How Important are Foreign Ownership Linkages for International Stock Returns?

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Abstract

A large previous literature has documented that common economic fundamentals drive comovement in international stock returns. We find that there is another important driver of comovement, foreign ownership. We develop a simple measure of international ownership linkages and show that ownership linkages are of similar importance to the traditional effects coming from economic fundamentals. International ownership linkages are not explained by the local or world market, country of capital origin, liquidity, investment style, foreign operations, or fund flows. We find evidence of the effect being driven by portfolio rebalancing of funds. The specific ownership composition of a stock is an important facet of international equity returns—a finding which has important implications for diversification.

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What drives stock price variation in international securities? A large literature debates the relative importance of country and industry forces or exchange rate movements affecting variation in stock returns and international diversification.[1] This is predominantly a cash flow view of international stock variation. We recast this debate in terms of another important driver of stock returns: international ownership. We add to the literature by: a) providing a new and intuitive measure to capture stock linkages, b) decomposing the channels through which ownership may matter, and c) documenting the importance of international ownership on a large and systematic scale.

We build upon a growing literature that predominantly points to the relevance of stock ownership for international equities. Froot and Dabora (1999), Chan, Hameed, and Lau (2003), and Foerster and Karolyi (1999) show in different contexts that when a stock switches its country of trading, its covariation shifts. Other papers have noted the importance of market liberalization [Bekaert and Harvey (1995, 1997, and 2000) and Kim and Singal (2000)], financial openness [Edison and Warnock (2003)], and capital flows for international market variation [e.g. Froot, O'Connell, and Seasholes (2001) Bekaert, Harvey, and Lumsdaine (2002), and Froot and Ramadorai (2008)].[2] Jotikasthira, Lundblad, and Ramadorai (2009) find that mutual fund flows can drive emerging market returns. Bekaert and Wang (2009)'s new survey article concludes that global betas are linked to financial openness and that there is weak evidence of equity price convergence. In contrast, Forbes and Chinn (2004) examine channels of cross-market linkages and find that financial markets are connected through global trade but not through foreign investment. By proposing a specific channel of foreign ownership linkage and show-

1 Papers analyzing the extent of country and industry sources of variation include Roll (1992), Heston and Rouwenhorst (1994), Griffin and Karolyi (1998), Carrieri, Errunza, and Sarkissian (2004), and Bekaert, Hodrick, and Zhang (2009). Those analyzing the importance for exchange rates in terms of simple covariation follow Jorion (1990) but others have examined the importance of exchange rates in international factor models [Dumas and Solnik (1995) and Ferson and Harvey (1994)].

2 Papers examining the behavior of international investing at the fund level include Kaminsky, Lyons, and Schmukler (2004), Chan, Covrig, and Ng (2005), Broner, Gelos, and Reinhart (2006), Ferriera and Matos (2008 and 2009), and Covrig, Fontaine, Jimenez-Garces, and Seasholes (2009) and Hau and Rey (2009).

ing that this channel has similar economic importance as traditional sources of stock return variation, our paper provides strong evidence that global investment does indeed connect stocks.

In order to capture a stock return's connectedness to foreign securities, we construct a measure of the foreign equity returns of the stock's shareholders. For example, for Samsung, a Korean firm, we first find that its largest foreign shareholder is an investment company called Capital World Investors. Second, we calculate the value-weighted return from all non-Korean stocks held by Capital World Investors. We perform this calculation for all institutions holding Samsung and then use the weight of the funds' ownership in Samsung to calculate an average (foreign) ownership return. Because the ownership return captures the returns of other stocks held by Samsung shareholders outside of Korea, it is a measure of foreign ownership linkage.[3] Using detailed holding data from the Lionshares Holdings database, we are able to capture ownership for 8,791 firms domiciled outside of the United States.

Based on weekly, monthly, and quarterly data, we first document that foreign ownership returns are important for driving cross-sectional variation in returns. For stocks with over five percent foreign ownership, a one percent increase in the ownership return is associated with an economically large 0.395 increase in a firm's stock return, even after controlling for the local market and industry movements. Changes in the level of foreign ownership are also positively related to stock returns, but this effect does not subsume the importance of the ownership return. In time-series analyses, we use the approach of Bekaert, Hodrick, and Zhang (2009) to analyze the covariance structure of international stock returns and find that the ownership return captures considerable co-variation beyond the local market, global market, and industry returns. We also identify a quasi-natural experiment which is a shift in ownership composition around an ADR or GDR listing date. Consistent with the ownership linkage relation being driven by the owners of the stock rather than an omitted firm characteristic, we

[3] We focus on variation due to ownership returns outside of a country because ownership returns within a country are highly correlated with the local market return, making empirical separation problematic.

find that the cross-listed stocks become more highly correlated with the new owners' other stock holdings following the listing.

