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# Large Foreign Ownership and Firm-Level Stock Return Volatility in Emerging Markets

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## Abstract

This study constructs a firm-level measure of large foreign ownership (LFO) and investigates its impact on stock return volatility in 31 emerging markets. We find a *negative* relationship between LFO and volatility, even after controlling for potential endogeneity and the impact of major domestic shareholders. This suggests a *stabilizing* role of LFO in emerging markets, which is consistent with previous suggestions in the literature on the strong commitments and potential monitoring role of large foreign shareholders. Overall, our study highlights the importance of recognizing the heterogeneity among foreign investors and the benefits of large foreign shareholders to emerging stock markets.

## I. Introduction

Stock market liberalization is one of the most important policy decisions of an emerging economy. It often involves opening or increasing the exposure of a domestic stock market to foreign investors. Both theoretical models and empirical evidence have highlighted significant benefits of liberalization, including the attraction of foreign capital to finance economic growth, the development of local stock markets, and the reduction of cost of capital through risk sharing between

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domestic and foreign investors.<sup>1</sup> However, past financial crises in emerging economies have also led to grave concerns about the potentially destabilizing impact of opening domestic capital markets to cross-border capital flows. Foreign investors were widely blamed by the financial media for the severity of the capital flight out of crisis countries, which further amplified financial asset volatility and worsened the crises. In the development economics literature, Stiglitz (1999), (2000) also suggests that premature capital market liberalization, which occurs without the support of well-functioning institutions and appropriate regulations, can make an emerging economy vulnerable to financial crises.

The potential impact of foreign investment on domestic stock return volatility is thus a primary concern during the liberalization process. Empirical evidence on this relationship has so far remained mixed. On the one hand, Bekaert and Harvey (1997), Kim and Singal (2000), and Umutlu, Akdeniz, and Altay-Salih (2010) find no significant increase or decrease in volatility following a liberalization event or in response to time variations in foreign investment openness, which to some extent reflects the risk-sharing benefit created by the entry of foreign investors to local markets. On the other hand, Bae, Chan, and Ng (2004) document a positive relationship between foreign investment restrictions and local firm stock return volatility. They argue that when a local firm is highly accessible to foreign investors, its stock trading is subject to international investment flows, and therefore their stock returns are more vulnerable to world market risk.

To some extent, this contrasting evidence reflects the difficulty in measuring the effects of opening local capital markets. In particular, studies that employ the event-study approach (e.g., Bekaert and Harvey (1997), (2000), Kim and Singal (2000), and Henry (2000)) face the problem that liberalization is a gradual process and is often confounded by other parallel domestic economic reforms. Other studies employ indices that measure the openness of an economy to foreign capital inflows and restrictions to foreign equity ownership (e.g., Quinn (1997), Edison and Warnock (2003), Bae et al. (2004), and Umutlu et al. (2010)). However, such indices only reflect the upper limit rather than the actual extent of foreign investment. None of these studies differentiates short-term, speculative investors from long-term, strategic investors. Stiglitz (1999), (2000) notes that foreign investors with large and direct investments are relatively stable shareholders, but their roles are often overshadowed by the disproportionate attention of the financial media to the mobility of foreign portfolio investments during the recent crises.

This paper constructs a measure of actual large foreign ownership (LFO) and utilizes both its cross-sectional and cross-time variations to study the impact of large foreign shareholders on stock return volatility in 31 emerging markets.

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<sup>1</sup>Theoretically, international asset pricing models such as those discussed in Errunza and Losq (1985), Eun and Janakiramanan (1986), and Bekaert and Harvey (1995) show that liberalization reduces the cost of equity capital. Empirical evidence on this and other benefits of liberalization is documented in studies such as Bekaert and Harvey (1997), (2000), Kim and Singal (2000), Henry (2000), (2003), Chari and Henry (2004), Bae, Bailey, and Mao (2006), Bekaert, Harvey, Lundblad, and Siegel (2007), Gupta and Yuan (2009), and so on.

A firm's LFO is specified by the aggregate shareholding of foreign investors who each own 5% or more of the issued shares. We identify these large foreign shareholders for each of our sample firms to construct the LFO measure for 2002 and 2006. To our knowledge, this is the first study that investigates the actual ownership pattern of large foreign shareholders across countries in the market liberalization and other relevant literature, instead of relying on foreign investment limits or liberalization dates as in previous studies.

Through different analyses of both cross-sectional and cross-time variations, in this paper we find a significantly *negative* relationship between LFO and stock return volatility at the firm level. This remains robust even after controlling for firm-level foreign investment restrictions and the ownership of different types of large domestic shareholders. We address meticulously the possibility that LFO decisions may not be exogenous. That is, compared to their domestic counterparts, foreign investors face additional cross-border investment risks, and hence may seek to alleviate risk by specifically targeting firms with inherent characteristics associated with lower volatility. We address the potential endogeneity issue by first using instrumental variables (IVs) in the estimation of the LFO-volatility regression. This approach involves tracing back the history of a firm to identify and classify the type of its original owner in order to construct an instrument that is as exogenous as possible. Second, we utilize time variations in the 2002–2006 period to test whether changes in LFO influence changes in volatility. Third, we conduct an event study to investigate whether volatility declines (increases) following a block purchase (sale) by a foreign investor. These different approaches all lead to the same robust conclusion. The negative relationship between LFO and volatility is unlikely to be driven entirely by their correlation with common unobservable firm factors, and LFO appears to have a causal impact on volatility. Economically, this implies that large foreign shareholders play a *stabilizing* role in emerging stock markets.

At first glance, our results appear to be opposite to those reported in Bae et al. (2004), who find that volatility is positively related to foreign investment openness. However, upon closer inspection, the implications of our and Bae et al.'s (2004) findings are not contradictory, as our LFO variable and the openness measure used in Bae et al. (2004) (i.e., the Standard & Poor's (S&P) Emerging Markets Investibility index) capture different aspects of the spectrum of foreign investors. The latter is constructed to incorporate both regulatory constraints (upper limits of aggregate foreign holdings) and practical barriers (firm size and liquidity) to foreign investments. We argue that foreign portfolio investors, who value the mobility of their capital, are most affected by these barriers. In contrast, our LFO variable directly measures the actual ownership of large foreign shareholders, who invest on a more strategic and long-term basis and are less affected by changes to these barriers. The correlation between our LFO variable and the investibility index is statistically and economically insignificant, which explains why the former may be negatively related to volatility, while the latter is not. Therefore, our results highlight the importance of recognizing the heterogeneity among foreign investors.

Our results are corroborated by evidence from Wang (2007), who documents a stabilizing effect of foreign investors in Indonesia and Thailand during the 1997

Asian financial crisis.<sup>2</sup> He interprets this finding according to Merton's (1987) model, which implies that broadening the investor base of a firm can create a risk-sharing effect, and ultimately, lower stock return volatility. While our findings also echo the broad implications of Merton's model, our focus on large foreign shareholders is unique among extant studies of emerging market volatility. We offer two additional arguments with some supporting evidence on the volatility-reduction impact of large foreign shareholders beyond the risk-sharing and investor-base broadening hypotheses.

First, this effect mirrors the well-recognized stabilizing role of foreign direct investment (FDI) in developing countries. Stiglitz (2000), for example, criticizes the speculative nature of portfolio investment, but notes that with regard to economic stability, "the argument for FDI . . . is compelling." He argues that FDI investors provide not only monetary capital but also other resources, such as technologies, business relationships, access to new export markets, and training of human capital.<sup>3</sup> Hence, they tend to have strong commitments to their investments that can translate into operational and financial support of local firms to help them weather external risk.<sup>4</sup> In this study we argue that large foreign shareholders are similarly committed to their investments, and their large shareholdings provide a strong incentive to reduce volatility.<sup>5</sup> While we do not have direct evidence on how large foreign shareholder commitments shore up local firms, we are able to show some indirect support for the previous argument. We find that the negative relationship between LFO and volatility is most observable when large foreign shareholders are nonfinancial firms or those holding controlling interests.

Second, the negative relationship between LFO and firm-level volatility may also reflect a potential monitoring role played by large foreign shareholders. These investors demand greater transparency, higher accountability of management, and less risk taking, all of which can result in lower return volatility. Stulz (1999), (2005) and Doidge, Karolyi, and Stulz (2004) argue that foreign investors provide emerging market firms with the tools and incentives to improve corporate governance. This is supported by evidence that operating results tend to improve after local firms become accessible to foreign investors (Mitton (2006)) and that firm performance measures are positively associated with shareholdings of foreign

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<sup>2</sup>Similarly, Choe, Kho, and Stulz (1999) do not find any destabilizing effect of foreign investors before and during the 1997 Asian financial crisis using data from Korea.

<sup>3</sup>See Blomström and Kokko (1998) for a literature review on the externalities associated with FDI and Aitken and Harrison (1999) for firm-level evidence of the positive impact of FDI on foreign-owned operations.

<sup>4</sup>During the Asian financial crisis, while net foreign portfolio flows in 5 crisis countries (Indonesia, Malaysia, the Philippines, South Korea, and Thailand) decreased from \$32.5 billion in 1996 to -\$4.4 billion in 1998, net FDI flows actually increased from \$13.9 billion to \$14.5 billion (source: International Monetary Fund's International Financial Statistics). Also refer to Blalock, Gertler, and Levine (2005) for evidence of how FDI supported and shielded foreign-owned Indonesian firms from the liquidity crunch during the Asian financial crisis.

<sup>5</sup>Another related possibility is that because of the support from large foreign shareholders, local firms can rely less on debt financing, which would otherwise generate stock return volatility. For example, Mitton (2006) finds that firms accessible to foreign investors have significantly lower leverage.

institutional investors (Ferreira and Matos (2008)).<sup>6</sup> In this study, the focus on large foreign shareholders means that we examine a group of foreign investors with strong incentives to monitor. We hypothesize that if the relationship between LFO and volatility is related to their monitoring, then it should differ across monitoring environments. Our results show that volatility is significantly lower for firms with large foreign shareholders, particularly in emerging markets with relatively strong corporate governance, and the volatility-LFO relationship is weak when shareholder monitoring is likely to be ineffective. Overall, our findings imply that for an emerging market economy, stock market liberalization would be most beneficial if it is paralleled by significant corporate governance reforms.

The remainder of this paper proceeds as follows. Section II describes the data and the summary statistics. Section III investigates the relationship between LFO and volatility and then reports other main findings. Section IV concludes the paper.

## II. Data and Descriptive Statistics

### A. Descriptions of the Sample of Emerging Market Firms

To construct our sample, we consider all firms in 31 emerging markets covered by the S&P Emerging Markets database in 2002. These firms are the constituents of the S&P/IFCG (Global) index (and the S&P/IFCI (Investible) index), which is a popular benchmark for funds investing in emerging markets. They are selected as the most liquid firms that on aggregate account for 60% to 75% of the total capitalization of each market. We collect information on the sample firms for 2 years (2002 and 2006) that are sufficiently far apart to capture meaningful changes in ownership concentration. This allows us to examine the relationship between LFO and volatility based upon both cross-sectional and cross-time variations.

