

Board of Governors of the Federal Reserve System

International Finance Discussion Papers

Number 771

July 2003; revised September 2003

U.S. Investors' Emerging Market Equity Portfolios: A Security-Level Analysis

Hali J. Edison and Francis E. Warnock

forthcoming, *Review of Economics and Statistics*

NOTE: International Finance Discussion Papers are preliminary materials circulated to stimulate discussion and critical comment. References in publications to International Finance Discussion Papers (other than an acknowledgment that the writer has had access to unpublished material) should be cleared with the author or authors. Recent IFDPs are available on the Web at www.federalreserve.gov/pubs/ifdp/.

U.S. Investors' Emerging Market Equity Portfolios: A Security-Level Analysis

Hali J. Edison and Francis E. Warnock*

Abstract: We analyze a unique data set and uncover a remarkable result that casts a new light on the home bias phenomenon. The data are comprehensive, security-level holdings of emerging market equities by U.S. investors. We document that at a point in time U.S. portfolios are tilted towards firms that are large, have fewer restrictions on foreign ownership, or are cross-listed on a U.S. exchange. The size of the cross-listing effect is striking. In contrast to the well-documented underweighting of foreign stocks, emerging market equities that are cross-listed on a U.S. exchange are incorporated into U.S. portfolios at full international CAPM weights. Our results suggest that information asymmetries play an important role in equity home bias and that the benefits of international risk sharing are limited to select firms.

JEL Classification: F3, G15

Keywords: emerging markets, portfolio choice, home bias, international risk sharing

* The authors are, respectively, Senior Economist in the Research Department of the IMF and Economist in the International Finance Division of the Board of Governors of the Federal Reserve System. The authors thank Sara Holland for superb research assistance; William Grier for helpful discussions and assistance with the holdings data; Alka Banerjee of Standard and Poor's for assistance with the S&P/IFC data; and, for helpful comments, John Campbell (the editor), two anonymous referees, Robert Flood, Steve Kamin, Andrew Karolyi, Vincent Reinhart, and participants at the International Finance Division's Monday Workshop, IMF Brown Bag Workshop, and IMF Global Linkages Conference. All errors are our own. The views in this paper are solely the responsibility of the authors and should not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or the International Monetary Fund or of any other person associated with the Federal Reserve System or IMF. The statistical analysis of security-level data on U.S. investors' holdings reported in this study was conducted at the International Finance Division of the Board of Governors of the Federal Reserve System under arrangements that maintained legal confidentiality requirements. email: hedison@imf.org, frank.warnock@frb.gov
Corresponding author: F. Warnock (Tel.: + 1-202-452-3314; fax: + 1-202-872-4926)

1. Introduction

We use a unique database to analyze U.S. portfolios in emerging markets. The security-level data, collected in conjunction with comprehensive benchmark surveys (Treasury Department and Federal Reserve Board, 2000), provide information on *all* U.S. investors' holdings of *every* equity in our sample of nine emerging markets as of two points in time, March 1994 and December 1997. The data set yields one remarkable result. Whereas the home bias in portfolios has been well documented in the surveys of Lewis (1999) and Karolyi and Stulz (2002), we find that a subset of emerging market firms—those that have cross-listed on a U.S. exchange—are incorporated into U.S. portfolios at full weights. The portfolio weights on cross-listed firms are in line with those predicted by the international capital asset pricing model (CAPM) and are almost four times greater than the weights on firms that have not cross-listed. Cross-listed firms tend to be larger and more liquid (Pagano, Roell, and Zechner, 2002), but a large cross-listing effect persists even after controlling for these and other firm characteristics.¹

Many explanations for the home bias have been put forward in the literature. Researchers initially pointed to direct barriers to international investment, such as capital controls and high transaction costs (Black, 1974; Stulz, 1981). Over the years, however, direct barriers fell and home bias persisted, leading researchers to consider indirect barriers such as information asymmetries (Merton, 1987; Gehrig, 1993). That information asymmetries may play an important role in the home bias is consistent with recent empirical studies (Kang and Stulz, 1997; Dahlquist and Roberttson, 2001; Coval and Moskowitz, 1999; Ahearne, Grier, and Warnock, forthcoming).

Our finding of a stark difference in the weights of cross-listed and non-cross-listed stocks in U.S. investors' portfolios is further evidence of a role for information asymmetries. Lang, Lins, and Miller (forthcoming) show that the cross-listing is associated with an improvement in the quality of the firm's financial information. Opting into U.S. investor protection regulations—which include, as discussed in Coffee (2002), not only increased disclosure and reconciliation to U.S. GAAP, but also increased enforcement by the SEC and a more demanding litigation environment—bonds the firm to greater transparency. Consistent with the models of Merton (1987) and Barry and Brown (1985), the enhanced information environment should broaden the shareholder base—consistent with our results—and reduce the cost of capital because the cost of following the firm falls and

¹ In our sample, cross-listing occurs through a Level II or III American Depositary Receipt (ADR) program. Miller (1999) and Karolyi (2003) discuss ADR programs. Lins, Strickland, and Zenner (2002) and Reese and Weisbach (2002) examine reasons firms cross-list.

investors are better able to assess its prospects. To be sure, our results are also consistent with a more basic familiarity effect as in Coval and Moskowitz (1999) and Huberman (2001). But evidence in support of the enhanced financial information hypothesis is provided by Level I ADRs, which are foreign stocks that trade in the United States but not on exchanges and, hence, are not subject to U.S. investor protection regulations. While Level I ADRs have greater U.S. ownership than local stocks (12% vs. 7% for non-ADRs), the effect is not statistically significant once control variables are added. That is, foreign stocks that are listed on U.S. exchanges and subject to U.S. investor protection regulations are incorporated in U.S. portfolios at full international CAPM weights, while no such effect is evident for foreign stocks that trade in the United States but are not subject to its securities laws.

Our findings offer a plausible reason for the surprisingly small decrease in the cost of capital after an emerging market opens its financial system to foreign investment (Bekaert and Harvey, 2000; Henry, 2000b). A substantial decrease in the cost of capital is expected to occur through improved international risk sharing because the risk premium, no longer determined locally by local market volatility, should drop substantially as it becomes determined by the (relatively low) covariance of local market returns with returns of the world market portfolio. Our results are a reminder that liberalization does not necessarily imply integration and the full benefits of international risk sharing in lowering a country's cost of capital are realized only if foreign investors begin to hold local stocks in proportion to their weight in the world market portfolio. Only some local stocks, the cross-listed ones, are fully incorporated in U.S. portfolios, so at the country-level the cost of capital decreases less than one might expect.

Studies have examined international portfolios at the individual security level, but these have been limited either in the scope of countries or in the comprehensiveness of the data. Studies of all holdings by foreign investors in a *single* country have been conducted by Kang and Stulz (1997), henceforth KS; Dahlquist and Robertsson (2001), henceforth DR; and Cai and Warnock (2003). Ours is broader in that we study investors' holdings in a range of emerging markets. Studies that include securities of *multiple* countries typically focus on one type of investor, either mutual funds (Aggarwal, Klapper, and Wysocki, 2003) or, more generally, institutional investors (Bradshaw, Bushee, and Miller, 2002). Our study is broader in that it includes all U.S. investment in these markets. To understand the difference in the scope of the data sets, note that the mutual fund holdings in Aggarwal et al. (2003) comprise only 8 percent of all U.S. investors' holdings in their

sample of countries and the Bradshaw et al. (2002) data should only contain information on foreign securities listed in the United States, specifically so-called 13(f) securities. Our data, on the other hand, should comprise all U.S. holdings for all publicly traded foreign firms.

The paper proceeds as follows. In Section 2, we describe the data on U.S. holdings. In Section 3, we describe the economic environment at the times of the two benchmark surveys, outline the firm-level characteristics used in this study, and present descriptive statistics on the relationship between U.S. holdings and firm characteristics. In Section 4, we more formally analyze the determinants of firms' weights in U.S. portfolios using multivariate regressions. Section 5 examines in more detail the result that for cross-listed firms there is no home bias and considers possible implications for policymakers. Section 6 concludes.