Having established the importance of ownership for stock returns, we consider various explanations for why ownership returns matter beyond common sources of country and industrial variation. The general categories of explanations that we entertain include: traditional economic channel of market integration, style proxies, price pressure from fund flows, portfolio rebalancing, and investor habitat. Under the market integration explanation, stocks with low institutional ownership may be segmented from the rest of the world, while stocks with high institutional ownership are more integrated. The importance of foreign ownership returns is not subsumed by expected returns from global and local asset pricing models, which is inconsistent with partial integration explanations. Nor is it captured by a world index that is tilted towards stocks with high foreign ownership. Industry returns, exchange rate effects, and foreign sales as a proxy for a firm's international operations do not materially alter the importance of the ownership return. We also show that the country where the institution is domiciled is an unimportant driver of international stock returns. A detailed firm-level style index bears some relation to stock returns but does not take away from the importance of the ownership return. In conflict with forced price pressure as the main explanation for our results, we find that the ownership return effect is actually more prevalent in liquid securities and developed (not emerging) markets, and no evidence of asymmetries.

To further examine the relation between stock prices and international ownership changes, we decompose the change in stock ownership into four components: flows into and out of the fund, capital appreciation in other stocks (extremely similar to our ownership return), re-allocating between equities and non-equity securities, and stock picking. We estimate cross-section regression of quarterly stock returns on these four determinants. In addition to the aggregate institutional sample used in the bulk of the paper, we also perform a separate analysis of non-U.S. securities held by owners in the

CRSP mutual fund database to more accurately measure mutual fund flows and funds' shifting of their equity weights. We find no evidence of equity reallocation and some evidence of fund flows being related to stock returns. The value fluctuation of a stockholder's holdings in other securities bears the largest relation to returns. This is consistent with: 1) stocks with shareholders that have positive gains abroad benefitting as these shareholders rebalance capital away from their gains and into the stock, and 2) a global habitat where the ownership composition of a stock captures the specific holders of a group of securities that trade in tandem. We find that both of these patterns are important in terms of explaining quarterly changes in institutional ownership. Thus, our findings suggest that the importance of the ownership return is primarily driven by institutional holdings capturing a firm's common habitat but also through institutional portfolio rebalancing.

We briefly examine the practical diversification implications of both the level of foreign ownership and our main ownership linkage results. Both are of large importance but the magnitude of ownership linkages are slightly larger than for the level of foreign ownership. If a fund adds a security with a high ownership linkage to their fund, the average beta of that security with their portfolio is 77 percent higher than if the manager had picked a firm with a low ownership linkage, even after controlling for the level of foreign ownership. Since investors hoping to obtain diversification cannot easily escape the effects of other foreign investors, these results are of widespread importance to all international investors.

Section I briefly summarizes the recent theoretical and empirical literature. Section II describes the ownership data, followed by our main cross-sectional and time-series findings in Section III. Section IV examines basic possible determinants of these findings, while Section V describes our ownership decomposition as well as additional tests for habitat and portfolio rebalancing explanations. Section VI discusses diversification implications, followed by our conclusions in Section VII.

I. Ownership Channels and Testable Implications

In this section we seek to provide a brief overview on the channels in which ownership may relate to variation in stock price movement.

A. Traditional Channels and Extensions

Variation in stock prices is determined by movements of cash flows and discount rates which are both driven by economic fundamentals. The international literature most commonly decomposes realized return variation into two components: common country and industry variations [Roll (1992), Heston and Rouwenhorst (1994), and Bekaert, Hodrick, and Zhang (2009)]. Moving beyond sources of covariation, formal international asset pricing models show that stock returns may be driven by local or global factors depending on the degree of integration/segmentation [Stulz (1981a), Errunza and Losq (1985)] and extensive empirical work has examined the scope of international pricing [Harvey (1991), Bekaert and Harvey (1995), Dumas, Harvey and Ruiz (2003), and Bekaert, Harvey, Lunblad, and Siegel (2009)].[4]

Similar to this traditional pricing channel, it is possible that foreign investors facilitate the globalization of a security. Stocks not owned by foreign institutions may be more segmented than stocks with high foreign ownership. Stocks with high degrees of foreign ownership are open to capital flows and more sensitive to global factors. With this view, the level of foreign ownership matters, but the specific composition of ownership is unimportant.