An important reason for using the S&P Emerging Markets database to construct our sample is that it accounts for the practical and legal barriers to foreign investments through its investibility index. This index is constructed to reflect legal and practical restrictions to foreign ownership. In particular, each market is assessed on whether there are constraints on the ability of foreign institutions to invest in local firms and to repatriate returns. Individual firms are also assessed to determine whether there are corporate bylaws or industrywide restrictions on foreign ownership. To capture the practical barriers, the S&P Emerging Markets database defines small and illiquid stocks as noninvestible.<sup>7</sup> It then creates a variable called the “degree open factor” or “investible weight,” which ranges from

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<sup>6</sup>Some other studies also show that governance environments and monitoring ability play an important role in determining cross-border acquisitions and fixed investments (Rossi and Volpin (2004), Kelley and Woidtke (2006)), as well as international investment allocation (Dahlquist, Pinkowitz, Stulz, and Williamson (2003), Chan, Covrig, and Ng (2005), and Leuz, Lins, and Warnock (2009)).

<sup>7</sup>These criteria vary at the discretion of S&P's Index Committee. For example, in 2002 the size criterion was a minimum investible capitalization of \$50 million, and the liquidity criterion was a minimum trading volume of \$20 million during the prior year, with trading on at least ½ of the local exchange's trading days. In 2007 these 2 criteria were specified at \$100 million and \$50 million, respectively.

0 to 1 and indicates the proportion of a firm's shares that foreign investors may legally and practically own.

We use data from the S&P Emerging Markets database to calculate firm-level stock return volatility and other firm-level control variables such as size and trading turnover. There are two known problems associated with the data (Rouwenhorst (1999)). The first is the survivorship bias due to the selection of stocks based on size and liquidity criteria, which are probably correlated with past performance. As explained in Bae et al. (2004), this is irrelevant to studies (including ours) that do not seek to explain performance over time. The second problem is the existence of unreasonable figures in the database. We follow the procedure used in Bae et al. (2004) to deal with dubious return and volume observations. Our analysis also employs leverage as another control variable, obtained from the Osiris, Worldscope, and S&P GlobalVantage databases. However, we are not able to match exhaustively all S&P Emerging Markets firms to the other databases. Thus, taking into account inactive and unmatched firms, and those with no ownership information (see the later discussion), our sample comprises 1,409 firms.

## B. Identification of Large Foreign Shareholders

To measure the LFO variable, we rely on the ownership data from Li, Moshirian, Pham, and Zein (2006), who assemble large block shareholdings data in 2002 for firms from 45 countries. This ownership database is constructed using data from Osiris (from Bureau Van Dijk), Worldscope (from Thomson Reuters), and supplementary sources within Lexis/Nexis.<sup>8</sup> By merging the S&P Emerging Markets database with that of Li et al., we are able to obtain shareholder names and percentage shareholdings for most domestic firms in our sample. For firms not covered by Li et al., we collect their ownership information from their annual reports (if available) using the Mergent Online database. We then extend the sample of Li et al. by applying the same methodology to obtain ownership information for 2006.

We define LFO as the sum of foreign block shareholdings. A block is defined as an ownership stake of at least 5% of issued shares (this threshold is later increased to 20% in our robustness checks). A foreign shareholder is defined as a citizen of another country, a business entity registered (or headquartered) in another country, or an unlisted majority-owned subsidiary of a foreign company.

We follow a detailed procedure to identify a foreign block shareholder. In summary, this procedure involves checking manually the origin of the ultimate owner of each blockholder. Using several company information databases (Osiris, Bureau Van Dijk's Company Directory Service, Lexis/Nexis, and Dun and Bradstreet's Who Owns Whom), the financial press (through Factiva and ProQuest), the Google search engine, company Web sites, and annual reports, we trace the ownership chain to identify the ultimate owner behind each blockholder. In addition, we match detailed subsidiaries data from the Osiris database with our database to identify whether an emerging market firm in our sample is

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<sup>8</sup>See Li et al. (2006) for a more detailed description of the ownership data collection process.



a partly owned subsidiary of a foreign corporation. For a small number of blockholders, whose origins cannot be identified, we classify whether they are foreign investors based on their countries of registration information available in Osiris, except in cases where they are registered in tax havens.<sup>9</sup>

### C. Variables

We examine the relationship between LFO and stock return volatility in a cross-sectional regression framework. Similar to Bae et al. (2004), we calculate the dependent variable, the stock return volatility in 2002 and 2006 (adjusted for dividends and stock-splits), by taking a logarithmic transformation of squared monthly returns for each year and averaging this measure for the year.<sup>10,11</sup>

Our main LFO variable is calculated as the sum of foreign block shareholdings, where a block is defined as a holding larger than or equal to 5% of a firm's issued shares. This variable is labeled as  $LFO^{5PCT}$ . This 5% benchmark for large shareholdings is later raised to 20% to construct an alternative LFO measure ( $LFO^{20PCT}$ ). For the robust analysis, we also construct another LFO measure ( $LFO^{5TO20PCT}$ ) that incorporates foreign shareholdings larger than or equal to 5% and less than 20% of a firm's issued shares. Further, we split the main LFO variable into ownership from financial institutions ( $LFO^{FIN}$ ) and nonfinancial entities ( $LFO^{NONFIN}$ ). To facilitate a comparison between our LFO measure and the foreign investibility factor created by the S&P Emerging Markets database, we include the latter as a control variable (INVESTIBILITY).

While our main focus is to test whether large foreign shareholdings are associated with lower volatility, it is possible that this relationship can be observed across all types of large shareholders, foreign and domestic alike. All large shareholders are likely to be long-term investors and may refrain from active stock market trading. The resulting lack of free-float shares may lead to lower volatility. It is also possible that any observed relationship between LFO and volatility is simply a result of foreign investors not being able to acquire large shareholdings in firms with already concentrated ownership. In emerging markets, these firms may exhibit higher volatility due to the added risk of potential expropriation (Bae, Kang, and Kim (2002), Bertrand, Mehta, and Mullainathan (2002)).

To address these issues, we control for measures of domestic ownership concentration. In particular, DOMFIN, CROSSHOLD, and DOMNONFIN are the aggregate percentage ownership of domestic financial institutions (e.g., banks, insurance companies, mutual funds, pension funds, and so on), of other domestic corporations, and of all nonfinancial domestic entities, respectively. It should

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<sup>9</sup>We exercise extreme caution when dealing with holding entities registered in tax havens. In such cases, we rely on other sources such as the firms' annual reports, statements of beneficial shareholdings, and the financial press to identify the ultimate owners. For those holding companies whose real owners cannot be identified, we follow a conservative approach and do not include them as foreign shareholders.

<sup>10</sup>Our main findings remain robust when volatility is measured using standard deviation of returns.

<sup>11</sup>We multiply monthly returns by 100 before the transformation for ease-of-reporting purposes. Nontrading months, in which 0 trading volume is recorded, are excluded from the calculation. Our main findings remain robust when we use an alternative volatility measure that does not exclude the nontrading months.

be noted that we single out institutional block shareholders (the 1st category) because they may influence volatility through another channel. That is, they may act as outside monitors, possibly in a way that can reduce volatility. Crossholdings by other domestic corporations (CROSSHOLD) are another important category to examine separately, as they may form a conduit for volatility contagion within a market. We construct DOMFIN and DOMNONFIN using our own ownership data, whereas CROSSHOLD is obtained from the S&P Emerging Markets database. Note that although CROSSHOLD and DOMNONFIN are collected from different sources, there is a significant degree of overlap between these 2 variables, and they are used as alternative controls in the regression.

We then follow previous studies on the cross-sectional determinants of stock return volatility to identify other necessary control variables in the regression. In particular, size and trading turnover are the 2 main control variables used in Bae et al. (2004). Large firms are often associated with lower volatility, and we measure size using the average of the natural logarithm of month-end market capitalization (LogMKTCAP) in 2002 and 2006. Trading turnover is included, as active trading also generates high volatility. This variable (TURNOVER) is measured as the average of the number of shares traded in a month scaled by the number of shares outstanding for 2002 and 2006. We also follow Wei and Zhang (2006) to include 2 other important determinants of volatility, that is, leverage and lagged volatility. Highly leveraged firms are expected to be more volatile, and we control for this by using the ratio of total liabilities to total assets reported for 2002 and 2006 (LEVERAGE). The 1-year lag of volatility (LagVOL) is also included in the model, as it is well known that return volatility is autocorrelated. The specification of our regression model is

$$(1) \quad V_{i,j} = \alpha + \beta' \text{LFO}_{i,j} + \delta' Z_{i,j} + \varepsilon_{i,j},$$

where  $V_{i,j}$  denotes the volatility of firm  $i$  in country  $j$ , measured as the annual average of the logarithm of squared monthly returns in 2002 or 2006;  $\text{LFO}_{i,j}$  stands for 1 (or 2) of the main explanatory variables,  $\text{LFO}^{5\text{PCT}}$ ,  $\text{LFO}^{5\text{TO}20\text{PCT}}$ ,  $\text{LFO}^{20\text{PCT}}$ ,  $\text{LFO}^{\text{FIN}}$ , and  $\text{LFO}^{\text{NONFIN}}$ ; and  $Z_{i,j}$  represents all the firm-level control variables. To control for industrywide differences in volatility, we include in the control variables a set of indicator variables (excluding one) that corresponds to 10 broad sectors defined by the Global Industry Classification System (GICS).

Finally, our regression model also includes a set of dummy variables for all sample countries (excluding one). These country fixed effects capture the homogeneity across firms in the same country that exists due to its laws, regulations, governance environments, economic conditions, and stages of financial development. These factors can affect the relationship between foreign investment and volatility, but they are difficult to measure explicitly. In addition, all inferences from the regression are based on standard errors that are adjusted for country-cluster heteroskedasticity (see Petersen (2009)).

#### D. Descriptive Statistics

Table 1 presents the summary statistics of the main variables used in this study. There are in total 31 countries spanning Asia, Europe, Latin America,



TABLE 1  
Summary Statistics of the Sample

For each country, Panel A of Table 1 reports the within-country average of volatility measures (logarithm of squared returns), investibility (proportion of issued shares that can be legally and practically held by foreign investors), LFO<sup>5PCT</sup> (the aggregate percentage ownership of all large foreign shareholders, using the 5% ownership threshold), LFO<sup>20PCT</sup> (an alternative LFO measure calculated using the 20% ownership threshold), and LFO<sup>FIN</sup> and LFO<sup>NONFIN</sup> (the aggregate large ownership held by foreign financial institutions and nonfinancial firms, respectively). DOMFIN (DOMNONFIN) is the aggregate block shareholdings of domestic financial institutions (all nonfinancial domestic entities). Panel A also reports the within-country median of firm size (monthly average of market capitalization), trading turnover (monthly average of the number of shares traded divided by the number of shares outstanding), and leverage (total liabilities divided by total assets). The numbers in Panel A are calculated by averaging the 2002 and 2006 statistics of each sample firm before aggregating to the country level.

