.49	.	.	.	.
10	Egypt	6	14	8	72	1996 - 2000	0.30	0.41	1.18	1.30	0.14	0.07	0.41	0.29	.	.	.	.
11	Estonia	2	7	2	10	1997 - 2000	0.14	0.07	2.89	2.07	0.36	0.22	0.30	0.47	.	.	.	.
12	Ghana	1	10	1	10	1996 - 2000	0.09	0.12	.	.	.	.	0.00	0.00	0.00	0.00	0.49	0.18
13	Greece	8	41	12	48	1989 - 2000	0.66	0.60	1.17	1.80	0.09	0.08	0.40	0.39	0.98	0.05	0.35	0.25
14	Hungary	13	5	13	7	1992 - 2000	0.81	0.61	0.81	1.54	0.05	0.07	0.84	1.30	0.75	0.16	0.47	0.33
15	India	48	109	53	132	1989 - 2000	0.34	1.02	2.07	2.11	0.23	0.16	0.61	1.09	0.88	0.20	1.62	3.71
16	Indonesia	8	90	10	119	1989 - 2000	0.94	1.66	1.03	1.33	0.65	0.24	0.49	0.38	0.50	0.19	0.68	0.25
17	Israel	16	28	18	34	1997 - 2000	0.26	0.14	0.27	0.33	0.10	0.10	0.45	0.34	0.59	0.33	1.01	0.92
18	Jamaica	2	0	0	17	1996 - 2000	.	.	.	.	.	.	0.07	0.06	.	.	.	.
19	Jordan	3	4	3	41	1989 - 2000	0.13	0.08	.	.	.	.	0.07	0.05	.	.	.	.
20	Korea	32	175	34	195	1989 - 2000	3.87	6.75	0.24	0.59	0.06	0.04	2.16	4.27	0.88	0.15	1.57	3.85
21	Latvia	2	12	2	14	1997 - 2000	0.45	0.71	4.12	1.23	0.35	0.20	0.40	0.40	.	.	.	.
22	Lebanon	1	0	0	3	1999 - 2000	.	.	.	.	.	.	0.03	0.01	.	.	.	.
23	Lithuania	4	10	2	40	1996 - 2000	0.11	0.18	3.64	2.06	0.68	0.18	0.23	0.26	.	.	.	.

Appendix Table 1 (Continued)
Basic Statistics and Means

This table reports summary statistics by country. It displays the total number of firms, the number of international firms, the number of domestic firms, the sample coverage, and the sample average of the trading and liquidity variables. International companies are the ones that issue a depositary receipt, cross-list, or raise capital in international equity markets.

	Country	No. of International Firms	No. of Domestic Firms	No. of Firms in the Aggregate Measures		Sample Period	Domestic Firms						International Firms					
							Turnover in Domestic Market		Amihud Illiquidity Ratio		Proportion of Zero Return Days		Turnover in Domestic Market		Turnover in Domestic Market/Total Turnover		Total Turnover	
				Int'l. Firms	Dom. Firms		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
24	Malaysia	11	168	12	182	1990 - 2000	1.30	4.27	0.57	0.85	0.32	0.16	0.33	0.44	.	.	.	.
25	Mexico	49	14	65	39	1999 - 2000	0.32	0.31	0.26	0.48	0.21	0.13	0.44	0.35	0.52	0.32	1.25	1.05
26	Morocco	1	11	1	20	1989 - 2000	0.11	0.07	0.09	0.05	0.02	0.01	0.21	0.11	.	.	.	.
27	Nigeria	1	0	0	27	1996 - 2000	.	.	.	.	.	.	0.05	0.03	.	.	.	.
28	Pakistan	4	0	0	56	1989 - 2000	.	.	.	.	.	.	3.32	3.17	.	.	.	.
29	Peru	8	22	8	34	1992 - 2000	0.75	0.70	1.33	1.10	0.56	0.22	0.32	0.28	0.60	0.30	0.49	0.35
30	Philippines	13	58	15	63	1989 - 2000	0.71	1.06	1.41	1.52	0.41	0.31	0.28	0.23	0.69	0.30	0.62	0.45
31	Poland	15	24	18	28	1997 - 2000	0.77	0.74	1.18	1.20	0.10	0.12	0.81	0.91	.	.	.	.
32	Portugal	8	24	8	34	1994 - 2000	0.26	0.21	1.19	1.26	0.07	0.06	0.61	0.52	0.84	0.16	0.53	0.43
33	Romania	1	12	1	32	1996 - 2000	0.24	0.18	1.26	1.43	0.81	0.21	0.05	.	.	.	.	.
34	Russia	14	11	21	23	1997 - 2000	0.28	0.37	1.67	1.49	0.69	0.25	0.33	0.50	0.63	0.30	0.88	0.84
35	Slovak Republic	2	0	0	15	1996 - 2000	.	.	.	.	.	.	0.21	0.27	.	.	.	.
36	Slovenia	2	14	2	15	1989 - 2000	0.34	0.30	0.52	0.87	0.03	0.01	0.39	0.22	.	.	.	.
37	South Africa	45	30	50	34	1992 - 2000	0.19	0.27	0.47	0.66	0.17	0.15	0.23	0.28	0.46	0.22	0.90	0.57
38	Sri Lanka	1	0	0	65	1989 - 2000	.	.	.	.	.	.	0.24	0.08	.	.	.	.
39	Taiwan	29	109	29	112	1989 - 2000	3.85	3.69	0.04	0.10	0.32	0.12	3.06	3.35	0.98	0.06	4.59	3.12
40	Thailand	13	0	0	92	1997 - 2000	.	.	.	.	.	.	0.65	0.87	.	.	.	.
41	Tunisia	1	11	1	17	1996 - 2000	0.09	0.08	.	.	.	.	0.15	0.07	.	.	.	.
42	Turkey	13	40	14	49	1989 - 2000	2.01	2.85	0.33	0.54	0.09	0.07	2.02	4.21	0.64	.	0.38	.
43	Ukraine	4	0	0	14	1989 - 2000	.	.	.	.	.	.	0.16	0.14	.	.	.	.
44	Venezuela	13	7	13	10	1997 - 2000	0.13	0.10	0.78	0.64	0.69	0.23	0.32	0.34	0.06	0.03	1.57	1.02
45	Zimbabwe	4	8	4	21	1999 - 2000	0.13	0.12	1.21	0.78	0.72	0.18	0.22	0.18	.	.	.	.
	Total	536	1,296	585	2,129		1.56	3.82	0.78	1.29	0.29	0.26	0.79	1.88	0.62	0.33	1.04	1.71