Related to the above channel, Dumas, Lewis and Osambela (2009) develop a general equilibrium model under the assumption of asymmetric beliefs between foreign and domestic investors. One implication of the model is that once domestic stocks become familiar to foreign investors, they would be willing to hold more of such domestic stocks and require less expected returns. Hence, the level of

[4] Bekaert and Harvey (2003) and Karolyi and Stulz (2003) provide comprehensive reviews of this theoretical and extensive empirical international pricing literature.

foreign ownership is important to the extent that it proxies for the familiarity of foreign investors with the stock.

B. Portfolio Rebalancing

A simple implication of portfolio rebalancing is that if stock prices increase in one group of securities investors may want to diversify away from this group and increase their holdings in other securities. This basic aspect of portfolio rebalancing plays a role in many models.[5] We will test this basic feature of portfolio rebalancing by examining if the ownership change of an institution in a particular security is related to the return that the institution experiences in other securities.

C. Contagion

Some of the portfolio rebalancing models are derived in the context of international contagion. For example, Goldstein and Pauzner (2004) propose that when an international investor's domestic holdings decrease, he has lower wealth and is more likely to sell his foreign holdings. However, investors are also more averse to the strategic risk that other international investors will be in a similar position and want to sell their international holdings. The increasing incentive of these investors to withdraw from their international investments prompts lower returns. This generates international comovement in returns of assets that are held by the same investors, even without common fundamentals. Kyle and Xiong (2001) propose that when convergence traders suffer trading losses they have a reduced capacity for bearing risks, motivating these traders to sell their positions in both countries. The selling leads to lower market liquidity, increased price volatility in both markets, and increased correlation. Thus, in addition to basic portfolio rebalancing mechanisms, some of these models call for asymmetries sur-

[5] See for example equation 4 in Bohn and Tesar (1996), equation 6 in Griffin, Nardari, and Stulz (2004), Figure 5 in Goldstein and Pauzner (2004), and page 1412 in Kyle and Xiong (2001).

rounding negative returns and particularly in periods of crisis. Similar predictions are also made by Calvo (1991) who finds that leveraged losses in one market will cause forced liquidations in another.[6]

D. Price Pressure from Fund Flows

Institutional investors are subject to constraints. The owners of a stock may move its price due to inflows and outflows in their funds. This could be consistent with price pressure [Frazzini and Lamont (2006)] or fire-sales [Coval and Stafford (2007)]. The effects they find are long-lived and can be explained by the flows of investor groups.[7] Jotikasthira, Lundblad, and Ramadorai (2009) find interesting evidence that domestic fire-sales spread to emerging markets. To examine this flow channel we construct an institutional and mutual fund flow measure.

E. Style and Habitat

The category view [Barberis and Shleifer (2003)] hypothesizes that stocks move together because investors mentally lump them into categories (e.g. value vs. growth) to easily describe them. The ownership composition of a stock could simply proxy for the category in that investors place the stock. To examine this category based view, we construct a detailed style proxy. Barberis, Shleifer, and Wurgler (2005) propose a 'habitat' view of comovement where investors trade in a limited set of stocks. If investors in a habitat have certain views, they push the prices of stocks in their habitat up and down together.[8] Consequently, ownership returns may represent a common habitat of stocks that investors purchase together. To examine this proposition we investigate whether changes in a firm's institutional

[6] Such effect is intensified when there is information asymmetry and herding by uninformed agents who cannot distinguish whether the institutions' trades are based on information or liquidity [Calvo (1991), Kodres and Pritsker (2002), and Yuan (2005)]. Empirically, Bae, Karolyi, and Stulz (2003) measure contagion, and Cho, Kho, and Stulz (1999), and Boyer, Kumagai, and Yuan (2006) examine contagion as well.

[7] Duffie (2010) emphasizes that capital is often slow moving and price dislocations are not necessarily arbitraged quickly.

[8] Stulz (1981b) proposes that investors may prefer home country assets because these assets could provide superior hedges against future state variables that affect investors' intertemporal expected utility. It is possible that investors' habitat of stocks is determined by certain intertemporal hedging properties. Dorn and Huberman (2010) finds individual investors with different risk aversions select stocks with different volatilities. Green and Hwang (2009) find evidence of category investing by examining comovements related to price levels surrounding stock splits.

ownership fluctuates in tandem with other securities' ownership changes for firms in the same ownership habitat.