Country	No. of Firms (2002)	Log of Squared Returns	Median Size (US\$ mil.)	Median Turnover (%)	Median Leverage (%)	Investibility (%)	LFO <sup>5PCT</sup> (%)	LFO <sup>20PCT</sup> (%)	LFO <sup>FIN</sup> (%)	LFO <sup>NONFIN</sup> (%)	DOMFIN (%)	DOMNONFIN (%)
<i>Panel A. Summary Statistics for Individual Countries</i>												
Argentina	20	4.129	275.61	3.187	58.565	36.578	42.272	39.011	2.131	37.424	0.225	15.463
Bahrain	11	1.293	192.49	0.339	78.097	0.000	19.395	9.105	9.541	9.855	6.091	22.007
Brazil	50	3.391	946.20	3.153	57.111	50.933	17.102	15.164	0.689	15.735	4.537	40.062
Chile	37	2.329	935.84	0.992	52.404	41.786	21.626	18.389	1.786	19.854	1.556	36.393
China	204	3.340	336.11	11.249	53.945	14.445	1.310	0.148	0.692	0.579	0.827	44.231
Colombia	12	2.933	915.55	0.791	49.009	0.000	13.720	10.234	2.478	11.242	0.292	42.473
Czech Rep.	15	2.704	360.44	2.662	41.717	16.366	27.590	26.944	1.356	26.234	4.370	40.102
Egypt	30	2.834	128.97	1.726	62.435	19.942	11.999	9.157	0.267	11.732	3.035	41.743
Hungary	17	2.835	181.43	4.335	39.997	40.776	32.803	24.252	4.691	28.103	2.074	22.296
India	121	3.404	569.17	5.800	54.048	18.287	12.687	10.456	2.108	10.554	4.416	29.878
Indonesia	55	3.130	123.01	2.861	59.229	17.844	18.290	12.344	4.641	13.295	0.055	38.474
Israel	45	3.194	640.73	4.083	67.091	51.878	7.761	4.452	2.853	4.908	3.311	38.655
Jordan	23	2.582	163.92	1.836	61.986	0.000	11.005	7.708	2.859	8.408	7.287	27.071
Korea	102	3.691	760.15	18.973	64.055	71.294	6.925	2.623	3.224	3.454	2.901	23.142
Malaysia	119	2.764	389.97	1.781	49.109	38.796	6.715	5.467	0.664	6.030	5.379	35.900
Mexico	52	3.065	968.91	1.455	58.812	48.440	12.217	9.668	2.446	9.876	0.499	43.255
Morocco	18	2.294	486.80	0.990	40.859	28.633	25.594	21.261	2.674	22.213	7.394	41.392
Nigeria	15	1.566	153.97	0.803	86.936	0.000	11.664	11.307	0.000	11.664	0.167	18.628
Oman	13	2.329	60.67	1.280	49.431	0.000	6.560	4.004	0.775	5.785	5.208	27.651
Pakistan	36	3.548	195.62	12.056	58.619	0.000	14.701	11.803	1.511	13.190	3.751	30.377
Peru	21	2.984	277.24	0.827	41.204	21.134	22.300	19.620	0.650	21.404	1.240	34.639
Philippines	53	3.250	229.20	1.280	57.019	10.482	6.623	3.678	1.997	4.604	1.237	44.133
Poland	26	3.446	399.48	2.352	52.736	42.666	36.096	29.643	5.999	29.716	4.183	19.094
Russia	16	3.518	8,298.00	2.657	34.252	34.987	4.421	2.323	1.157	3.264	4.173	49.369
Slovakia	7	1.877	67.42	5.088	56.058	0.000	35.156	31.679	0.464	34.692	0.000	36.606
South Africa	67	3.184	1,185.28	4.526	56.222	71.621	8.907	6.446	2.211	6.307	12.223	25.733
Sri Lanka	40	2.809	20.96	1.566	66.905	0.000	22.263	16.355	3.262	18.872	3.438	31.460

(continued on next page)

TABLE 1 (continued)  
Summary Statistics of the Sample

Country	No. of Firms (2002)	Log of Squared Returns	Median Size (US\$ mil.)	Median Turnover (%)	Median Leverage (%)	Investibility (%)	LFO <sup>5PCT</sup> (%)	LFO <sup>20PCT</sup> (%)	LFO <sup>FIN</sup> (%)	LFO <sup>NONFIN</sup> (%)	DOMFIN (%)	DOMNONFIN (%)
Taiwan	94	3.591	932.45	17.485	53.148	57.332	2.014	0.722	1.216	0.798	1.110	18.128
Thailand	57	3.363	340.34	6.845	67.165	21.198	13.077	9.502	2.614	10.377	1.346	30.567
Turkey	22	3.679	124.61	17.815	43.802	29.333	18.158	16.737	0.000	18.044	0.000	42.061
Venezuela	11	3.314	156.48	0.530	49.567	0.000	16.453	14.898	0.383	16.070	2.662	27.265
Country avg.		2.980	671.52	4.559	55.533	25.315	16.368	13.068	2.172	14.009	3.064	32.847
<i>Panel B. Descriptive Statistics for the Entire Sample for 2002 (N = 1,409)</i>												
Mean		3.290	822.08	10.875	58.533	31.383	11.340	8.708	1.601	9.655	2.964	37.093
Median		3.365	243.86	3.511	56.330	24.000	0.000	0.000	0.000	0.000	0.000	36.450
Max		9.209	4.1 × 10 <sup>4</sup>	683.609	500.000	100.000	99.210	99.210	55.000	99.210	53.450	99.920
Min		-2.768	1.46	0.000	0.118	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Std. dev.		1.189	2,201.62	29.488	35.091	34.366	21.912	21.021	5.330	21.173	8.138	26.106
<i>Panel C. Descriptive Statistics for the Entire Sample for 2006 (N = 1,300)</i>												
Mean		3.068	2,240.67	9.386	58.820	31.709	11.491	8.601	2.265	9.024	3.046	29.783
Median		3.136	545.27	4.844	56.738	24.000	0.000	4.844	0.000	0.000	0.000	25.000
Max		6.050	2.0 × 10 <sup>5</sup>	274.343	500.000	100.000	98.000	98.000	54.000	98.000	58.000	99.000
Min		-5.226	1.11	0.000	2.238	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Std. dev.		1.079	7,660.70	15.098	37.522	34.085	22.154	21.190	6.101	21.379	7.884	23.449
<i>Panel D. Descriptive Statistics for Changes in the Variables from 2002 to 2006 (N = 1,300)</i>												
Mean		-0.230	1,533.21	-1.238	0.222	0.532	1.504	1.095	0.829	0.550	0.082	-7.459
Median		-0.236	245.028	0.367	-0.173	0.000	0.000	0.000	0.000	0.000	0.000	-3.770
Max		4.880	1.8 × 10 <sup>6</sup>	247.346	459.171	100.000	97.000	97.000	44.140	97.000	47.000	99.000
Min		-8.344	-1.8 × 10 <sup>5</sup>	-662.986	-375.323	-100.000	-88.590	-88.590	-55.000	-88.590	-53.450	-90.920
Std. dev.		1.385	6,442.16	28.167	29.906	22.786	11.848	12.227	5.500	12.210	7.509	20.968

Africa, and the Middle East. The number of stocks in each country ranges from 7 in Slovakia to 204 in China. To arrive at the country-specific statistics for each variable (in Panel A), we first take the average of the values for each firm in both 2002 and 2006, then report its country-level average. Due to the high level of within-country skewness of the size, trading turnover, and leverage measures, we report the country-level median instead for these variables. We also report the summary statistics of the variables across the entire sample separately for 2002 and 2006.

There are large variations in average volatility across countries. It is worth noting that Argentina, South Korea, Turkey, and Taiwan, which are relatively larger and more developed economies in the sample, actually record the highest level of volatility in 2002 and 2006, while countries with the lowest level of volatility are small economies such as Bahrain, Nigeria, Slovakia, and Morocco. All in all, stock returns of firms in the S&P Emerging Markets database are not more volatile than those in developed markets. For example, in 2002 and 2006, the medians of our volatility measure for the entire sample are 3.37 and 3.14 (see Panels B and C of Table 1), respectively, whereas the medians of the same measure for all firms in 23 developed markets covered by Datastream are 3.36 and 3.05, respectively.

We further examine the summary statistics of the potential determinants of volatility. Although our sample firms are listed in emerging markets, they are not necessarily small firms. Their median market capitalization is US\$243.86 million in 2002 and US\$545.27 million in 2006 (see Panels B and C of Table 1). In comparison, the median market capitalization of all firms in 23 developed markets covered by Datastream is approximately US\$111 million for 2002 and US\$82 million for 2006. Panel A of Table 1 also shows that emerging market firms on average are not overburdened with debt. The average of the within-country median leverage level is 55.53%. Liquidity appears to be the only characteristic that distinguishes emerging from developed markets. With the exception of China, Korea, Pakistan, Taiwan, and Turkey, all emerging markets have a within-country median trading turnover (average of 2002 and 2006) of less than 10% per month, and the cross-country average of this figure is 4.56%. Again, using Datastream data, we find that the cross-country average of trading turnover for the 23 developed markets is much higher, at approximately 8% in the same period.

We observe substantial variations in LFO statistics across countries. Based on the LFO<sup>5PCT</sup> variable, China has the lowest level of LFO (1.31%), reflecting its use of different share classes to restrict foreign shareholdings. In contrast, transition economies such as the Czech Republic, Hungary, Poland, and Slovakia have very high average LFO statistics, reflecting their willingness to attract FDI and their geographic proximity to the developed economies (and large sources of funds) in Western Europe.

There is no detectable correlation between the LFO and volatility statistics at the country level. Differences in volatility across countries appear to be driven mainly by country-specific factors unrelated to foreign investment. For example, in 2002, Argentina and Brazil are the countries with the highest volatility measures. This corresponds to large currency fluctuations in both Argentina and Brazil over the same period. However, a closer look at our data shows that high-LFO

firms in these countries appear to better withstand macroeconomic and political shocks. In a separate calculation based on the average of 2002 and 2006 volatility values (not reported in the table), firms with above-median LFO have lower median volatility (3.85 in Argentina and 3.17 in Brazil) than those with below-median LFO (4.14 and 3.62, respectively). This is consistent with our expectation that LFO may have an influence on stock return volatility at the firm level, and appears to be resistant to volatility shocks at the country level. A disaggregation of the LFO variable further indicates that cut-and-run activities may be difficult for large foreign shareholders. As reflected by the high average LFO<sup>20PCT</sup> and LFO<sup>NONFIN</sup> statistics, the majority of large foreign shareholders are nonfinancial entities (which tend to invest more than just monetary capital) and those that hold a (potentially controlling) ownership stake of at least 20% of shares outstanding.

### E. Comparison of LFO and Investibility

The S&P Emerging Markets database's investibility index has been a popular measure of foreign investment restrictions in emerging markets (Edison and Warnock (2003), Bae et al. (2004), Chari and Henry (2004), and Mitton (2006)). It indicates the maximum percentage of a firm's issued shares that can be owned by foreign investors, subject to the database's size and liquidity screening criteria. In this section, we investigate the differences between LFO and the investibility index to highlight the contributions of our findings to the existing literature.

To clarify their differences, we split our sample according to the average of a firm's monthly investible weights in 2002 and 2006. Following Bae et al. (2004), firms are classified as noninvestible if their investibility index values are 0, as partially investible if their investibility index values range from 0 to 0.5, and as highly investible if their investibility index values are higher than 0.5. Table 1 reports that there are quite a few countries in which all firms can be classified as noninvestible, namely Bahrain, Colombia, Jordan, Nigeria, Oman, Pakistan, Slovakia, Sri Lanka, and Venezuela, but they do have local firms partially owned by large foreign shareholders, according to our ownership information. This suggests a substantial difference between LFO and investibility as measures of foreign investments.

It should be noted that LFO measures the *actual* presence of large foreign shareholders in a domestic firm, whereas investibility is based on the upper limit of the percentage ownership held by foreign investors, regardless of whether and how much they actually invest in the company. Thus, a firm may be fully or highly investible, but it has no or low LFO. Panel A of Table 2 reports that such firms make up around 20% of our sample. This implies that easing foreign investment restrictions does not necessarily attract LFO. In addition, the investibility index does not account for many natural barriers to foreign investments, such as the ownership of domestic controlling shareholders. Their tight control reduces the extent of free-float shares available to foreign investors.