2. The Security-Level Holdings Data

We use confidential security-level data on U.S. holdings of emerging market stocks from comprehensive benchmark surveys conducted by the U.S. Treasury Department and the Federal Reserve Board as of March 1994 and December 1997; for a primer on the surveys, see Grier, Lee, and Warnock (2001). Publicly available country-level data—formed by aggregating the confidential security-level data used here—have been analyzed in Ahearne et al. (forthcoming) and Dahlquist, Pinkowitz, Stulz, and Williamson (2003), henceforth DPSW. Data are collected from two types of reporters: U.S. custodians and U.S. institutional investors. Holdings of private individuals are captured as long as they are through U.S. institutional investors or are entrusted to U.S.-resident custodians. Reporting on the survey is mandatory, and penalties may be imposed for noncompliance. Custodians—primarily banks but also some broker-dealers—are the main source of information, reporting 97 percent of the market value of U.S. holdings of foreign long-term securities measured on the 1997 survey. Institutional investors, such as mutual funds, pension funds, insurance companies, endowments, and foundations, report in detail on their ownership of foreign securities only if they do not entrust the safekeeping of these securities to U.S.-resident custodians. If they do use U.S.-resident custodians, institutional investors report only the name(s) of the custodian(s) and the amount(s) entrusted. Of the 1209 U.S. firms that reported data in the survey, 863 reported the names and amounts they had entrusted to U.S. custodians. The requirement that institutional investors identify their U.S.-resident custodian(s) has the beneficial side effect of ensuring that all sizable U.S.-resident custodians holding foreign securities are included in the

survey, because any custodian identified by an institutional investor is instructed to report. The requirement also makes it possible to check on survey accuracy, as the amount of foreign holdings each custodian should report can be estimated by summing the amounts that institutional investors as a group have entrusted to each custodian.

Data from the asset surveys are considered accurate but difficulties and complexities mean that they are not likely perfect. Accurately pricing and categorizing the universe of foreign securities—370,000 records on equity holdings were collected in the 1997 survey—is very challenging, as commercial data used to cross-check data on foreign securities are generally less complete than for U.S. securities; custodian data in asset surveys tend to have some errors and omissions; and unexpected local market quirks can lead to misinterpretations of reported data. Because of the great number of records and the various complexities, the data were edited and cleansed for eighteen months by Federal Reserve and Treasury staff, who also attempt to cross-check the holdings data with other sources. But there is no comparable source. One cross-check involves holdings of U.S. institutional investors as reported to the SEC through Form 13(f) filings. The SEC has jurisdiction over securities that trade in U.S. markets, so only U.S.-traded securities—or, to be more specific, so-called 13(f) securities—are reportable in 13(f) filings. Non-U.S. securities are reportable to 13(f) only if they trade in U.S. markets. Therefore, 13(f) filings include U.S. institutions' holdings of ADRs but not holdings of the underlying foreign security. Thus, one check is to confirm that all U.S. investors' holdings of a particular ADR as reported to the benchmark survey are greater than the amount of U.S. institutions' holdings of the same ADR from 13(f) data. Unfortunately, the cross-check showed that for some securities 13(f) holdings are paradoxically greater than in the survey. A follow-up showed why. To limit reporter burden the SEC allows institutions to consolidate their 13(f) holdings across subsidiaries, including foreign ones. Thus, holdings of foreigners are intermingled with U.S. holdings in 13(f) data, which greatly reduces the usefulness of 13(f) filings as a check of the survey data.

That the data set is comprehensive is evident by the small number of zero holdings. For the nine countries in our sample, at the end of 1997 the S&P/IFC Emerging Markets Database (EMDB) contained 727 firms; in the benchmark survey data set, only 1 percent (7 of 727) of these had zero U.S. holdings. The proportion of EMDB firms with zero U.S. holdings was higher in 1994 (40 of 345), but this higher proportion makes sense because at that time some Asian countries had extremely restrictive capital controls. By 1997, restrictions in Asia were relaxed and U.S. investors'

purchased a wider range of emerging market equities.

3. Firm Characteristics and U.S. Ownership

In this section we first set the scene by describing conditions in our sample of emerging markets. We then describe data on firm characteristics and present a first pass at their relationships with U.S. ownership.

The importance of U.S. investors—whose holdings are shown in parentheses in the left columns of Table 1—increased in both regions between 1994 and 1997. U.S. positions in Latin America increased in both dollar terms (from \$53 billion in 1994 to \$84 billion in 1997) and as a percent of local market capitalization (from 13 percent to 15 percent). In emerging Asia, between 1994 and 1997 U.S. holdings fell in dollar terms (from \$21 billion to \$17 billion), but increased as a share of local market capitalization (from 4 to 8 percent) because market capitalizations fell more sharply.

Substantial changes in stock market development and financial liberalization occurred in between the two surveys. Stock market development, as measured by the number of listed firms, increased dramatically in emerging Asia, especially Indonesia, Korea, and Malaysia, but was roughly unchanged in Latin America (Table 1). Market capitalizations paint a different picture; some Latin American markets, such as Brazil and Chile, grew sharply between the surveys, but by end-1997 the Korean, Malaysian, and Thai equity markets were (in dollar terms) just 20 to 50 percent of their March 1994 sizes, primarily because of the crisis-related currency depreciations and drop in equity prices (Figure 1). All of the markets in our sample were open to foreign investment by March 1994 (Figure 2).² At that time, Argentina, Mexico, and Malaysia had the fewest legal restrictions, but, by the end of 1997, the other countries in our sample had also dismantled (at least temporarily) the bulk of foreign ownership restrictions. By 1997 firms from most of these countries—with the exception of Thailand and Malaysia—had cross-listed on U.S. exchanges. Figure 3 shows the basic message from Ahearne et al. (forthcoming): Countries whose firms tended to cross-list on U.S. exchanges had greater weights in U.S. portfolios. The firm-level analysis of

² International financial liberalization in these countries has been studied by Bekaert and Harvey (2000), Chari and Henry (2002a,b), Edison and Warnock (2003a), Henry (2000a,b), and Kim and Singal (2000).

this paper enables us to discern whether this effect is limited to only the firms that cross-listed or also extends to other firms in these countries.

3.1 Firm Characteristics

For data on firm characteristics we use balance sheet variables from Worldscope and data on returns, market capitalization, turnover, and investability from the S&P/IFC EMDB; complete details are provided in Table 2. Although the EMDB consists only of firms in the S&P/IFC Global index, in this sample it has broader coverage than Worldscope. All actively traded stocks of domestic companies are candidates for inclusion in a country's Global index (there are no liquidity or size screens), but the index and, hence, the database, is not comprehensive because it is constructed to represent a target 60 to 75 percent of a country's total market capitalization (Standard & Poor's, 2000). For the nine emerging markets in our sample, EMDB firms comprise 68 percent of the \$767 billion in end-1997 market capitalization, but 88 percent of the \$100 billion in U.S. positions.

We group our main explanatory variables in five categories. Our priors on these variables come from the literature based on single-country analyses of foreigners' investments in Japan (Kang and Stulz) and Sweden (Dahlquist and Robertsson) and on the composition of institutional investors' domestic equity portfolios (Falkenstein, 1996; Gompers and Metrick, 2001 (henceforth GM)).

3.1.1 Liquidity and transaction costs. The typical U.S. international investor is likely an institution. If institutions turn over their portfolio often (Schwartz and Shapiro, 1992) and are large relative to foreign stocks, U.S. investors might prefer firms with high liquidity and low transaction costs. We have no direct measure of firm-level transaction costs, so we include two proxies, *size* (log market capitalization) and *turnover* (value of trading over the previous twelve months as a percentage of market capitalization).³

3.1.2 Prudence variables. *Dividend yield* (dividends per share over the year-end market price) was used by Del Guercio (1996) and GM as a "prudence" proxy—stocks paying higher yields

³ Because lower priced stocks have, on a percentage basis, higher bid-ask spreads and therefore higher transaction costs, GM use price as a proxy for transaction costs. We do not include price because many foreign stocks as held as ADRs, which often bundle underlying shares to produce a higher price.

might be considered safer and some institutions cannot hold stocks that do not pay dividends. Yield also has predictive power for returns (Fama and French, 1988; Campbell and Shiller, 1988; Harvey, 1995). Another prudence proxy is the volatility of past returns, which we measure as the *residual variance* of a market model estimated over a 3-year period. We do not have a strong prior on this variable. From a prudence standpoint, U.S. ownership should be greater in firms with lower volatility. But investors may seek high-risk high-reward stocks—GM and Falkenstein (1996) find a positive impact of volatility on U.S. institutions' domestic holdings—so the sign is ambiguous.

3.1.3 Historical returns. In addition to residual variance, we use three other variables that are based on historical returns: book-to-market, beta, and momentum. *Book-to-market*, calculated as the book value per share over the year-end market price, can be viewed as a style variable; a tendency to hold low (high) book-to-market values indicates a preference for “growth” (“value”) stocks. We do not have a strong prior on book-to-market: U.S. institutions appear to favor domestic value stocks, but foreigners in Japan and Sweden reveal a preference for growth stocks. *Beta*, calculated from the same market model as residual variance, measures the systematic risk of a stock. KS note that in the presence of proportional barriers to investment foreigners should hold high beta stocks, so we might expect a positive relationship between beta and U.S. ownership. We also include a *momentum* variable (mean monthly return over the preceding one-year period) that provides an indication of whether U.S. investors can be characterized as momentum traders in emerging markets. Past evidence of momentum trading by foreigners seems to be sample specific. Whereas KS, Falkenstein (1996), and Grinblatt and Keloharju (2000) find evidence of momentum investing, GM show strong evidence that institutions do not chase past returns.