Appendix Table 2

Series Description and Data Sources

This table shows the description of the data used and their coverage and sources.

Series	Description	Source
Variables related to the internationalization of stock markets	Dates of cross-listings, depositary receipts issuances, and capital raisings in international equity markets. This information is used to classify firms as domestic or international and date the start of their international activities. International companies are the ones that issue a depositary receipt, cross-list, or raise capital in international equity markets.Different variables are constructed using these data. See text for details.	Bank of New York, Euromoney, the London Stock Exchange (LSE), the New York Stock Exchange (NYSE), and NASDAQ.
Domestic market capitalization	Market capitalization in domestic stock markets. End ot the year data in current U.S. dollars.	Standard & Poor's (former International Finance Corporation) Emerging Markets Database
Domestic value traded	Value traded in domestic stock markets. Annual data in current U.S. dollars.	Standard & Poor's (former International Finance Corporation) Emerging Markets Database
Value traded abroad	Value traded in depositary receipts covering the period 1989-2000. Series are computed on a firm-level basis by adding the different depositary receipts that belong to each company on a yearly basis. Data in current U.S. dollars.	Bank of New York
GDP per capita at market prices	Gross domestic product (GDP) in current U.S. dollars divided by mid-year population. The GDP at purchaser prices data is converted from domestic currencies using yearly official exchange rates. For the cases in which the official exchange rate is different from the market rate, the latter is used.	World Bank: World Development Indicators
Law and order	Qualitative variable that ranges from one to six, where higher numbers indicate higher "levels" of law and order. Law and order are assessed separately, with each sub-component comprising zero to three points. The law sub-component is an assessment of the strength and impartiality of the legal system, while the order sub-component is an assessment of popular observance of the law. Thus, a country can have a high rating in terms of its judicial system, for example three, but a low rating, for example one, if the law is ignored for a political aim, e.g. widespread strikes involving illegal practices.	Political Risk Services: International Country Risk Guide
Stock market liberalization dummy	Dummy that equals one on and after the year of stock market liberalization. The liberalization date corresponds to the date of formal regulatory change after which foreign investors officially have the possibility to invest in domestic equity securities. For the data from Vinhas de Souza (2005), we consider the first year when a country's stock market is fully liberalized as the liberalization date.	Bekaert, Harvey, and Lundbald (2005) and Vinhas de Souza (2005)
Stock Market Liberalization Edison and Warnock (2003) Measure	Stock market liberalization measure based on S&P/IFC Indices. The variable used is the smoothed measure calculated by Edison and Warnock (2003), which takes into account asymmetric shocks to investable and non-investable stocks. We converted their capital control index into a liberalization measure by subtracting one from it.	Edison and Warnock (2003)
Total assets	Total assets as reported in Worldscope for each firm-year, in million of U.S. dollars. The sample covers the period 1989-2000 for all countries.	Worldscope
Daily stock price	Daily stock price in domestic markets (main stock exchange). Used to calculate liquidity measures. Data in current U.S. dollars.	Datastream
Daily volume traded	Daily number of shares traded in domestic markets (main stock exchange). Used to calculate liquidity measures.	Datastream