In contrast, a noninvestible firm can still be invested in by large foreign shareholders. Panel B of Table 2 reports that there are around 4% of the sample firms whose actual aggregate large foreign shareholdings are greater than 50% but the

TABLE 2  
LFO versus Investibility: Country-Level Summary

Investibility is obtained from the S&P Emerging Markets database and is defined as the proportion of the issued shares that can be legally and practically held by foreign investors. A large foreign shareholding is an ownership stake of at least 5% of a firm's issued shares held by a foreign investor.

Country	No. of Firms		% of Firms in Each Country		% of Firms in Entire Sample	
	2002	2006	2002	2006	2002	2006
<i>Panel A. Highly Investible Firms without Any Large Foreign Shareholdings</i>						
Argentina	1	1	5.000	5.556	0.071	0.077
Brazil	18	15	36.000	32.609	1.278	1.152
Chile	7	6	18.919	17.647	0.497	0.461
China	21	13	10.294	6.500	1.490	0.998
Egypt	1	4	3.333	15.385	0.071	0.307
Hungary	4	2	23.529	15.385	0.284	0.154
Indonesia	3	2	5.455	3.636	0.213	0.154
Israel	14	12	31.111	27.273	0.994	0.922
Korea	52	39	50.980	40.625	3.691	2.995
Malaysia	32	33	26.891	29.464	2.271	2.535
Mexico	14	9	26.923	20.930	0.994	0.691
Morocco	2	1	11.111	6.250	0.142	0.077
Peru	2	3	9.524	14.286	0.142	0.230
Poland	3	3	11.538	13.043	0.213	0.230
Russia	4	2	25.000	12.500	0.284	0.154
South Africa	42	34	62.687	60.714	2.981	2.611
Taiwan	69	66	73.404	73.333	4.897	5.069
Turkey	2	2	9.091	9.091	0.142	0.154
Total	291	247			20.655	18.971
<i>Panel B. Noninvestible Firms with Aggregate Large Foreign Shareholdings of at Least 50%</i>						
Argentina	5	4	25.000	22.222	0.355	0.307
Bahrain	1	2	9.091	25.000	0.071	0.154
Chile	2	2	5.405	5.882	0.142	0.154
Colombia	0	2	0.000	20.000	0.000	0.154
Czech Republic	1	1	6.667	14.286	0.071	0.077
Egypt	1	0	3.333	0.000	0.071	0.000
Hungary	3	1	17.647	7.692	0.213	0.077
India	4	6	3.306	5.263	0.284	0.461
Indonesia	4	1	7.273	1.818	0.284	0.077
Jordan	1	2	4.348	11.765	0.071	0.154
Malaysia	4	4	3.361	3.571	0.284	0.307
Morocco	2	0	11.111	0.000	0.142	0.000
Nigeria	2	3	13.333	33.333	0.142	0.230
Pakistan	4	7	11.111	19.444	0.284	0.538
Peru	4	4	19.048	19.048	0.284	0.307
Philippines	1	1	1.887	1.887	0.071	0.077
Poland	1	1	3.846	4.348	0.071	0.077
Slovakia	2	2	28.571	100.000	0.142	0.154
Sri Lanka	9	9	22.500	22.500	0.639	0.691
Thailand	1	1	1.754	1.887	0.071	0.077
Turkey	1	4	4.545	18.182	0.071	0.307
Venezuela	1	3	9.091	27.273	0.071	0.230
Total	54	60			3.833	4.608

investibility indices for these firms are 0. There are two possible reasons for such a mismatch. First, some of these firms do have large foreign shareholders but do not pass the size and liquidity tests as specified by the S&P Emerging Markets database to be classified as investible. Second, some firms are owned by locally registered entities, which are actually wholly owned subsidiaries or joint ventures of foreign entities. In some countries, this arrangement may bypass foreign investment regulations as interpreted and recorded by the S&P Emerging Markets database, whereas our manual classification still allows us to identify these firms as having large foreign shareholders.

### III. Analysis of Results

#### A. Baseline Regression Results on the Relationship between LFO and Volatility

Table 3 reports the country fixed-effects regression results of volatility on LFO, with the dependent variable being volatility measured in 2002 (in Panel A) or 2006 (in Panel B). We find that the coefficients of LFO<sup>5PCT</sup> are negative and statistically significant in all regression specifications, for both 2002 and 2006. Thus, large foreign shareholdings are found to be associated with lower stock return volatility. The economic significance of this relationship is quite strong. For example, in Column (4) of Panel A, which reports the results of our full regression model for 2002 volatility, the coefficient of LFO<sup>5PCT</sup> is  $-0.474$ . This implies that a 10% increase in LFO is expected to reduce the range of monthly stock price changes by 2.34% from its median level, if other factors remain constant.

TABLE 3  
The Relationship between Volatility and LFO (firm-level baseline regression results)

The dependent variable is the average of a logarithmic transformation of monthly squared returns. LFO<sup>5PCT</sup> is the aggregate percentage ownership of foreign investors with a block ( $\geq 5\%$ ) shareholding. INVESTIBILITY is obtained from the S&P Emerging Markets database, which defines this variable as the proportion of the issued shares (ranging from 0 to 1) that can be legally and practically held by foreign investors. DOMFIN (DOMNONFIN) is the aggregate block shareholdings of domestic financial institutions (all nonfinancial domestic entities). CROSSHOLD is the percentage of issued shares of a sample firm held by other domestic corporations. LogMKT CAP is the average of the monthly natural logarithm of market capitalization. TURNOVER is the average of the number of shares traded in a month divided by the number of shares outstanding at the beginning of the month. LEVERAGE is the ratio of total liabilities to total assets. All regressions include (but we do not report) industry dummy variables and country fixed effects. Cluster-adjusted standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	Panel A. Dependent Variable Is 2002 Volatility				Panel B. Dependent Variable Is 2006 Volatility			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LFO <sup>5PCT</sup>	-0.535*** (0.167)	-0.542*** (0.184)	-0.385* (0.217)	-0.474** (0.173)	-0.573*** (0.133)	-0.600*** (0.130)	-0.439*** (0.151)	-0.569*** (0.124)
INVESTIBILITY		0.198 (0.259)	0.212 (0.232)	0.114 (0.290)		0.095 (0.183)	0.074 (0.155)	0.080 (0.158)
DOMFIN		-0.314 (0.326)	-0.164 (0.290)	-0.294 (0.299)		-0.610 (0.375)	-0.541 (0.374)	-0.395 (0.315)
CROSSHOLD		0.026 (0.166)		0.122 (0.159)		0.112 (0.200)		0.135 (0.192)
DOMNONFIN			0.214 (0.153)				0.258** (0.115)	
LogMKT CAP	-0.097** (0.045)	-0.101** (0.047)	-0.104** (0.045)	-0.068 (0.044)	-0.110** (0.043)	-0.116** (0.045)	-0.116** (0.046)	-0.100*** (0.034)
TURNOVER	0.419* (0.235)	0.412* (0.230)	0.426* (0.232)	0.317 (0.196)	1.362*** (0.179)	1.363*** (0.180)	1.381*** (0.183)	1.040*** (0.185)
LEVERAGE	0.318*** (0.073)	0.324*** (0.074)	0.333*** (0.073)	0.274*** (0.081)	0.138* (0.074)	0.147* (0.075)	0.154* (0.077)	0.065 (0.059)
LagVOL				0.281*** (0.045)				0.258*** (0.049)
Adjusted R <sup>2</sup>	0.326	0.327	0.328	0.370	0.217	0.217	0.219	0.276
No. of obs.	1,409	1,409	1,409	1,364	1,300	1,300	1,300	1,300

We investigate the differences between LFO and investibility further by examining jointly their effects on stock return volatility. Across all regression



models in Table 3 that include INVESTIBILITY, the coefficients of this variable are all insignificant, whereas the significance and explanatory power of the LFO<sup>5PCT</sup> variable remain the same. In contrast, utilizing a panel data set covering an earlier period (1989–2000),<sup>12</sup> Bae et al. (2004) document a positive relationship between investibility and volatility. Once again, these contrasting findings indicate that our LFO measure and the investibility measure constructed by the S&P Emerging Markets database capture different foreign ownership elements. In particular, the findings in Bae et al. (2004) may be driven by foreign portfolio investors being sensitive to the intertemporal changes in the investibility of emerging market firms that occur due to new restrictions/regulations, and improvements/degradations in firm size and liquidity.

Incorporating the alternative measures of large domestic shareholdings, we find that the LFO<sup>5PCT</sup> variable remains significant in all regressions. Block shareholdings by domestic institutions (DOMFIN) have a negative impact on volatility, whereas shareholdings of domestic corporations (CROSSHOLD) and all nonfinancial blockholders (DOMNONFIN) actually have a positive impact. However, the coefficients of these variables are mostly insignificant. This reflects that in emerging markets, concentrated ownership is widespread and common to all firms with different risk profiles. Large (controlling) domestic blockholders are likely to be original owners/founders, and it is unlikely that they tend to set up their firms to be inherently low risk (or high risk). Overall, the significant relationship between LFO and volatility is unlikely to be spuriously driven by their negative correlation with the extent of large domestic shareholdings. Among different types of blockholders, only the presence of foreign blockholders is strongly associated with a volatility-reduction effect.

The regression results also justify the inclusion of important determinants of volatility, as their coefficients are mostly significant. Consistent with our expectations, volatility is significantly higher in small, high-turnover, and highly leveraged firms. All regressions include (but do not report the coefficients of) industry indicators and country fixed effects, which explain a large proportion of cross-sectional variations in volatility. Further, the inclusion of the control variables does not alter the significance and direction of the LFO variables. Overall, this relationship cannot simply be attributed to systematic differences in country-level environments or to previously identified firm-level determinants of volatility.<sup>13</sup>

## B. Alternative Definitions of LFO

We next attempt to pinpoint the types of large foreign shareholders that bring the largest volatility-reduction effect. This provides insights into whether

<sup>12</sup>Bekaert et al. (2007) also show that most of the equity market liberalization events and opening of banking sector events in emerging markets are concentrated in the earlier part of this period.

<sup>13</sup>This relationship also remains robust when we exclude foreign shareholders from neighboring countries and countries in the same region from our LFO calculation, or when we replace our 2002 and 2006 volatility measures with their 1-year leads. We also retest our basic specification (Models 1 and 5 of Table 3) over individual countries that have more than 30 firms, and over subsamples of other countries grouped by their regions. The negative relationship between LFO and volatility holds for the majority of these subsamples.

the commitment of a large shareholding is one of the underlying economic channels through which foreign investors can reduce volatility. In the development economics literature, Stiglitz (2000) clearly distinguishes (short-term) portfolio investment flows from (long-term) FDIs, which bring not only financial resources, but also technology, access to markets, and training of human capital. As such commitments create a physical barrier to any quick exit, foreign direct investors are likely to have a strong incentive to reduce the risk of their investments.

Although FDI is not the focus of our study, all arguments related to commitments of FDI are also likely to apply to investments by large foreign shareholders. To further highlight the role of commitments, we reestimate the regression models of Table 3 using other alternative definitions of LFO that reflect different sizes and types of large foreign shareholders.