3.1.4 Financial health. We use three measures of financial health. *Return on assets* (ROA) is an accounting performance measure calculated as net income over total assets. If there is persistence in accounting performance, U.S. investors might favor emerging market stocks with high ROA. Firms with higher *leverage*, calculated as the ratio of total debt to total assets, are more financially vulnerable and, thus, might attract less foreign investment. *Current ratio*, calculated as current assets over current liabilities, indicates the firm's ability to meet short-term obligations. Firms with a high current ratio are in better financial health (at least in the short-term) and, thus,

might be more attractive to foreign investors.⁴

3.1.5 Barriers to international investment. Barriers to international investment can be direct or indirect. Direct barriers, such as capital controls, are captured by *investable weight*, a firm-level measure of the legal availability of a stock to foreigners. The investable weight, which is the basis of the Edison and Warnock (2003a) capital controls measure, is an openness measure that represents the portion of a firm's equity that is legally available to a foreign investor. A barrier that is both direct and indirect is the extent to which a stock is held by insiders—stocks with a high concentration of insiders are less available to foreign investors for algebraic reasons but also because insiders' objectives might not align with those of atomistic investors. *Closely held* is calculated as the percent of outstanding common shares that are held by large shareholders; as in Holland and Warnock (2003), we correct the closely held variable by subtracting the percentage closely held that Worldscope erroneously attributes to depository banks. We also include two cross-listing dummy variables. *US Listed* takes the value of one if the firm is listed on a U.S. exchange; in this sample, all such listings are as Level II and III ADRs. Such a cross-listing alleviates two type of barriers to international investment: direct (through lower transaction costs and better settlement) and indirect (through an improved information environment due to stricter investor protection regulations). Some foreign firms trade in U.S. OTC markets as Level I ADRs or private placements (Rule 144a). For these firms, captured by a *Level I ADR* dummy, direct costs might be lower, but we expect no improvement in the information environment because they are not subject to U.S. investor protection regulations.

3.2 Holdings by Firm Characteristic⁵

Before discussing the relationship between firm characteristics and U.S. holdings, we describe some features of the data. Information on the typical firm in our sample can be gleaned

⁴ Glen and Singh (2003) provides a thorough analysis of accounting ratios in emerging markets.

⁵ Some variables used in previous studies are not available. Most importantly, adequate foreign sales data do not exist for these emerging market firms. DR find a significant relationship between foreign sales and foreign ownership. It is not clear that we would find a similar result, because in our sample U.S. investors tend to overweight some firms for which international trade is not important, such as transportation and communications firms; see footnote 7.

from the column labeled Average in the All Countries block of Table 3. Our full sample contains at most 627 firms (N), of which 445 are from emerging Asia. Coverage is greatest for EMDB variables such as returns-based variables, market capitalization, and investability. The average firm in our full sample has market capitalization of \$1016 million, of which 43 percent is held by insiders (the average of *Closely Held*), 62 percent *can* be held by foreigners (*Investability weight*), and 9.1 percent *is* held by U.S. investors (top row). The typical firm has a turnover rate of less than one; a dividend yield of 2.3 percent; returns of negative 10% (*Momentum*) in 1997; a beta greater than one; and a book-to-market ratio greater than one. In 1997, the typical firm had total debt of about 39 percent of total assets (*Leverage*); current assets that were 1.39 times current debt (*Current Ratio*); and a return on assets of positive 2 percent. Nine percent of the firms are listed on U.S. exchanges and 11 percent trade as Level I ADRs.

The Latin America and Asia blocks in Table 3 reveal differences across regions. Compared to the typical Latin American firm in our sample, the typical Asian firm is about three times smaller; has a higher turnover rate; pays lower dividends; has more volatile returns, lower 1997 returns, a slightly lower beta, and a much higher book-to-market ratio; is in worse financial health with higher leverage, lower current ratio, and a much lower return on assets; is less closely held by insiders but also less available to foreigners; and is less likely to be listed on a U.S. exchange or trade as a Level I ADR. Perhaps not surprisingly, U.S. investors hold less of the typical Asian firm (6 percent) than the typical firm in Latin America (16 percent).

For the full sample, Table 3 also present two indicators of simple bivariate relationships between holdings and firm characteristics: quintile analysis (labeled Q1 - Q5) and t-statistics from regressions of U.S. ownership on a characteristic; space considerations prompt us to omit the quintile analysis for the regions. In the full sample quintile analysis, firms are ranked and sorted into quintiles based on the firm characteristics. For each quintile, we report the average of the characteristic and the percentage of the market capitalization held by U.S. investors. By design, the quintiles are increasing in the firm characteristic. If they are also increasing in U.S. ownership, a positive bilateral relationship is revealed. The two liquidity variables show conflicting results in Table 3. U.S. ownership is, as expected, increasing with firm size: U.S. investors hold only 4.0 percent of the smallest firms, but 14.4 percent of the largest firms, and this relationship is also evident from the positive and highly significant t-statistic (8.12) on a regression of U.S. ownership on firm size. The positive but insignificant t-statistic on turnover indicates that in the full sample

firms with higher turnover rates do not have higher U.S. ownership. The regional t-statistics provide further information on this result. In Latin America, there is a strong positive relationship between U.S. ownership and turnover rates (t-stat=8.34), but the relationship is negative in emerging Asia, where U.S. ownership is lowest in firms with the highest turnover rates.⁶

There is mixed evidence of a role for prudence factors. U.S. ownership and residual variance (volatility) are negatively related in the full sample (consistent with a prudence motive) and in emerging Asia, but not in Latin America. In the full sample dividends are positively related to U.S. ownership (t-stat=2.00), but the quintiles show that this is a distaste for foreign stocks that pay no dividends. If we omit stocks that do not pay dividends, the positive relationship disappears: U.S. ownership varies little in dividend yield quintiles 2 through 5. Regional analysis, not shown, reveals that this distaste for zero dividend stocks is actually an emerging Asian phenomenon: U.S. ownership in Latin American stocks that pay no dividends is 15 percent, in line with U.S. ownership in all Latin American firms, but is much lower in the many Asian firms that pay no dividends.

At the end of 1997, U.S. investors had larger relative weights on stocks that had strong returns over the past year (momentum) and a high beta, and these relationships are also significant in both regions. In the full sample, book-to-market is negatively related to U.S. ownership, but this relationship may be spurious: U.S. positions are greater in Latin America than in emerging Asia and Latin American stocks had lower book-to-market ratios, but there is little evidence that within regions firms with lower book-to-market had higher U.S. ownership.

We see only weak evidence in the bivariate relationships that the financial health of the firm affects U.S. portfolio weights. In the full sample, firms with higher return on assets and less leverage have higher weights in U.S. portfolios. But within regions these relationships are not significant, suggesting that the full sample might be picking up a preference for Latin American firms, which were in better financial health in 1997.

Among the variables that proxy for barriers to international investment, there is evidence of a striking effect of a cross-listing on a U.S. exchange. In the full sample, U.S. ownership is 27 percent for those firms that have cross-listed on U.S. exchanges (and, hence, are subject to U.S.

⁶ Our result could be interpreted as evidence that U.S. investors prefer foreign stocks with turnover rates similar to U.S. markets' turnover (about one). A variable measuring the distance from U.S. turnover rates does not, however, support that interpretation.

investor protection regulations), but 20 percentage points lower (7 percent) for those that have not. This relationship is apparent at the regional level, too. Firms that trade in the United States as Level I ADRs, which are not subject to U.S. investor protection regulations, do not experience a dramatic increase in U.S. participation; the increase is only 5 percentage points. For the other barriers, U.S. ownership is greater in firms that are more open, particularly in Latin America, and, counterintuitively, in emerging Asian firms that are more closely held.

To sum up, simple bivariate statistics show that while there are important differences across regions. U.S. investors prefer emerging market firms with the following characteristics: large, high returns over the past year, high beta, and cross-listed on a U.S. exchange. Other relationships are apparent—for example, a preference for firms that are financially healthy—but these may be capturing a preference for Latin American stocks. There is also evidence of two counterintuitive relationships in U.S. positions in emerging Asian stocks, where U.S. investors seem to reveal a preference for stocks that are illiquid and more closely held by insiders. To disentangle the various relationships, we turn next to multivariate regressions.

4. U.S. Positions in Emerging Equity Markets – Regression Results

To analyze U.S. positions at a point in time, we define *Ownership_i* as the share of security *i* that is held by U.S. investors:

$$Ownership_i = \frac{H_i^{US}}{MCap^i} \quad (1)$$

where H_i^{US} is U.S. holdings of security *i* and $MCap^i$ is the market capitalization of security *i*. This measure is identical to the Falkenstein (1996) and GM measures of the importance of a type of investor in a particular market (in those articles, institutional investors in U.S. equities) and, in cross-sectional analysis, observationally equivalent to the deviation from international CAPM weights used in DR as a home bias measure. Note that the international CAPM predicts that, for all *i*, *Ownership_i* equals the share of the U.S. market in the world portfolio, about 48 percent in 1997.