First, we consider the foreign shareholders who hold a (potentially controlling) ownership stake of at least 20% of shares outstanding. The so-defined LFO variable is labeled LFO<sup>20PCT</sup>. The results are reported in Table 4. Again, this

TABLE 4  
The Relationship between Volatility and Alternative LFO Measures Classified According to Sizes of Large Foreign Shareholders (firm-level regression results)

The dependent variable is the average of a logarithmic transformation of monthly squared returns. LFO<sup>5TO20PCT</sup> (LFO<sup>20PCT</sup>) is the aggregate percentage ownership of foreign investors who each own 5% to less than 20% (more than 20%) of issued shares. INVESTIBILITY is obtained from the S&P Emerging Markets database, which defines this variable as the proportion of the issued shares (ranging from 0 to 1) that can be legally and practically held by foreign investors. DOMFIN (DOMNONFIN) is the aggregate block shareholdings of domestic financial institutions (all nonfinancial domestic entities). CROSSHOLD is the percentage of issued shares of a sample firm held by other domestic corporations. LogMKT-CAP is the average of the monthly natural logarithm of market capitalization. TURNOVER is the average of the number of shares traded in a month divided by the number of shares outstanding at the beginning of the month. LEVERAGE is the ratio of total liabilities to total assets. LagVOL is the lagged dependent variable. All regressions include (but we do not report) industry dummy variables and country fixed effects. Cluster-adjusted standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	Panel A. Dependent Variable Is 2002 Volatility		Panel B. Dependent Variable Is 2006 Volatility	
	(1)	(2)	(3)	(4)
LFO <sup>5TO20PCT</sup>	-0.027 (0.436)	0.071 (0.460)	-0.096 (0.384)	0.027 (0.379)
LFO <sup>20PCT</sup>	-0.519*** (0.174)	-0.366** (0.204)	-0.584*** (0.107)	-0.417*** (0.124)
INVESTIBILITY	0.103 (0.290)	0.065 (0.259)	0.066 (0.160)	0.033 (0.127)
DOMFIN	-0.300 (0.297)	-0.176 (0.277)	-0.410 (0.317)	-0.337 (0.322)
CROSSHOLD	0.141 (0.161)		0.140 (0.192)	
DOMNONFIN		0.182 (0.158)		0.263** (0.107)
LogMKT-CAP	-0.069 (0.044)	-0.066 (0.042)	-0.102*** (0.033)	-0.101*** (0.034)
TURNOVER	0.319* (0.178)	0.336* (0.200)	1.045*** (0.184)	1.061*** (0.181)
LEVERAGE	0.273*** (0.080)	0.278*** (0.079)	0.064 (0.059)	0.071 (0.060)
LagVOL	0.280*** (0.045)	0.279*** (0.045)	0.258*** (0.049)	0.257*** (0.048)
Adjusted R <sup>2</sup>	0.370	0.370	0.276	0.277
No. of obs.	1,364	1,364	1,300	1,300

LFO variable is negatively and significantly related to volatility. In comparison, the  $LFO^{5TO20}$  variable, which aggregates foreign ownership stakes ranging from 5% to 20%, is insignificant in all regression specifications. Thus, the volatility-reduction effect is most observable among foreign investors who are likely to have a strong commitment to their investments, that is, those with a potential controlling stake.

Second, we split LFO into 2 groups according to whether a foreign shareholder is a financial institution ( $LFO^{FIN}$ ) or a nonfinancial entity ( $LFO^{NONFIN}$ ). The former category includes banks, insurance companies, mutual funds, pension funds, and other investment entities. The latter category includes all other foreign blockholders. While foreign institutions do have large shareholdings (see Table 1), their interests are likely to differ from those of nonfinancial entities (mainly multinational firms), whose investments are more likely to be long term and may extend beyond financial interests. The results associated with this categorization are reported in Table 5. We find that the coefficients of  $LFO^{NONFIN}$  are

TABLE 5  
The Relationship between Volatility and Alternative LFO Measures Classified According to Types of Large Foreign Shareholders (firm-level regression results)

The dependent variable is the average of a logarithmic transformation of monthly squared returns.  $LFO^{FIN}$  ( $LFO^{NONFIN}$ ) is the aggregate percentage ownership of foreign investors who each own more than 5% of issued shares and is also a financial institution (nonfinancial entity). INVESTIBILITY is obtained from the S&P Emerging Markets database, which defines this variable as the proportion of the issued shares (ranging from 0 to 1) that can be legally and practically held by foreign investors. DOMFIN (DOMNONFIN) is the aggregate block shareholdings of domestic financial institutions (all nonfinancial domestic entities). CROSSHOLD is the percentage of issued shares of a sample firm held by other domestic corporations. LogMKT CAP is the average of the monthly natural logarithm of market capitalization. TURNOVER is the average of the number of shares traded in a month divided by the number of shares outstanding at the beginning of the month. LEVERAGE is the ratio of total liabilities to total assets. LagVOL is the lagged dependent variable. All regressions include (but we do not report) industry dummy variables and country fixed effects. Cluster-adjusted standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	Panel A. Dependent Variable Is 2002 Volatility		Panel B. Dependent Variable Is 2006 Volatility	
	(1)	(2)	(3)	(4)
$LFO^{FIN}$	0.500 (0.415)	0.586 (0.441)	-0.287 (0.377)	-0.159 (0.373)
$LFO^{NONFIN}$	-0.581*** (0.182)	-0.438* (0.225)	-0.601*** (0.121)	-0.439*** (0.138)
INVESTIBILITY	0.100 (0.290)	0.052 (0.259)	0.073 (0.159)	0.037 (0.125)
DOMFIN	-0.324 (0.297)	-0.210 (0.276)	-0.406 (0.314)	-0.337 (0.318)
CROSSHOLD	0.160 (0.165)		0.142 (0.195)	
DOMNONFIN		0.165 (0.160)		0.248** (0.107)
LogMKT CAP	-0.070* (0.041)	-0.069* (0.041)	-0.101*** (0.034)	-0.100*** (0.034)
TURNOVER	0.322 (0.200)	0.327 (0.203)	1.042*** (0.185)	1.056*** (0.182)
LEVERAGE	0.276*** (0.081)	0.279*** (0.080)	0.065 (0.059)	0.071 (0.060)
LagVOL	0.282*** (0.044)	0.280*** (0.044)	0.259*** (0.049)	0.258*** (0.048)
Adjusted $R^2$	0.372	0.372	0.276	0.278
No. of obs.	1,364	1,364	1,300	1,300

consistently negative and significant. In contrast, the coefficients of  $LFO^{FIN}$  are insignificant. This indicates that nonfinancial large foreign shareholders, who are potentially more committed, play a stabilizing role, while the foreign financial institutions group does not. Overall, the findings reported in both Tables 4 and 5 further emphasize the importance of recognizing the heterogeneity of foreign investors and the need to treat them differently in studies of cross-border investments.

### C. Endogeneity

As with other studies on the effects of financial liberalization, our study faces a potential endogeneity problem. More specifically, is the investment decision by large foreign investors exogenous to stock return volatility, or do they consciously avoid inherently risky firms?

The foreign investment literature suggests that volatility may influence portfolio allocation of foreign investors, although the evidence appears mixed. For example, Kang and Stulz (1997) find that foreign investors in Japan overallocate their portfolios to firms with low unsystematic risk. Dahlquist and Robertsson (2001), on the other hand, report that percentage ownership held by foreign investors is not significantly related to either beta or idiosyncratic volatility, after controlling for other firm characteristics.

We carefully address potential endogeneity concerns by using 3 approaches. The 1st approach is to estimate the LFO-volatility relationship using IV regressions. Although there is no prior theory that pinpoints suitable instruments for LFO, econometrically, any instrument needs to be highly correlated with LFO (the relevance condition) and uncorrelated with the unexplained component of volatility (the exclusion condition). To satisfy both conditions, we argue that the best instruments are those related to the evolution of a firm's ownership and control. This is because the ability of foreign investors to acquire large shareholdings in emerging markets is highly dependent on a firm's ownership structure development path, which is also likely to be unrelated to contemporary volatility.

Our 1st instrument, therefore, is a measure of the type of original ultimate controlling owner. To construct this variable, we trace the history of each sample firm to identify how it was established. If the firm is currently owned by another listed firm as part of a business group, we examine the history of its ultimate controlling parent firm at the top of the ownership chain. We find that most listed emerging market firms are established by a family/individual, a government, or other widely held firms. Our 1st instrument is therefore constructed as an indicator variable, which equals 1 if a sample firm was established by a family/individual and was never nationalized in its history, and 0 otherwise. This instrument should be highly (negatively) correlated with LFO because privatizations of government-owned enterprises or divestments of subsidiaries from a domestic corporation are often the main avenues for foreign investors to acquire significant stakes in emerging market firms,<sup>14</sup> whereas domestic families (and entrepreneurs) are often much

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<sup>14</sup>In a World Bank study, Sader (1995) documents that during the 1980s and early 1990s, governments of developing economies specifically targeted foreign investors in their privatization program

more reluctant to relinquish or share control. As this instrument is constructed based on historical information regarding owner identities extending far back to a firm's foundation, it is likely to be exogenous with respect to current volatility.

The 2nd instrument is based on the well-documented pattern that many emerging market firms are part of a business group and controlled through a pyramid structure (see Khanna and Yafeh (2007)). Similar to Masulis, Pham, and Zein (2011), we measure the extent to which a sample firm is pyramid-controlled as the number of layers (i.e., other listed firms) separating the firm from its ultimate controlling owner, and use this as our 2nd instrument. This variable should be highly correlated with LFO because the deviation of control rights from cash-flow rights in a pyramid structure may create more incentives for the controlling shareholder to expropriate (La Porta, Lopez-de-Silanes, and Shleifer (1999)), which deters foreign investments (Stulz (2005)). Almeida and Wolfenzon (2006) also argue that a pyramid structure can create a financing advantage for member firms, making them less dependent on foreign capital. Our pyramid-layer instrument is unlikely to have a direct influence on a firm's current volatility, as it is determined by the evolution in the control structure linking it to the rest of the group.

We run 4 IV regressions of volatility on LFO using specifications similar to those reported in Table 3. We include both instruments in the same estimation because we believe that a combination of original owner identity and the use of a pyramid structure would strongly discourage foreign investors or make it very difficult for them to obtain large shareholdings in an emerging market firm. The IV regression specifications are thus overidentified. Their results are reported in Table 6 for volatility measured in 2002 (Panel A) and 2006 (Panel B).

In Table 6 we report several important test statistics related to our instruments. First, on the relevance of the instruments, the high Shea (1997) partial- $R^2$  statistics (in the range of 0.08 to 0.13) indicate that both instruments strongly correlate with LFO. This is further supported by the Kleibergen and Paap (2006) Wald statistics, which mostly exceed the highest recommended critical value. Second, to test the exclusion condition, we report the Hansen (1982)  $J$  statistics, which are statistically insignificant. This implies the null hypotheses that the instruments can be excluded from the main equation and that the overidentifying restrictions are valid cannot be rejected. Based on these tests, our instruments appear to satisfy both the relevance and exclusion conditions.

Across the regression specifications reported in Table 6, our LFO measure is consistently negatively related to stock return volatility at the conventional levels of significance. It is also important to note that the inclusion of the instruments does not substantially alter the significance of other control variables. In summary, these results support the claim that higher LFO leads to lower stock return volatility in emerging markets.