4.1 What types of firms attract U.S. investors?

Results for U.S. positions in the full sample of nine countries as of 1997 are presented in the first two columns of Table 4. Because our sample only has nine country-level data points, we

include country dummies rather than potentially relevant country-level variables such as rule of law, shareholder protection, or country credit ratings. The results correspond to a scenario in which investors first choose to invest in emerging markets (the sample) and then, given desired country allocations (captured by country dummies), select stocks based on firms' characteristics. The country dummies are important; the next to the last row of the table shows that adjusted R^2 statistics are substantially smaller when the country dummies are omitted.⁷

We start in Column (1) with a parsimonious set of control variables in order to maximize the number of observations and then add Worldscope and returns-based variables with less coverage in Column (2).⁸ The first two columns suggest that in the full sample U.S. investors prefer large stocks that have fewer ownership restrictions and are cross-listed. Also apparent is evidence of a preference for stocks with a high beta and firms with lower leverage. In Column (1) the coefficient estimate for *US Listed* of 0.152 indicates that, compared to non-cross-listed firms, firms that cross-listed on U.S. exchanges had 15.2 percentage points more U.S. ownership. Thus, even controlling for size, liquidity, and openness, emerging market firms that cross-listed on U.S. exchanges attracted much more U.S. investment. The coefficient on *Level IADR*, on the other hand, is never significant, indicating that stocks that trade in the United States but are not subject to U.S. investor protection regulations do not attract significantly more U.S. investment.⁹

4.2 Are U.S. investors attracted to different types of firms across regions?

Columns (3) - (6) of Table 4 show the 1997 multivariate results for Latin America and emerging Asia. For Latin American stocks, the most important characteristics are liquidity (turnover), low residual variance, investability, and a cross-listing. For emerging Asia, *US Listed*

⁷ The sectoral composition of U.S. holdings (not shown) indicates that U.S. investors overweight a "local" sector (transportation and communication) and a "tradable" sector (agriculture and mining firms), but underweight manufacturing. Industry dummies, when included, provide no added information; the adjusted R^2 falls in most cases, as shown in the last row of Table 4.

⁸ In an earlier draft we included three other variables (closely held shares, dividend yield, and current ratio) in our 1997 regressions. These variables greatly reduced the sample size and were rarely significant so, for space considerations, we have omitted them from Table 4.

⁹ Maintaining a constant sample size by estimating Column (1) using the sample in Column (2) yields nearly identical results.

is again significant and size and openness are significant in all specifications. One notable difference between the regions is that the liquidity variables matter to different degrees. In Asia, the preference seems to be for large firms, whereas in Latin America high turnover stocks are favored.

4.3 Have U.S. investors' portfolios changed over time?

Emerging Asia was in the midst of a severe financial crisis in December 1997. To see if the factors that were important in 1997 were also important in 1994, we estimated similar regressions for 1994 (Table 5).¹⁰ The table indicates that, broadly speaking, factors that significantly influenced U.S. investment in 1997 did so in 1994, too. The positive and highly significant coefficient on *US Listed* indicates that in 1994, as in 1997, U.S. ownership was about 15 percent higher for cross-listed stocks. Size is also important in most regressions, but not in Latin America. The most noticeable difference between the two years is a lack of significance for 1994 firm-level investability of Latin American firms. Since country-level capital controls are captured by the country dummies, this could be due to limited variation in investability among firms within Latin American countries.

Whereas Table 5 showed that the determinants of firm-level weights in U.S. portfolios in 1994 and 1997 were roughly similar, Table 6 examines the factors that explain reallocations in U.S. portfolios. We regress the change in $Ownership_i$ from 1994 to 1997 on $Ownership_i^{1994}$ and the 1994 levels of and 1994-1997 changes in various firm characteristics. The results show a catching up in U.S. portfolios; the negative coefficient on $Ownership_i^{1994}$ indicates firms that were more underweight in U.S. portfolios in 1994 saw greater increases by 1997.¹¹ U.S. investors increased portfolio weights on firms that were larger and more open in 1994, but firm growth is not significant and an increase in openness corresponds with increased U.S. ownership in only some cases. There is also evidence of a re-weighting of U.S. investors' portfolios towards firms that improved their financial health, either by reducing leverage or improving the current ratio.

¹⁰ We lose a few variables when analyzing 1994 data. Data on returns and trading do not start much before 1994 for most of the firms, so we do not include returns-based variables or turnover. Nor do we have 1994 data on closely held. Only one emerging Asian firm was cross-listed on a U.S. exchange as of March 1994, so to maintain legal confidentiality requirements we do not include a 1994 cross-listing variable for Asia.

¹¹ The share of the U.S. in the world portfolio increased from 0.36 in 1994 to 0.48 in 1997, so maintaining international CAPM weights would require an increase in U.S. ownership.

A strong movement towards cross-listed firms is evident in Table 6. The coefficients on $USListed^{1994}$ and $\Delta USListed$ indicate that U.S. ownership of firms that were already cross-listed in 1994 or cross-listed between 1994 and 1997 increased about 10 percentage points. For the firms that cross-listed before 1994, this counteracts the catching-up effect. For example, in 1994 U.S. ownership in the typical cross-listed firm was 21 percentage points higher than in the typical non-cross-listed firm. Thus, the coefficient estimate for $Ownership^{1994}$ (about -0.5) indicates that, all else equal, the cross-listed firm would have seen a 0.105 greater decrease in U.S. ownership by 1997, offsetting the increase implied by the coefficient estimate on $USListed^{1994}$. One story that emerges is that stocks that cross-listed prior to 1994 experienced a large increase in U.S. portfolios by 1994 (Table 5) but no further increase by 1997 (Table 6), while those that cross-listed between 1994 and 1997 experienced increased U.S. participation by 1997. In the next section we delve further into the cross-listing effect.

5. Where There is No Home Bias: Further on the Cross-Listing Effect

One of the least contentious empirical regularities in international finance is that there is a home bias in asset holdings. Researchers may disagree on their favorite explanation for the home bias and whether it is rational or irrational, but there is general agreement that portfolios are not fully diversified internationally. The share of foreign securities in portfolios is much lower than predicted by the international CAPM and, equivalently, there appear to be substantial unexploited diversification benefits.

The most striking finding in this paper is that U.S. investors' holdings of emerging market equities that are cross-listed on U.S. exchanges are in line with the amount predicted by the international CAPM. Put another way, for the subset of emerging market firms that are cross-listed on U.S. exchanges, there is no home bias.

The international CAPM, based on traditional portfolio theory developed by Sharpe (1964) and Lintner (1965), predicts that mean-variance optimizing investors should hold the world market portfolio of risky assets. DPSW put a finer point on this, reminding us that it applies only to atomistic price-taking investors. Controlling shareholders are not price takers and, because they can

extract private benefits to control, do not likely behave as mean-variance optimizers.¹² Thus, the prediction from a float-adjusted international CAPM is that atomistic investors should hold the world float portfolio, which is the market portfolio excluding shares held by controlling insiders. Hence, one should analyze not deviations from international CAPM weights, observationally equivalent to our equation (1), but rather deviations from float-adjusted international CAPM allocations, or

$$Ownership_i^\delta = \frac{\frac{H_i^{US}}{H^{US}(1-\delta^{US})}}{\frac{MCap^i(1-\delta^i)}{MCap^W(1-\delta^W)}} = \frac{\frac{H_i^{US}}{MCap^i(1-\delta^i)}}{\frac{H^{US}(1-\delta^{US})}{MCap^W(1-\delta^W)}} \quad (2)$$

where δ^k ($k = i, US, W$) is the percent of the market capitalization of firm i , the U.S. market, and the world market portfolio, respectively, that is held by controlling shareholders.

Because of the poor quality and poor coverage of the closely held variable in the Worldscope database, we do not use equation (2) in our empirical work.¹³ Caveats about the quality of the closely held variable aside, it can provide a useful metric to judge the size of U.S. holdings in a particular stock. The denominator of the last equality in equation (2) is the share of the U.S. in the world float portfolio, which DPSW puts at 0.58 for 1997. Thus, a stock is not underweighted in U.S. investors portfolios if the numerator is also 0.58—that is, if U.S. investors hold 58 percent of its float.

Table 3 showed that in our sample U.S. investors hold on average only 7 percent of the market capitalization of firms that are not cross-listed, but 27 percent of the market capitalization of those that are cross-listed. Worldscope data indicate that about 52 percent of the market capitalization of the average cross-listed firm in our sample is held by insiders, so the 27 percent of

¹² For evidence of the private benefit to control, see Nenova (2003) and Dyck and Zingales (2001).

¹³ Following Holland and Warnock (2003), we have corrected one problem in Worldscope data—the erroneous attribution of ADR shares as being held by the depository bank—but others could be lurking in the shadows. For example, DPSW report for Sweden the weighted average of closely-held shares from Worldscope (21 percent of the market) and from a more reliable Swedish source (29 percent). These aggregate differences could mask even greater data discrepancies at the firm-level.

the market capitalization held by U.S. investors is about 56 percent of the float (27% / 48%). Thus, among emerging market firms cross-listed on U.S. exchanges, the numerator and denominator of equation (2) are approximately equal and U.S. investors hold these stocks at full float-adjusted weights.

Why do U.S. investors fully incorporate cross-listed emerging market stocks into their portfolios? One reason consistent with our results is that it is the reduction in information asymmetries associated with the cross-listing that makes the stock attractive to U.S. investors. Lang et al. (forthcoming) show that cross-listed stocks have better information environments owing to the fact that exchange-listed stocks are subject to U.S. investor protection regulations, broadly defined to include its accounting standards, disclosure rules, and security laws. Our findings of no effect for Level I ADRs and a large increase in ownership for stocks that cross-listed between 1994 and 1997 (even controlling for changes in other firm characteristics) suggests that the key reason is information, not convenience, familiarity, or transaction costs.

We find no evidence that the cross-listing effect is just a preference for large, liquid stocks or those included in indices. While firms that were in an Morgan Stanley Capital International (MSCI) index in 1997 had greater U.S. ownership than those that were not (11 percent versus 5 percent), an MSCI dummy variable is not significant in multivariate regressions (not shown). And the 20 percentage point difference in U.S. holdings of cross-listed and non-cross-listed stocks did not disappear in the multivariate regressions of Table 4; the typical coefficient on the *USListed* variable was about 0.15, implying a 15 percentage point increase in U.S. holdings for cross-listed stocks, even after controlling for size, liquidity, and other characteristics.

Finally, both KS and DR document that size is the most important determinant of foreign ownership. We provide evidence that cross-listings may be even more important than size. It is worthwhile investigating whether the size effect is eliminated with a cross-listing. To test this we reestimated (not shown) the baseline regressions from Table 4 (columns 1, 3, and 5) with a term interacting *U.S. Listed* with *Size*. The interaction term is insignificant in the Latin American and full samples, suggesting the size effect does not carry through to cross-listed stocks. In the emerging Asian example, the interaction term is negative and significant—U.S. investment is greater in smaller cross-listed stocks—indicating again that the traditional size effect does not apply to cross-listed stocks.

6. Conclusions

This study uses a unique data set to analyze U.S. investors' equity positions in emerging markets. We find that the effect of liquidity and size vary across regions—high turnover stocks are preferred in Latin America, whereas large stocks are favored in emerging Asia. Some variables transcend regional differences; on the whole U.S. investors tend to prefer stocks with fewer foreign ownership restrictions and stocks that are cross-listed on U.S. exchanges. Between 1994 and 1997, U.S. investment shifted toward large, open firms and firms that cross-listed or improved their financial health.

The most striking result is that cross-listed firms are well integrated into U.S. portfolios. Weights of cross-listed stocks in U.S. portfolios are in line with weights predicted by a float-adjusted international CAPM. We argue that this cross-listing effect is likely due to a reduction in information asymmetries owing to the information content inherent in U.S. investor protection regulations—broadly defined to include its accounting standards, disclosure rules, and security laws. This interpretation is consistent with the Lang et al. (forthcoming) evidence that cross-listings are associated with an improved information environment and the Tribukait (2003) finding that U.S. securities laws affect the behavior of foreign owners.

The cross-listing result has important implications for capital flows to emerging markets and the benefits of financial liberalization. Coupled with the Edison and Warnock (2003b) evidence of a sharp but temporary increase in emerging market equity flows at the time of a cross-listing, we can trace out a time line of investment flows. Before the cross-listing, capital inflows are minimal. At the time of the listing, inflows increase suddenly as investors fully incorporate the stock into their portfolios; this can be viewed as a discrete shift in demand that is consistent with recent results in the cross-listing literature of a positive price impact (Foerster and Karolyi, 1999; Miller, 1999) and an increase in firm value (Dojige et al., forthcoming). Because the cross-listed stock is fully incorporated into portfolios, there is little need for large subsequent purchases and, absent further cross-listings, equity flows to the emerging market may well dry up. Because only cross-listed stocks are integrated into U.S. portfolios, liberalization benefits are concentrated in only select firms—those that cross-list on U.S. exchanges. The majority of firms in the emerging market are much less than fully integrated into world capital markets, so at the country level the benefits from international financial liberalization are limited, providing an explanation for a surprising result in Bekaert and Harvey (2000) and Henry (2000a). Improved international risk sharing lowers the cost

of capital only to the extent that the emerging market equities are incorporated into global portfolios; our results show that only a select few are.

The firm benefits from the cross-listing, but it is an open question whether the emerging market country benefits, too. There is mounting evidence that emerging market firms that do not cross-list face adverse consequences, from the inability to attract U.S. investment documented here to decreased liquidity (Karolyi, 2003; Levine and Schmukler, 2003). If international risk sharing is limited because of information asymmetries, the solution is clear: Uniform investor protection regulations across countries may well result in greater capital market integration.

References

- Aggarwal, R., L. Klapper, and P. Wysocki, 2003. Portfolio preferences of foreign institutional investors. mimeo, Georgetown University.
- Ahearne, A., W. Grier, and F. Warnock, forthcoming. Information costs and home bias: an analysis of U.S. holdings of foreign equities. *Journal of International Economics*.
- Baker, H.K., J. Nofsinger, and D. Weaver, 2002. International cross listing and visibility. *Journal of Financial and Quantitative Analysis* 37:495-521.
- Barry, C., and S. Brown, 1985. Differential information and security market equilibrium. *Journal of Financial and Quantitative Analysis* 20: 407-422.
- Bekaert, G., and C.R. Harvey, 2000. Foreign speculators and emerging equity markets. *Journal of Finance*, 55:565-614.
- Black, F., 1974. International capital market equilibrium with investment barriers. *Journal of Financial Economics*, 1.
- Bradshaw, M., B. Bushee, and G. Miller, 2002. Accounting choices, home bias, and US investment in non-US firms. mimeo, Harvard University.
- Cai, F., and F. Warnock, 2003. International Diversification at Home. mimeo, Federal Reserve Board.
- Campbell, J.Y., and R. Shiller, 1988. Stock prices, earnings, and expected dividends. *Journal of Finance* 43(3): 661-76.
- Chari, A., and P. Henry, 2002a. Capital account liberalization: allocative efficiency or animal spirits? NBER Working Paper #8908.
- _____, 2002b. Risk sharing and asset prices: evidence from a natural experiment. NBER Working Paper #8988.
- Coffee, J., 2002. Racing towards the top? The impact of cross-listings and stock market competition on international corporate governance. Columbia Law School Working Paper #205.
- Coval, J., and T. Moskowitz, 1999. Home bias at home: local equity preference in domestic portfolios. *Journal of Finance*, 54(6): 1-39.
- Dahlquist, M., and G. Robertsson, 2001. Direct foreign ownership, institutional investors, and firm characteristics. *Journal of Financial Economics*, 59:413-440.
- _____, L. Pinkowitz, R. Stulz, and R. Williamson, 2003. Corporate governance and the home bias. *Journal of Financial and Quantitative Analysis*.

Del Guercio, D., 1996. The distorting effect of the prudent-man laws on institutional equity investments. *Journal of Financial Economics*, 40: 31-62.

Doidge, C., G.A. Karolyi, and R. Stulz, forthcoming. Why are foreign firms listed in the U.S. worth more? *Journal of Financial Economics*.

Dyck, A., and L. Zingales, 2001. Why are private benefits to control so large in certain countries and what effect does this have on their financial development? working paper, University of Chicago.

Edison, H., and F. Warnock, 2003a. A simple measure of the intensity of capital controls. *Journal of Empirical Finance* 10(1/2): 81-103.

_____, 2003b. Cross-border listing, capital controls, and equity flows to emerging markets. International Finance Discussion Paper #770, Board of Governors of the Federal Reserve System.

Falkenstein, E., 1996. Preferences for stock characteristics as revealed by mutual fund portfolio holdings. *Journal of Finance* 51(1): 111-135.

Fama, E., and K. French, 1988. Dividend yields and expected stock returns. *Journal of Financial Economics* 22: 3-16.

Foerster, S., and G.A. Karolyi, 1999. The effects of market segmentation and investor recognition on asset prices: evidence from foreign stocks listing in the U.S. *Journal of Finance*, 54(3).

Gehrig, T., 1993. An information based explanation of the domestic bias in international equity investment. *Scandinavian Journal of Economics* 95: 97-109.

Glen, J., and A. Singh, 2003. Capital structure, rates of return and financing corporate growth: comparing developed and emerging markets, 1994-00. working paper, International Finance Corporation and University of Cambridge.

Gompers, P., and A. Metrick, 2001. Institutional investors and equity prices. *Quarterly Journal of Economics* 116(1): 229-259.

Griever, W., G. Lee, and F. Warnock, 2001. The U.S. system for measuring cross-border investment in securities: a primer with a discussion of recent developments. *Federal Reserve Bulletin*, 87(10): 633-650.