Our 2nd method of addressing the endogeneity problem is to examine the relationship between LFO and volatility using the 1st-difference regression model. We reestimate the main regression models reported in Table 3, using changes in volatility, LFO, and relevant control variables over the 2002–2006 period, rather

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as a financial liberalization strategy. He reports that foreign investors participate in about 30% of the privatization transactions in these periods and contribute to about 35% of the sales volume.

TABLE 6  
The Relationship between Volatility and LFO at the Firm Level  
(instrumental variables regressions)

The dependent variable is the average of a logarithmic transformation of monthly squared returns.  $LFO^{5PCT}$  is the aggregate percentage ownership of foreign investors with a block ( $\geq 5\%$ ) shareholding. The instruments for  $LFO^{5PCT}$  are i) the dummy variable for the identity of the original owner of a firm, which equals 1 if the original owner is a domestic individual or family, and 0 otherwise; and ii) the number of pyramid layers between the firm and its ultimate controlling owner. INVESTIBILITY is obtained from the S&P Emerging Markets database, which defines this variable as the proportion of the issued shares (ranging from 0 to 1) that can be legally and practically held by foreign investors. DOMFIN (DOMNONFIN) is the aggregate block shareholdings of domestic financial institutions (all nonfinancial domestic entities). CROSSHOLD is the percentage of issued shares of a sample firm held by other domestic corporations. LogMKTCAP is the average of the monthly natural logarithm of market capitalization. TURNOVER is the average of the number of shares traded in a month divided by the number of shares outstanding at the beginning of the month. LEVERAGE is the ratio of total liabilities to total assets. LagVOL is the lagged dependent variable. All regressions include (but we do not report) industry dummy variables and country fixed effects. Cluster standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	Panel A. Dependent Variable Is 2002 Volatility		Panel B. Dependent Variable Is 2006 Volatility	
	(1)	(2)	(3)	(4)
$LFO^{5PCT}$	-1.102** (0.521)	-1.264* (0.765)	-0.663** (0.335)	-0.996* (0.595)
INVESTIBILITY	0.138 (0.273)	0.021 (0.221)	0.083 (0.152)	-0.015 (0.126)
DOMFIN	-0.460* (0.263)	-0.647* (0.361)	-0.410 (0.302)	-0.461 (0.320)
CROSSHOLD	0.201 (0.161)		0.149 (0.196)	
DOMNONFIN		-0.267 (0.425)		-0.031 (0.268)
LogMKTCAP	-0.061 (0.044)	-0.046 (0.043)	-0.100*** (0.033)	-0.086*** (0.033)
TURNOVER	0.315 (0.199)	0.289 (0.205)	1.030*** (0.191)	0.964*** (0.224)
LEVERAGE	0.271*** (0.078)	0.250*** (0.088)	0.064 (0.058)	0.052 (0.061)
LagVOL	0.273*** (0.042)	0.272*** (0.041)	0.258*** (0.048)	0.255*** (0.048)
Adjusted $R^2$	0.132	0.125	0.148	0.140
Shea Partial $R^2$	0.131	0.105	0.097	0.082
Kleibergen-Paap Wald stat.	33.325	32.933	27.636	13.255
Critical value	19.93	19.93	19.93	19.93
Hansen $J$ statistic	0.785	0.103	0.500	0.713
$p$ -value	0.376	0.749	0.479	0.598
No. of obs.	1,364	1,364	1,300	1,300

than their levels.<sup>15</sup> This model controls for unobservable time-invariant firm factors that may drive both LFO and volatility and that cannot be accounted for in a standard cross-sectional regression model, such as the risk nature of a firm. It is important to note that we do not examine ownership changes on a yearly basis, as such changes are likely to be very small. Instead, we measure differences over 2 different years and select a time period long enough for there to be significant and meaningful changes in ownership concentration. On average, LFO changes by 5.8% over the period between 2002 and 2006. This is a significant average change because for a large number of firms, there are actually no large foreign

<sup>15</sup>We thank the referee for the constructive suggestion on dealing with the endogeneity problem.



shareholders at any time. Among the sample firms with LFO, the magnitude of the average change in LFO increases to 13.8%.

Based on such time variations, we estimate this 1st-difference model across the full sample, for the subsample with positive LFO, and finally for the subsample with only firms that have an increase (decrease) in LFO between 2002 and 2006. The results are reported in Table 7. From Panel A to Panel C, we find that intertemporal changes in LFO are significantly related to corresponding changes

TABLE 7  
The Relationship between Volatility and LFO at the Firm Level (1st-difference regression)

The dependent variable is the change in the volatility (the average of a logarithmic transformation of monthly squared returns) from 2002 to 2006. All explanatory variables are changes (denoted by  $\Delta$ ) in the following.  $LFO^{5PCT}$  is the aggregate percentage ownership of foreign investors with a block ( $\geq 5\%$ ) shareholding. INVESTIBILITY is obtained from the S&P Emerging Markets database, which defines this variable as the proportion of the issued shares (ranging from 0 to 1) that can be legally and practically held by foreign investors. DOMFIN (DOMNONFIN) is the aggregate block shareholdings of domestic financial institutions (all nonfinancial domestic entities). CROSSHOLD is the percentage of issued shares of a sample firm held by other domestic corporations. LogMKTCAP is the average of the monthly natural logarithm of market capitalization. TURNOVER is the average of the number of shares traded in a month divided by the number of shares outstanding at the beginning of the month. LEVERAGE is the ratio of total liabilities to total assets. LagVOL is the lagged dependent variable. All regressions include (but we do not report) industry dummy variables and country fixed effects. Cluster-adjusted standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	Panel A. Full Sample		Panel B. Subsample of Firms with $LFO^{5PCT} > 0$		Panel C. Subsample of Firms with $\Delta LFO^{5PCT} > 0$		Panel D. Subsample of Firms with $\Delta LFO^{5PCT} < 0$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta LFO^{5PCT}$	-1.014*** (0.250)	-0.869*** (0.259)	-1.058*** (0.242)	-1.150*** (0.303)	-1.098*** (0.277)	-1.223*** (0.289)	-1.209 (0.941)	-1.383* (0.840)
$\Delta INVESTIBILITY$	-0.124 (0.208)	-0.035 (0.202)	-0.027 (0.219)	-0.018 (0.193)	0.071 (0.257)	0.082 (0.196)	-0.228 (0.598)	-0.210 (0.568)
$\Delta DOMFIN$	0.418 (0.394)	0.488 (0.361)	1.040 (0.939)	0.999 (0.921)	0.890 (0.930)	0.866 (0.911)	0.891 (1.764)	0.742 (1.829)
$\Delta CROSSHOLD$	-0.300 (0.244)		-0.042 (0.325)		-0.066 (0.453)		-0.072 (0.790)	
$\Delta DOMNONFIN$		0.274 (0.203)		-0.192 (0.299)		-0.304 (0.340)		-0.341 (0.494)
$\Delta \text{LogMKTCAP}$	0.012 (0.050)	0.005 (0.050)	-0.087 (0.061)	-0.088 (0.061)	0.003 (0.079)	0.001 (0.078)	-0.227 (0.165)	-0.222 (0.167)
$\Delta TURNOVER$	0.379 (0.264)	0.382 (0.266)	1.191*** (0.397)	1.182*** (0.394)	1.137*** (0.330)	1.113*** (0.342)	1.962*** (0.586)	1.996*** (0.576)
$\Delta LEVERAGE$	0.146 (0.164)	0.151 (0.166)	-0.127 (0.231)	-0.130 (0.228)	0.560* (0.307)	0.536* (0.298)	-0.457 (0.349)	-0.440 (0.361)
$\Delta \text{LagVOL}$	0.131*** (0.039)	0.132*** (0.038)	0.130* (0.070)	0.129* (0.069)	0.095 (0.076)	0.092 (0.074)	0.152 (0.109)	0.165* (0.097)
Adjusted $R^2$	0.220	0.220	0.320	0.321	0.362	0.364	0.363	0.364
No. of obs.	1,261	1,261	540	540	312	312	169	169

in volatility. The negative relationship still holds, but the level of significance becomes weaker, as shown in Panel D. One possible reason is that the number of observations used in Panel D is substantially smaller than those in other panels. Overall, the volatility-reduction effect of LFO is unlikely to be driven by unobservable time-invariant firm characteristics.

Finally, we employ an event study to further clarify the causality direction in the relationship between LFO and volatility. We focus on the sample firms reporting transactions involving large foreign shareholders to establish whether volatility changes only after such transactions. This exercise uses data sources other than our ownership database. In particular, we collect announcements of large block purchases or sales (involving more than 5% of the issued shares) involving both foreign and domestic investors as counterparties from Securities Data Company (SDC) Platinum (from Thomson Financial Reuters) and Zephyr (from Bureau Van Dijk). These data sources are further supplemented by manual searches of financial news reported in the Factiva database. While LFO can change for many different reasons (e.g., share issue participation, stock market trading, and so on), we find only 88 event firms in our sample for which LFO changes due to events of large block purchases/sales and for which the transaction dates can be ascertained from the previous data sources.

We calculate volatility for preevent periods of up to 3 years, ending 6 months before the 1st announcement of a transaction, and for corresponding postevent periods of up to 3 years, starting from 6 months after the announcement date. The 6-month periods before and after each event are excluded from the volatility measures so that they do not capture potential excess volatility generated by rumors of an impending transaction or by arbitrage activity occurring after the transaction. For each event firm, we also calculate the same volatility measures of a control set, consisting of all firms in the same market that do not report any changes in LFO, and report the averages over the same matched calendar periods.<sup>16</sup>

The results are reported in Table 8. For large block purchases by foreign investors (see Panel A), we find that volatility measures indeed decline following each transaction. Further, the target firm has similar volatility to its control set before the transaction, but after the transaction, its volatility is significantly lower than that of its control set. This implies that foreign block purchases do not seem to be driven by ex ante volatility changes. However, such transactions generate ex post declines in volatility. We also find that the average volatility of event firms increases relative to that of control firms following large block sales by foreign investors (see Panel B), but the levels of significance of our tests are constrained by the small sample size (17 transactions). In Panel C, we consider all transactions and compare volatility observed in low-LFO periods (before a purchase and after a sale) with that observed in high LFO-periods (after a purchase and before a sale). Again, we find that volatility is always lower in the latter periods and that volatility changes surrounding a transaction for an event firm are also significantly larger than contemporaneous volatility changes of its control firms.

It is unlikely that the previous findings arise simply because foreign investors are able to forecast long-term volatility better than domestic investors, so that the former can target firms facing declining future volatility or divest from firms

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<sup>16</sup>Note that due to the size and liquidity selection criteria imposed by the S&P Emerging Markets database, our control firms are quite similar to the event firms. As a robustness check, we also form a set of 1-to-1 matched firms (by finding the firm in the same industry with the closest market capitalization, or if not possible, the firm in the same market with the closest market capitalization). This alternative control set produces similar results.

TABLE 8  
 The Relationship between Volatility and LFO at the Firm Level:  
 Study of Events of Large Block Acquisitions and Disposals by Foreign Investors

Volatility for a particular period is measured as the average of a logarithmic transformation of monthly squared returns. The event sample consists of events of acquisitions (Panel A of Table 8) and disposals (Panel B) by foreign investors of large block of shares (>5%) in our sample firms of emerging markets, as reported by SDC Platinum, Zephyr, and/or Factiva. Panel A (Panel B) compares volatility during Year -3, Year -2, and Year -1 relative to the date that is 6 months before the announcement of a purchase (sale) to volatility during Year +1, Year +2, and Year +3 relative to the date that is 6 months after the announcement. Panel C combines both acquisition and disposal events into one sample, and compares volatility between periods with low LFO (i.e., before a block purchase or after a block sale by a foreign investor) and periods with high LFO (i.e., after a block purchase or before a block sale by a foreign investor). In this panel, volatility is also measured over cumulative periods of 1, 2, and 3 years surrounding each event, excluding 6 months surrounding the event. The same volatility measures calculated over matched calendar periods are also reported for sample firms in the same country that do not report any large block transfers involving foreign investors (the control sample). The differences in volatility between the event sample and the control sample, and the *t*-statistics associated with these differences are reported in the last 2 columns. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	Average Volatility – Event Sample (1)	Average Volatility – Control Sample (2)	Difference (1) – (2)	<i>t</i> -Test of Difference (1) – (2)
<i>Panel A. Volatility Before and After Large Block Purchases by Foreign Investors (N = 71)</i>				
Year -3	3.217	3.368	-0.151	1.203
Year -2	3.621	3.409	0.212	1.613
Year -1	3.561	3.507	0.053	0.417
Year +1	2.724	3.051	-0.327	-2.189**
Year +2	2.712	3.090	-0.378	-2.711**
Year +3	3.039	3.438	-0.398	-3.240***
<i>Panel B. Volatility Before and After Large Block Sales by Foreign Investors (N = 17)</i>				
Year -3	3.684	3.714	-0.030	-0.122
Year -2	3.846	3.507	0.339	2.106**
Year -1	3.625	3.432	0.192	0.912
Year +1	3.436	3.067	0.368	2.201**
Year +2	3.232	3.079	0.153	0.638
Year +3	4.261	3.588	0.672	1.930*
<i>Panel C. Comparison of Volatility Surrounding both Purchases and Sales (N = 88)</i>				
1-year low LFO	3.257	3.325	-0.039	-0.356
1-year high LFO	2.805	3.132	-0.317	-2.024**
Low vs. high <i>t</i> -test	2.850**	3.388***	1.699*	
2-year low LFO	3.312	3.258	0.097	1.080
2-year high LFO	2.822	3.151	-0.239	-2.352**
Low vs. high <i>t</i> -test	3.139**	1.954*	3.214***	
3-year low LFO	3.431	3.347	0.088	1.009
3-year high LFO	2.943	3.227	-0.287	-2.956**
Low vs. high <i>t</i> -test	4.324***	2.058**	3.721***	

facing increasing volatility at prices favorable to them. Such foresight is not supported by existing theory and evidence that it is foreign investors who generally face information disadvantages vis-à-vis domestic investors (French and Poterba (1991), Kang and Stulz (1997), Dahlquist and Robertsson (2001), and Portes and Rey (2005)). Therefore, evidence from our event study suggests that the observed volatility-reduction effect is a causal outcome of large foreign shareholder participation.<sup>17</sup>

Overall, we subject our baseline regression results regarding a negative relationship between LFO and volatility to a battery of robustness checks to control for endogeneity. All of these analyses consistently suggest that endogeneity is

<sup>17</sup>A closer look at the Factiva news announcements associated with these block transactions shows that in close to 80% of the transactions, one of the counterparties is a major domestic company operating in the same industry sector as the target firm, which is unlikely to be at an informational disadvantage.

unlikely to be the driving factor behind our main findings. We do not rule out that foreign investors may simply pick up low-risk firms, as documented by Kang and Stulz (1997), but our evidence strongly suggests that large foreign shareholders do generate important volatility-reduction benefits for their targets.

#### D. Volatility Impact of Large Foreign Shareholders in Different Governance Environments

Our earlier findings imply that large foreign shareholders have an *incentive* to reduce stock return volatility due to the size of their shareholdings and possibly other physical (or intangible) investments beyond their financial interests. This is also consistent with the broader interpretation that certain large foreign shareholders may have a monitoring role in emerging markets. However, the *means* by which foreign shareholders can exert their influence on local managers may not always be available or may differ across investment environments. In this section, we consider whether the stabilizing role of large foreign shareholders is related to their monitoring activities. Our hypothesis is that if the relationship between LFO and volatility reflects large foreign shareholder monitoring, then it is likely to be more observable in a governance environment that provides more support for monitoring activities.

To test this hypothesis, we reexamine the LFO-volatility relationship across different country-level governance environments, using several classifications. First, we rank countries according to the Financial Disclosure index, obtained from the World Economic Forum's (WEF) Global Competitiveness Report, which measures the ability to access sufficient, accurate, and timely corporate information by shareholders. Second, we classify countries according to the anti-director rights index as employed in La Porta et al. (1999), which measures the degree of minority shareholder protection. This index was updated to 2002 by Pagano and Volpin (2005) and to 2005 by Spamann (2010). Last, we use an index that measures the extent to which legal rights are effectively enforced in a country, constructed as the principal component aggregation of 3 World Bank indicators (see Kaufmann, Kraay, and Mastruzzi (2004)): the rule of law, regulatory quality, and the control of corruption. With our 3 governance indices, a higher score indicates a better governance environment, which offers greater support for monitoring activity. For each of the 3 alternative indices, we rerun our baseline regression model for the subsample of firms in countries with below-median index values and again for those with above-median index values. When the regression model is estimated using 2002 (2006) data, we use the indices as measured in 2001 (2005).

The regression results are reported in Table 9. Regardless of governance classification methods, we find that the corporate governance environment appears to influence the strength of the relationship between LFO and stock return volatility. For the 2002 regressions, the coefficients of LFO<sup>5PCT</sup> are always statistically significant in most "High" governance score columns and are less significant or insignificant in "Low" governance score columns. For the 2006 regressions, the magnitudes of the coefficients of LFO are consistently higher in

TABLE 9  
The Firm-Level Relationship between LFO and Volatility  
in Different Governance Environments

The dependent variable is the average of a logarithmic transformation of monthly squared returns. The results are based upon subsamples classified according to the Financial Disclosure index obtained from the Global Competitiveness Report, the La Porta et al. (1999) index (excluding Bahrain and Oman due to missing index value), and the enforcement index constructed using the World Bank's governance indicators. For each of the indices, the "high" (or "low") group comprises firms from countries with above (or below) median index value. LFO<sup>SPECT</sup> is the aggregate percentage ownership of foreign block ( $\geq 5\%$ ) shareholdings. INVESTIBILITY is the proportion of the issued shares (ranging from 0 to 1) that can be legally and practically held by foreign investors, as obtained from the S&P Emerging Markets database. DOMFIN (DOMNONFIN) is the aggregate block shareholdings of domestic financial institutions (all nonfinancial domestic entities). CROSSHOLD is the percentage of issued shares of a sample firm held by other domestic corporations. LogMKTAP is the average of the monthly natural logarithm of market capitalization. TURNOVER is the average of the number of shares traded in a month divided by the number of shares outstanding at the beginning of the month. LEVERAGE is the ratio of total liabilities to total assets. LagVOL is the lagged dependent variable. All regressions include (but do not report) industry dummy variables and country fixed effects. Cluster-adjusted standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	WEF Financial Disclosure Index		Anti-Director Rights Index		World Bank Enforcement Index	
	Low	High	Low	High	Low	High
<i>Panel A. Dependent Variable Is 2002 Volatility</i>						
LFO <sup>SPECT</sup>	-0.138 (0.237)	-0.586** (0.202)	-0.205 (0.203)	-0.558** (0.215)	-0.412* (0.242)	-0.392** (0.157)
INVESTIBILITY	-0.332 (0.282)	0.545*** (0.153)	-0.141 (0.340)	0.390** (0.150)	-0.221 (0.285)	0.447** (0.206)
DOMFIN	0.283 (0.597)	-0.492 (0.357)	0.561 (0.880)	-0.589* (0.313)	-0.022 (0.813)	-0.330 (0.336)
CROSSHOLD	-0.294 (0.190)	0.506*** (0.145)	0.053 (0.195)	0.250 (0.224)	0.147 (0.238)	0.051 (0.224)
LogMKTAP	0.035 (0.073)	-0.154*** (0.029)	-0.021 (0.076)	-0.130*** (0.034)	0.008 (0.070)	-0.123*** (0.033)
TURNOVER	3.119** (1.090)	0.226 (0.148)	0.149 (0.206)	0.426*** (0.068)	0.221 (0.204)	0.553*** (0.164)
LEVERAGE	0.107 (0.107)	0.548*** (0.132)	0.206** (0.073)	0.576*** (0.180)	0.218*** (0.058)	0.415** (0.170)
LagVOL	0.238*** (0.068)	0.316*** (0.039)	0.202*** (0.050)	0.352*** (0.041)	0.230*** (0.038)	0.350*** (0.052)
Adjusted R <sup>2</sup>	0.354	0.406	0.267	0.472	0.307	0.463
No. of obs.	522	842	649	693	663	701
<i>Panel B. Dependent Variable Is 2006 Volatility</i>						
LFO <sup>SPECT</sup>	-0.507** (0.170)	-0.569*** (0.173)	-0.430* (0.202)	-0.610*** (0.164)	-0.445** (0.155)	-0.640*** (0.175)
INVESTIBILITY	0.052 (0.240)	0.005 (0.171)	0.171 (0.263)	-0.040 (0.165)	0.011 (0.225)	0.066 (0.186)
DOMFIN	0.048 (0.477)	-0.603 (0.348)	0.256 (0.462)	-0.615 (0.354)	-0.943 (0.886)	-0.272 (0.279)
CROSSHOLD	0.346 (0.306)	-0.131 (0.196)	0.529 (0.321)	-0.196 (0.191)	0.151 (0.318)	0.059 (0.186)
LogMKTAP	-0.017 (0.050)	-0.128*** (0.032)	-0.016 (0.037)	-0.130*** (0.032)	-0.045 (0.048)	-0.120*** (0.036)
TURNOVER	1.039*** (0.289)	0.841*** (0.196)	1.480*** (0.153)	0.793*** (0.138)	1.089*** (0.297)	0.830*** (0.191)
LEVERAGE	0.083* (0.044)	0.070 (0.149)	0.056 (0.058)	0.097 (0.151)	0.070 (0.040)	0.064 (0.147)
LagVOL	0.202*** (0.053)	0.277*** (0.064)	0.225*** (0.053)	0.258*** (0.064)	0.205*** (0.054)	0.284*** (0.068)
Adjusted R <sup>2</sup>	0.174	0.352	0.184	0.336	0.156	0.359
No. of obs.	486	814	421	860	518	782

the “High” groups than in the “Low” groups.<sup>18</sup> In summary, consistent with our earlier prediction, the stabilizing effect of large foreign shareholdings appears to be more significant in emerging markets with strong support for shareholder monitoring than in those with weak support.

#### IV. Conclusion

The experience of past financial crises in emerging economies has raised concerns about the possible destabilizing impact of foreign capital flows into and out of local stock markets. Much of the debate focuses on the effect of foreign investments on firm-level stock return volatility. This issue remains unsolved, as most of the existing studies in the stock market liberalization literature not only lack an accurate measure of foreign ownership but also fail to account for the heterogeneity among foreign investors.

This paper constructs a firm-level measure of LFO in emerging stock markets. We document a *negative* relationship between this measure and stock return volatility. After controlling for potential endogeneity and major domestic ownership, our results suggest a *stabilizing*, rather than destabilizing, role of large foreign shareholders in emerging stock markets. We also demonstrate that our measure of LFO differs substantially from the investibility index that has been widely used in the literature.