Grinblatt, M., and M. Keloharju, 2000. The investment behavior and performance of various investor types: a study of Finland's unique data set. *Journal of Financial Economics* 55: 43-67.

Harvey, C., 1995. Predictable risk and returns in emerging markets. *Review of Financial Studies* 8(3): 773-816.

Henry, P., 2000a. Stock market liberalization, economic reform, and emerging market equity prices. *Journal of Finance*, 55(2):529-564.

_____, 2000b. Do stock market liberalizations cause investment booms? *Journal of Financial Economics*, 58:301-334.

Holland, S., and F. Warnock, 2003. Firm-level access to international capital markets: evidence from Chilean equities. *Emerging Markets Review* 4(1) 39-51.

Huberman, G., 2001. Familiarity breeds investment. *Review of Financial Studies*, 14(3):659-680.

Kang, J., and R. Stulz, 1997. Why is there a home bias? An analysis of foreign portfolio equity ownership in Japan. *Journal of Financial Economics*, 46:3-28.

Karolyi, G.A., 2003. The role of ADRs in the development and integration of emerging equity markets? mimeo, Ohio State University.

_____, and R. Stulz, 2002. Are financial assets priced locally or globally? NBER Working Paper #8994.

Kim, E.H., and V. Singal, 2000. Stock market openings: experience of emerging economies. *Journal of Business*, 73(1):25-66.

Lang, M., K. Lins, and D. Miller, forthcoming. ADRs, analysts, and accuracy: Does cross listing in the U.S. improve a firm's information environment and increase market value? *Journal of Accounting Research*.

Levine, R., and S. Schmukler, 2003. Migration, spillovers, and trade diversion: the impact of internationalization on stock market liquidity. mimeo, University of Minnesota and World Bank.

Lewis, K., 1999. Trying to explain the home bias in equities and consumption. *Journal of Economic Literature*, 37:571-608.

Lins, K., D. Strickland, and M. Zenner, 2002. Do non-U.S. firms issue equity in U.S. stock exchanges to relax capital constraints? mimeo, University of Utah.

Lintner, J., 1965. The valuation of risky assets and the selection of risky investment in stock portfolio and capital budgets. *Review of Economics and Statistics*, 47: 103-124.

Merton, R., 1987. A simple model of capital market equilibrium with incomplete information. *Journal of Finance*, 42: 483-510.

Miller, D., 1999. The market reaction to international cross-listings: evidence from Depository Receipts. *Journal of Financial Economics*, 51: 103-123.

Nenova, T., 2003. The value of corporate votes and control benefits: Cross-country analysis. *Journal*

of Financial Economics, 68(3): 325-351.

Pagano, M., A. Roell, and J. Zechner, 2002. The geography of equity listing: Why do companies list abroad? *Journal of Finance*, 57(6): 2651-2694.

Reese, W., and M. Weisbach, 2002. Protection of minority shareholders interests, cross-listings in the United States, and subsequent equity offerings. *Journal of Financial Economics*, 66(1): 65-104.

Schwartz, R., and J. Shapiro, 1992. The challenge of institutionalization of the equity markets. in A. Saunders (ed.) *Recent Developments in Finance*. New York Salomon Center, New York.

Sharpe, W., 1964. Capital asset prices: A theory of market equilibrium under the condition of risk. *Journal of Finance*, 19: 425-442.

Standard & Poor's, 2000. *The S&P Emerging Market Indices: Methodology, Definitions, and Practices*. McGraw-Hill.

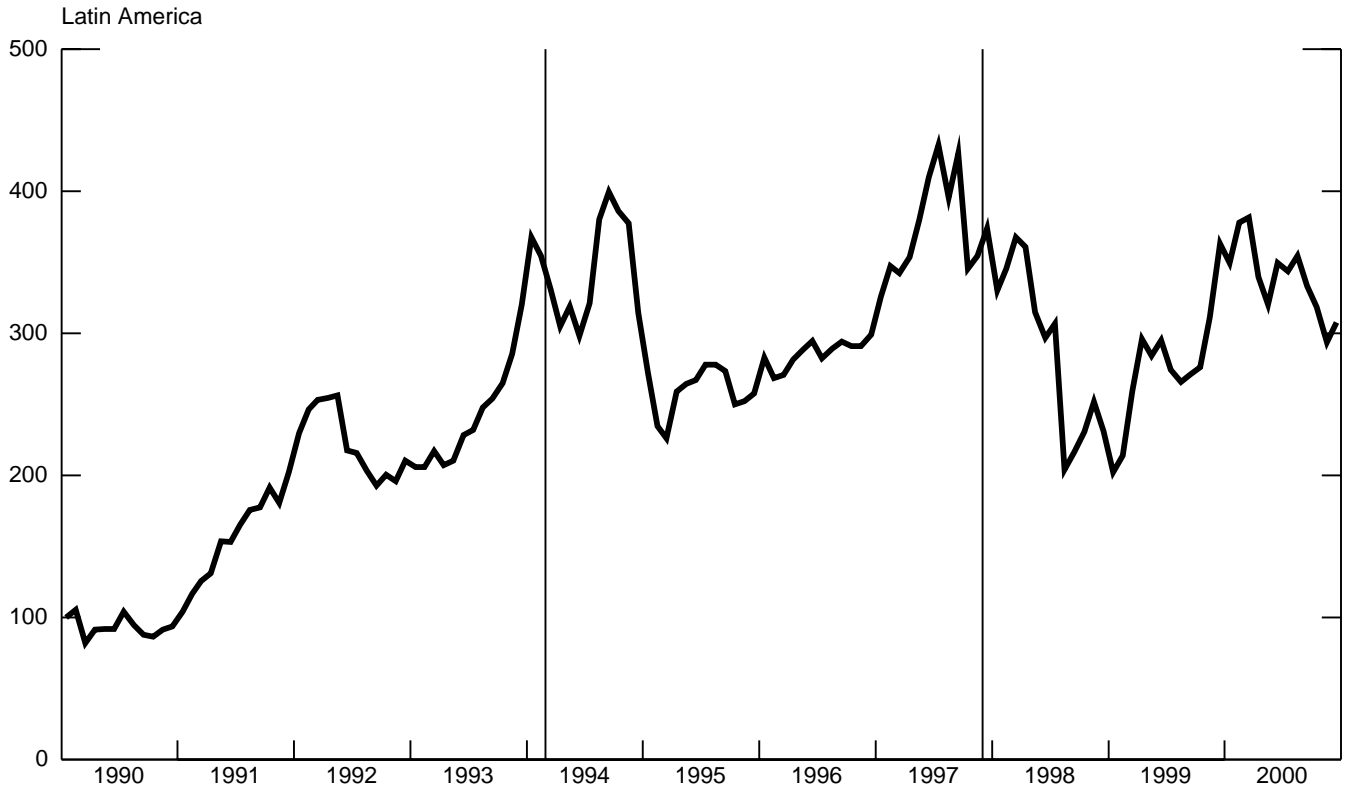
Stulz, R., 1981. On the effects of barriers to international investment. *Journal of Finance*, 36: 923-934.

_____, 1999. Globalization of equity markets and the cost of capital. *Journal of Applied Corporate Finance*, 12:8-25.

Treasury Department and Federal Reserve Board, 2000. United States Holdings of Foreign Long-Term Securities as of December 31, 1997 and December 31, 1999.

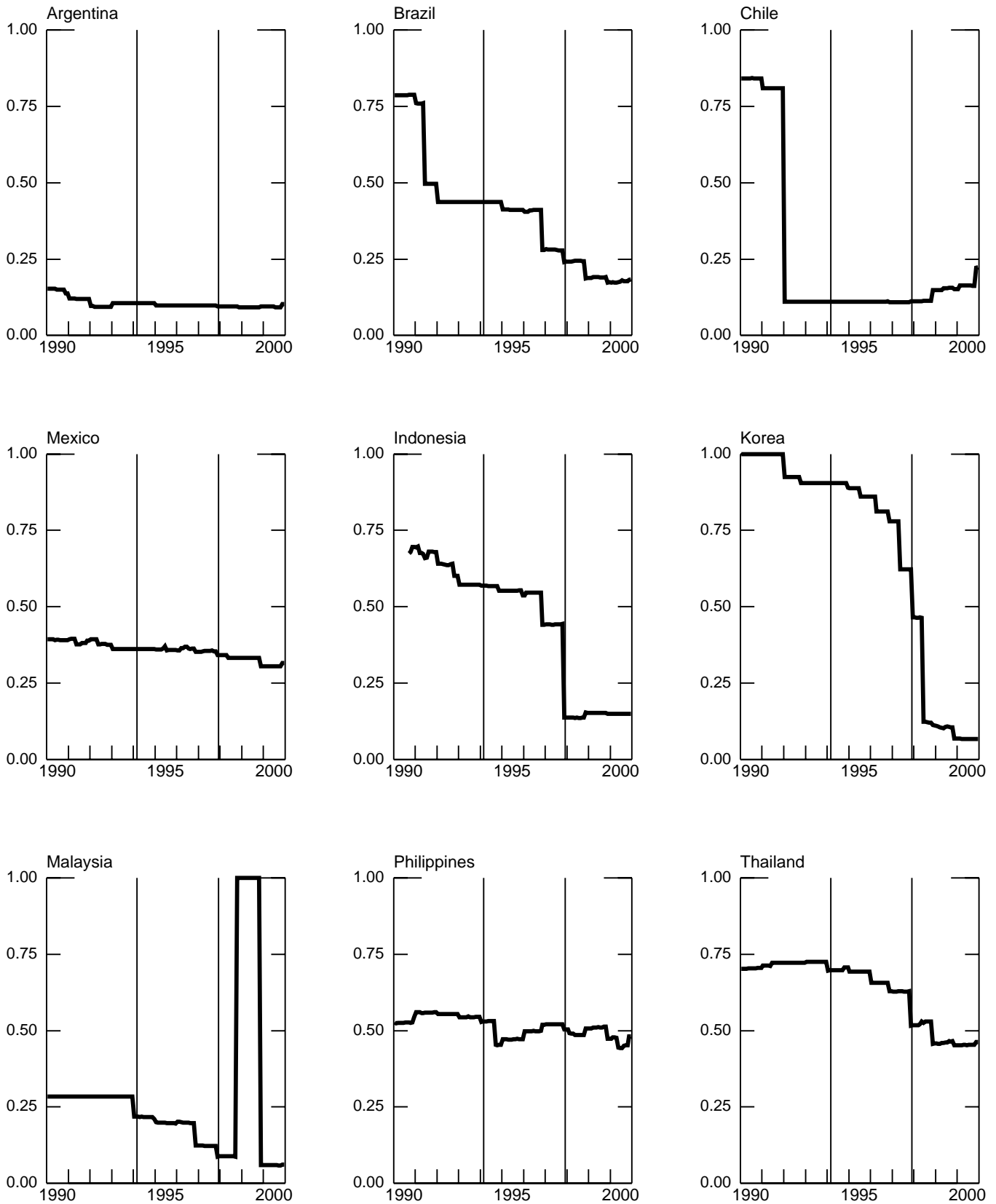
Tribukait, H., 2003. ADRs, institutions, and stock price reaction around earnings announcements of Mexican firms. mimeo, Harvard University.

Figure 1. Equity Prices in Latin America and Emerging Asia, 1990 - 2000.



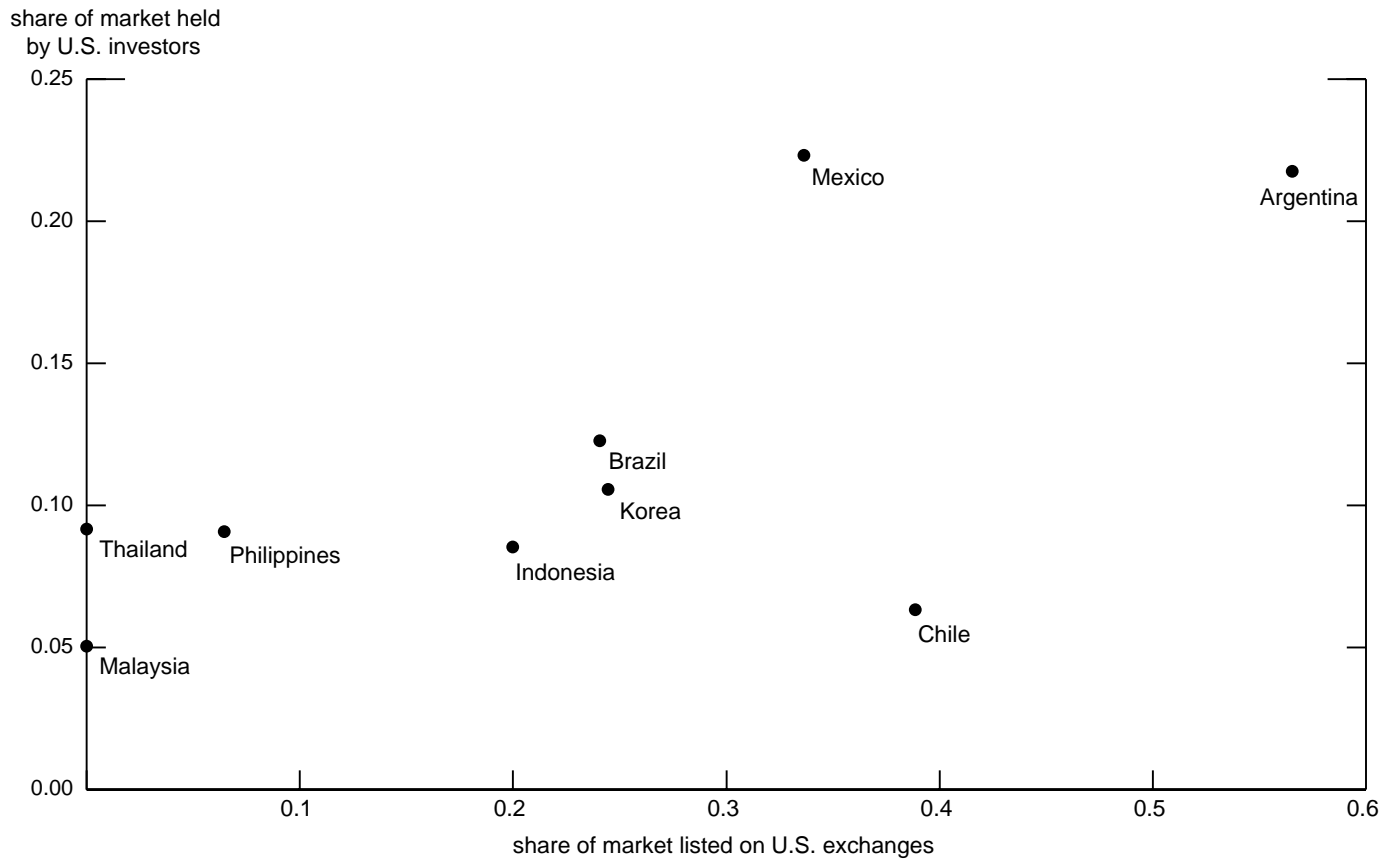
Notes. Equity prices are from the S&P/IFC Global index (rescaled so that Jan. 1990=100). Vertical lines are at March 1994 and December 1997, the dates of the benchmark survey data.

Figure 2. Restrictions on Foreign Ownership of Equities, 1990 - 2000.



Notes. Foreign ownership restrictions, which range from 0 (no restrictions) to 1 (completely closed to foreign investment), are the smoothed measure from Edison and Warnock (2003a).

Figure 3. Cross-Border Listings and U.S. Positions, 1997.



Source: Data from Ahearne, Grier, and Warnock (forthcoming).

Table 1. Stock Market Development and U.S. Holdings

	Market Capitalization (U.S. Holdings)		Number of Listed Firms (# in EMDB)	
	March 1994 \$ billions	Dec 1997 \$ billions	March 1994 # firms	Dec 1997 # firms
Latin America	403.8 (53.2)	543.4 (83.8)	1164 (174)	1165 (201)
Argentina	41.6 (7.6)	59.3 (12.9)	162 (23)	136 (29)
Brazil	130.5 (8.4)	255.5 (31.3)	541 (63)	536 (70)
Chile	45.4 (2.5)	72.0 (4.6)	268 (36)	295 (46)
Mexico	186.3 (34.7)	156.6 (35.0)	193 (52)	198 (56)
Emerging Asia	492.3 (21.4)	219.5 (16.6)	1843 (375)	2777 (526)
Indonesia	31.5 (1.9)	29.1 (2.5)	183 (42)	282 (59)
Korea	143.9 (4.4)	41.9 (4.4)	698 (142)	1135 (184)
Malaysia	176.8 (9.1)	93.6 (4.7)	423 (104)	708 (155)
Philippines	35.0 (1.9)	31.4 (2.8)	185 (27)	221 (54)
Thailand	105.1 (4.1)	23.5 (2.2)	354 (60)	431 (74)

Sources: Market capitalizations (in billions of dollars) and number of listed firms are from Emerging Stock Markets Factbook (various issues). Holdings (in billions of dollars) are from U.S. benchmark surveys. Of the 727 firms in the EMDB at the end of 1997, 7 had zero U.S. holdings. In 1994, the proportion was higher; of the 345 EMDB firms, 40 had zero U.S. holdings, and half of those were Korean.

Table 2. Variable Definitions and Sources

Variables from the S&P/IFC Emerging Markets Database*

Market Capitalization: To scale holdings, we use firm-level market capitalization as of the dates of the benchmark surveys. As a measure of *size* we use the log of market capitalization; for 1997, when valuations were decreasing rapidly in some countries, *size* is computed as the log of the average of the June and December market capitalizations.