Two possible economic channels are offered toward understanding the stabilizing effect of large foreign shareholders. First, drawing from a well-established point in the FDI literature, we argue that a large shareholding represents a long-term commitment from the foreign investor, who may provide not just monetary capital but also resources, technology, and training of human capital. Unlike portfolio investors, large foreign shareholders do not come and go quickly. This explanation is supported by evidence that the documented stabilizing effect is most observable for nonfinancial large foreign shareholders. Second, we argue that large foreign shareholders reduce volatility by playing a significant monitoring role in the local firms they invested in. Consistent with this argument, we find that the negative relationship between LFO and volatility is more observable in countries that support shareholder monitoring. Overall, our results imply that certain foreign investors can make positive contributions to domestic firms, but such benefits of market liberalization can be constrained by failure to improve the underlying legal and governance institutions in a host country.

An important contribution of this study is to examine, in a cross-country context, a new measure of foreign ownership that represents the *actual* presence of large foreign investors in emerging markets. In contrast, most previous studies only focus on the openness of foreign investment regulations by measuring the *prospect* of foreign investor presence. Our results therefore not only add to

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<sup>18</sup>In an alternative robustness check, we find that the LFO variable representing investors from developed markets generates a more significant volatility-reduction effect than the LFO variable representing investors from emerging markets. Chari, Ouimet, and Tesar (2010) also document that developed-economy firms experience greater positive returns upon acquiring emerging-economy firms than emerging-economy acquirers. Similar to our interpretation, they attribute their results to the superior governance and monitoring attributes of foreign shareholders.



existing evidence on the impact of stock market liberalization but also highlight the importance of recognizing the heterogeneity among foreign investors. This direction of analysis is advocated by Stiglitz ((2004) p. 60), who points out that “the analysis would have been greatly enriched if more effort had been put into parsing out the effects of different kinds of capital flows.” We hope that our results might encourage more research into foreign investor heterogeneity to further clarify their different contributions to local stock markets.

## References

- Aitken, B. J., and A. E. Harrison. “Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela.” *American Economic Review*, 89 (1999), 605–618.
- Almeida, H. V., and D. Wolfenzon. “A Theory of Pyramidal Ownership and Family Business Groups.” *Journal of Finance*, 61 (2006), 2637–2680.
- Bae, K.-H.; W. Bailey; and C. X. Mao. “Stock Market Liberalization and the Information Environment.” *Journal of International Money and Finance*, 25 (2006), 404–428.
- Bae, K.-H.; K. Chan; and A. Ng. “Investibility and Return Volatility.” *Journal of Financial Economics*, 71 (2004), 239–263.
- Bae, K.-H.; J.-K. Kang; and J.-M. Kim. “Tunneling or Value Added? Evidence from Mergers by Korean Business Groups.” *Journal of Finance*, 57 (2002), 2695–2740.
- Bekaert, G., and C. R. Harvey. “Time-Varying World Market Integration.” *Journal of Finance*, 50 (1995), 403–444.
- Bekaert, G., and C. R. Harvey. “Emerging Equity Market Volatility.” *Journal of Financial Economics*, 43 (1997), 29–77.
- Bekaert, G., and C. R. Harvey. “Foreign Speculators and Emerging Equity Markets.” *Journal of Finance*, 55 (2000), 565–613.
- Bekaert, G.; C. R. Harvey; C. Lundblad; and S. Siegel. “Growth Opportunities and Market Integration.” *Journal of Finance*, 62 (2007), 1081–1138.
- Bertrand, M.; P. Mehta; and S. Mullainathan. “Ferretting Out Tunneling: An Application to Indian Business Groups.” *Quarterly Journal of Economics*, 117 (2002), 121–148.
- Blalock, G.; P. J. Gertler; and D. I. Levine. “Investment Following a Financial Crisis: Does Foreign Ownership Matter?” Working Paper, Cornell University (2005).
- Blomström, M., and A. Kokko. “Multinational Corporations and Spillovers.” *Journal of Economic Surveys*, 12 (1998), 247–277.
- Chan, K.; V. Covrig; and L. Ng. “What Determines the Domestic Bias and Foreign Bias? Evidence from Mutual Fund Equity Allocations Worldwide.” *Journal of Finance*, 60 (2005), 1495–1534.
- Chari, A., and P. B. Henry. “Risk Sharing and Asset Prices: Evidence from a Natural Experiment.” *Journal of Finance*, 59 (2004), 1295–1324.
- Chari, A.; P. P. Ouimet; and L. L. Tesar. “The Value of Control in Emerging Markets.” *Review of Financial Studies*, 23 (2010), 1741–1770.
- Choe, H.; B.-C. Kho; and R. M. Stulz. “Do Foreign Investors Destabilize Stock Markets? The Korean Experience in 1997.” *Journal of Financial Economics*, 54 (1999), 227–264.
- Dahlquist, M.; L. Pinkowitz; R. M. Stulz; and R. Williamson. “Corporate Governance and the Home Bias.” *Journal of Financial and Quantitative Analysis*, 38 (2003), 87–110.
- Dahlquist, M., and G. Robertsson. “Direct Foreign Ownership, Institutional Investors, and Firm Characteristics.” *Journal of Financial Economics*, 59 (2001), 413–440.
- Doidge, C.; G. A. Karolyi; and R. M. Stulz. “Why Are Foreign Firms That List in the U.S. Worth More?” *Journal of Financial Economics*, 71 (2004), 205–238.
- Edison, H. J., and F. E. Warnock. “A Simple Measure of the Intensity of Capital Controls.” *Journal of Empirical Finance*, 10 (2003), 81–103.
- Errunza, V., and E. Losq. “International Asset Pricing under Mild Segmentation: Theory and Test.” *Journal of Finance*, 40 (1985), 105–124.
- Eun, C. S., and S. Janakiraman. “A Model of International Asset Pricing with a Constraint on the Foreign Equity Ownership.” *Journal of Finance*, 41 (1986), 897–914.
- Ferreira, M. A., and P. Matos. “The Colors of Investors’ Money: The Role of Institutional Investors around the World.” *Journal of Financial Economics*, 88 (2008), 499–533.
- French, K. R., and J. M. Poterba. “Investor Diversification and International Equity Markets.” *American Economic Review*, 81 (1991), 222–226.

- Gupta, N., and K. Yuan. "On the Growth Effect of Stock Market Liberalizations." *Review of Financial Studies*, 22 (2009), 4715–4752.
- Hansen, L. P. "Large Sample Properties of Generalized Method of Moments Estimators." *Econometrica*, 50 (1982), 1029–1054.
- Henry, P. B. "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices." *Journal of Finance*, 55 (2000), 529–564.
- Henry, P. B. "Capital-Account Liberalization, the Cost of Capital, and Economic Growth." *American Economic Review*, 93 (2003), 91–96.
- Kang, J.-K., and R. M. Stulz. "Why Is There a Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan." *Journal of Financial Economics*, 46 (1997), 3–28.
- Kaufmann, D.; A. Kraay; and M. Mastruzzi. "Governance Matters III: Governance Indicators for 1996, 1998, 2000, and 2002." *World Bank Economic Review*, 18 (2004), 253–287.
- Kelley, E., and T. Woidtke. "Investor Protection and Real Investment by U.S. Multinationals." *Journal of Financial and Quantitative Analysis*, 41 (2006), 541–572.
- Khanna, T., and Y. Yafeh. "Business Groups in Emerging Markets: Paragons or Parasites?" *Journal of Economic Literature*, 45 (2007), 331–372.
- Kim, E. H., and V. Singal. "Stock Market Openings: Experience of Emerging Economies." *Journal of Business*, 73 (2000), 25–66.
- Kleibergen, F., and R. Paap. "Generalized Reduced Rank Tests Using the Singular Value Decomposition." *Journal of Econometrics*, 133 (2006), 97–126.
- La Porta, R.; F. Lopez-de-Silanes; and A. Shleifer. "Corporate Ownership around the World." *Journal of Finance*, 54 (1999), 471–517.
- Leuz, C.; K. V. Lins; and F. E. Warnock. "Do Foreigners Invest Less in Poorly Governed Firms?" *Review of Financial Studies*, 22 (2009), 3245–3285.
- Li, D.; F. Moshirian; P. K. Pham; and J. Zein. "When Financial Institutions Are Large Shareholders: The Role of Macro Corporate Governance Environments." *Journal of Finance*, 61 (2006), 2975–3007.
- Masulis, R.; P. Pham; and J. Zein. "Family Business Groups around the World: Financing Advantages, Control Motivations and Organizational Choices." *Review of Financial Studies*, forthcoming (2011).
- Merton, R. C. "A Simple Model of Capital Market Equilibrium with Incomplete Information." *Journal of Finance*, 42 (1987), 483–510.
- Mitton, T. "Stock Market Liberalization and Operating Performance at the Firm Level." *Journal of Financial Economics*, 81 (2006), 625–647.
- Pagano, M., and P. F. Volpin. "Political Economy of Corporate Governance." *American Economic Review*, 95 (2005), 1005–1030.
- Petersen, M. A. "Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches." *Review of Financial Studies*, 22 (2009), 435–480.
- Portes, R., and H. Rey. "The Determinants of Cross-Border Equity Flows." *Journal of International Economics*, 65 (2005), 269–296.
- Quinn, D. "The Correlates of Change in International Financial Regulation." *American Political Science Review*, 91 (1997), 531–551.
- Rossi, S., and P. F. Volpin. "Cross-Country Determinants of Mergers and Acquisitions." *Journal of Financial Economics*, 74 (2004), 277–304.
- Rouwenhorst, K. G. "Local Return Factors and Turnover in Emerging Stock Markets." *Journal of Finance*, 54 (1999), 1439–1464.
- Sader, F. "Privatizing Public Enterprises and Foreign Investment in Developing Countries: 1988–93." The World Bank Foreign Investment Advisory Service Paper (1995).
- Shea, J. "Instrument Relevance in Multivariate Linear Models: A Simple Measure." *Review of Economics and Statistics*, 79 (1997), 348–352.
- Spamann, H. "The 'Antidirector Rights Index' Revisited." *Review of Financial Studies*, 23 (2010), 467–486.
- Stiglitz, J. E. "Reforming the Global Economic Architecture: Lessons from Recent Crises." *Journal of Finance*, 54 (1999), 1508–1521.
- Stiglitz, J. E. "Capital Market Liberalization, Economic Growth, and Instability." *World Development*, 28 (2000), 1075–1086.
- Stiglitz, J. E. "Capital-Market Liberalization, Globalization, and the IMF." *Oxford Review of Economic Policy*, 20 (2004), 57–71.
- Stulz, R. M. "Globalization, Corporate Finance and the Cost of Capital." *Journal of Applied Corporate Finance*, 12 (1999), 8–25.
- Stulz, R. M. "The Limits of Financial Globalization." *Journal of Finance*, 60 (2005), 1595–1638.

- Umutlu, M.; L. Akdeniz; and A. Altay-Salih. "The Degree of Financial Liberalization and Aggregated Stock-Return Volatility in Emerging Markets." *Journal of Banking and Finance*, 34 (2010), 509–521.
- Wang, J. "Foreign Equity Trading and Emerging Market Volatility: Evidence from Indonesia and Thailand." *Journal of Development Economics*, 84 (2007), 798–811.
- Wei, S. X., and C. Zhang. "Why Did Individual Stocks Become More Volatile?" *Journal of Business*, 79 (2006), 259–292.