Beta and *residual variance* are calculated from a world market model that uses monthly firm-level and MSCI World total returns and is estimated from January 1994 through December 1997. *Momentum* is returns over a twelve-month period preceding a benchmark survey date.

Turnover is the value of trading over a 12-month period divided by beginning of period market capitalization.

Investability (or investable weight) is the firm's openness factor in the IFC Investable index, calculated as an average over a six month period.

Variables from Worldscope**

Return on Assets (%):*** (Net Income before Preferred Dividends + ((Interest Expense on Debt-Interest Capitalized) * (1-Tax Rate))) / Last Year's Total Assets * 100

Dividend Yield (%): Dividends Per Share / Market Price-Year End * 100

Closely Held Shares (%): (Number of Closely Held Shares / Common Shares Outstanding) * 100, adjusted as in Holland and Warnock (2003)

Book-to-Market Ratio: Book Value Per Share / Market Price-Year End

Current Ratio: Current Assets-Total / Current Liabilities-Total

Leverage or Debt-to-Assets Ratio (%):***

(Short Term Debt & Current Portion of Long Term Debt + Long Term Debt) / Total Assets * 100

Data on Cross-Listings

US Listed consists of all firms cross-listed on U.S. exchanges as Level II or III ADRs; the sources are NYSE and Nasdaq. *Level I ADR* consists of firms that trade in the United States (but not on exchanges) as Level I ADRs; the source is Bank of New York.

* In our 1997 analysis, we include all firms that were in the EMDB for all of 1997, except for nine firms that appear to have bad data. We used the April 2001 EMDB CD.

** We use the May 1999 Worldscope CD in an attempt to get complete coverage for 1997 while minimizing the loss of data due to "dead" companies.

*** For insurance companies, policyholders' surplus is added to the numerator. For banks and other financial companies, customer liabilities on acceptance and custody securities, respectively, are subtracted from the denominator.

In Table 3, firms are ranked and sorted into quintiles (Q1 - Q5) based on several characteristics. U.S. ownership is the percent of a firm's market capitalization held by U.S. investors. For each characteristic we report the number of observations; t-statistics from a regression of foreign ownership on the characteristic (***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively); and, for each quintile and overall, the average of the characteristic and foreign ownership. There are 179 firms with a dividend yield of zero in the first quintile and 170 firms with investable weight of one in the fifth quintile. The overall average of the characteristic and foreign ownership, bivariate t-statistics, and number of observations are also shown by region.

^a Represents U.S. ownership of non-Level I ADR, non-U.S.-listed firms.

Table 4. Holdings 1997

	All countries		Latin America		Emerging Asia	
	(1)	(2)	(3)	(4)	(5)	(6)
Size	0.017*** (5.17)	0.011*** (2.82)	0.011** (1.98)	0.005 (0.59)	0.017*** (5.62)	0.015*** (3.10)
Turnover	0.017 (1.46)	0.022* (1.89)	0.047*** (12.10)	0.051*** (9.60)	-0.002 (1.00)	-0.001 (0.19)
Investability	0.073*** (4.08)	0.056*** (2.81)	0.075*** (2.61)	0.056 (1.64)	0.070*** (3.77)	0.065*** (3.05)
US Listed	0.152*** (7.18)	0.170*** (8.06)	0.160*** (6.87)	0.178*** (7.43)	0.118** (2.08)	0.155*** (2.93)
Level I ADR	0.012 (0.93)	0.010 (0.69)	0.028 (1.12)	0.026 (1.01)	0.003 (0.26)	-0.005 (0.39)
Momentum		0.030 (0.28)		-0.186 (0.61)		0.079 (0.58)
Book-to-Market		-0.001 (1.32)		-0.003 (1.54)		-0.0002 (0.44)
Leverage		-0.0004* (1.94)		-0.001 (1.31)		-0.0002 (0.68)
Return on Assets		0.0001 (0.21)		-0.0004 (0.37)		0.0002 (0.39)
Residual Variance		-0.464 (1.54)		-1.073* (1.79)		0.150 (0.32)
Beta		0.017** (2.26)		0.020 (1.18)		0.005 (0.62)
No. of Observations	627	469	182	154	445	315
R ²	0.458	0.493	0.515	0.563	0.285	0.312
R ² w/out country dummies	0.309	0.370	0.428	0.478	0.133	0.143
w/ industry dummies	0.312	0.380	0.416	0.466	0.141	0.171

Table 4 presents regression results where the dependent variable is the share of security i held by U.S. residents as of December 1997. Reported are parameter estimates, with the absolute value of t-statistics computed from robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Country dummies are included but not reported. The bottom rows of the table report the adjusted R² from the same regressions excluding country dummies and with industry dummies.

Table 5. Holdings 1994 with Country Dummies

	All Countries		Latin America		Emerging Asia	
	(1)	(2)	(3)	(4)	(5)	(6)
Size	0.007** (2.40)	0.008** (2.25)	0.005 (0.67)	0.008 (0.89)	0.009*** (3.97)	0.008*** (3.30)
Investability	0.014 (0.43)	0.046* (1.92)	-0.004 (0.07)	0.041 (1.03)	0.043** (2.11)	0.047* (1.80)
Leverage	-0.0001 (0.32)	0.0001 (0.35)	-0.001 (0.78)	-0.0001 (0.13)	0.0002 (1.02)	0.0004 (1.48)
Book-to-Market	-0.006 (1.21)	-0.010** (2.15)	-0.009 (1.30)	-0.014** (2.26)	0.008 (1.17)	0.023* (1.79)
Current Ratio		0.002 (0.79)		-0.0005 (0.12)		0.007* (1.71)
Return on Assets		0.00004 (0.14)		-0.0001 (0.25)		0.001* (1.68)
US Listed	0.142*** (4.38)	0.158*** (4.83)	0.151*** (4.27)	0.159*** (4.41)	n.a.	n.a.
No. of Observations	482	372	144	127	338	245
R-squared	0.424	0.457	0.331	0.377	0.267	0.295

Table 5 presents regression results where the dependent variable is the share of security i held by U.S. residents as of March 1994. Reported are the parameter estimates, with the absolute value of t-statistics computed from robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. For emerging Asia, US Listed is n.a. (not available); only one firm had cross-listed by March 1994 and including the US Listed variable would violate confidentiality requirements. Country dummies are included but not reported.

Table 6. Change in Ownership from 1994 to 1997

	Total All Firms		Latin America		Emerging Asia	
	(1)	(2)	(3)	(4)	(5)	(6)
Ownership ¹⁹⁹⁴	-0.516*** (5.61)	-0.480*** (4.86)	-0.524*** (4.27)	-0.451*** (3.30)	-0.436*** (5.03)	-0.478*** (5.16)
Size ¹⁹⁹⁴	0.013*** (3.62)	0.009** (2.30)	0.007 (1.06)	0.004 (0.55)	0.017*** (3.84)	0.008* (1.94)
Δ Size	0.008 (1.20)	0.001 (0.16)	0.002 (0.17)	-0.002 (0.23)	0.007 (0.79)	0.003 (0.37)
Investability ¹⁹⁹⁴	0.068*** (2.88)	0.085*** (2.89)	0.075* (1.78)	0.125*** (2.90)	0.067*** (3.52)	0.045** (2.00)
Δ Investability	0.031 (1.39)	0.048** (2.40)	0.042 (1.17)	0.075*** (2.66)	0.004 (0.17)	0.012 (0.43)
Leverage ¹⁹⁹⁴	-0.001** (2.26)	-0.001** (2.23)	-0.001 (1.33)	-0.001 (1.63)	-0.001** (2.14)	-0.0004 (1.40)
Δ Leverage	-0.001*** (3.26)	-0.0003 (1.23)	-0.001 (1.57)	-0.001 (0.86)	-0.001*** (3.46)	-0.0004 (1.35)
Current Ratio ¹⁹⁹⁴		-0.003 (1.18)		-0.003 (1.01)		-0.013** (2.04)
Δ Current Ratio		0.012*** (3.16)		0.014** (2.57)		0.002 (0.31)
Return on Assets ¹⁹⁹⁴		0.001 (1.40)		0.0002 (0.17)		0.006*** (2.80)
Δ Return on Assets		-0.0001 (0.13)		-0.0003 (0.31)		-0.0001 (0.14)
US Listed ¹⁹⁹⁴	0.123*** (4.51)	0.123*** (4.61)	0.125*** (3.97)	0.115*** (3.46)		
Δ US Listed	0.101*** (3.77)	0.096*** (3.56)	0.091*** (2.85)	0.074** (2.31)	0.118*** (2.69)	0.146*** (3.39)
No. of Observations	383	292	120	104	263	188
R-squared	0.308	0.369	0.328	0.338	0.268	0.422

Table 6 presents regression results where the dependent variable is the change from March 1994 to December 1997 in U.S. ownership. Reported are the parameter estimates, with the absolute value of t-statistics computed from robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Country dummies are included but not reported.