Kumar, Page, and Spalt (2010) provide evidence for the habitat view of co-movement by documenting correlated trading and co-movement among stocks with similar geography, price ranges, and lottery features. Anton and Polk (2010) find that connected stocks with more common owners have stronger covariation. Pirinsky and Wang (2004), Sun (2008), and Greenwood and Thesmar (2010) also find evidence of different channels of ownership influencing comovement in manners generally consistent with category or habitat investing.

F. Other potential reasons

There are other potential reasons for a stock's return being related to its ownership composition. For example, movements in assets may also stem from views about fundamentals or sentiment originating from the country where investors are domiciled. To investigate this view, we construct the returns of assets arising from the home country of origin of the investor base and compare such home country returns with the ownership returns (from the country where the capital is invested). The ownership return might also represent exchange rate exposure, the extent of foreign operations, or the level of foreign ownership. We examine these possibilities in turn in our empirical work.

II. Data and Methodology

A. Data

Our international institutional holdings are from Factset/Lionshares. Ferriera and Matos (2008) are the first academic paper to use the annual institutional filings from this data source. We follow many of their cleaning procedures though augmented with other standard checks for 13f filings as described in Appendix A. Like Ferriera and Matos (2008), we obtain the historical Lionshares database that is free from survivorship bias. FactSet does not provide detailed disclosure of their sources, but they use

data from publicly available information: filings obtained in various countries supplemented by companies' annual reports. Their coverage appears to be lacking in hedge funds outside of the United States. Wei (2010) analyzes the integrity of the data in an appendix, and he finds that the United States and the United Kingdom account for slightly over 70 percent of non-domestic capital.

Lionshares contains two main databases: the aggregate institutional filings (similar to 13f in the United States), and the mutual fund database (similar to N-CSR mutual fund filings in the United States). Lionshares provides the number of shares held by a fund or institution, as well as the total number of shares outstanding for each stock at a point in time. We aim to maximize data coverage and hence use the institutional database as our primary database but add additional ownership data from the fund database if the parent institution's holdings are not in the institutional ownership database.[9] We carry the holdings information forward to the next available report date for up to three quarters.[10]

Appendix Table AI details the frequency of coverage by database for the final sample and shows that 48 percent is annual, 32 percent biannual, and 14 percent quarterly. While most of the data in the United States is reported quarterly, in most other countries biannual and annual data is the norm. Also, the data comes primarily from mutual fund filings in countries other than the United States, where most data comes from institutional filings. Appendix Table AII details the number of institutions or mutual funds in the database by country and year in 2001, 2005, and 2008. The table shows that the sample grows rapidly from 2001 to 2005.

[9] If the holding of the parent firm appears in the institutional ownership data for a stock in a given quarter, we do not include the holdings of the mutual fund filings to avoid double-counting. However, if the holding of a stock does not appear for the parent firm in the institutional ownership data, but it does appear in the mutual fund filings in the same quarter, we add the additional holding information. Because reporting frequencies differ, we do not attempt to reconcile the institutional and mutual fund files for the same fund. In the United States, most of the institutional 13f filings are quarterly, while mutual fund filings are often bi-annual at various time intervals. We provide more details in Appendix A.

[10] For the last holding report, we carry the holdings information over by the same number of months as there are between the last two holdings observations. We use holdings data for the last month within a quarter.

For returns and market value data, we use Thomson Financial's Datastream total return indices and market values. In order to have a common currency to compute global returns, we download data in local currency and convert it into U.S. dollars using exchange rates from Datastream. To screen for common equities, we use screens from Griffin, Kelly, and Nardari (2009) which eliminate preferred stocks, warrants, unit trusts, investment trusts, duplicates, and other non-common equities. We primarily utilize weekly, monthly, and quarterly returns. We use reversion and extreme return filters to smooth potential data errors as described in Appendix A. The exception is in the United States, where the data is from the Center for Research in Security Prices (CRSP) and where we restrict our sample to common equities with CRSP share codes of 10 or 11. American Depository Receipts (ADR) and Global Depository Receipts (GDR) and their parent firms are identified using classifiers obtained from both Datastream and Lionshares. After examining reporting conventions, we calculate the ownership in a stock as the combined ownership of the ADR/GDR and the home country stock, and use the returns from the parent firm. The percentage of closely held shares and the percentage of foreign sales are from the WorldScope database, and missing observations of both variables are set to zero. Further details are provided in Appendix A.

The percentage of zero returns is the main measure of liquidity used by Bekaert, Harvey, and Lundblad (2007). This measure is similar to Lesmond, Ogden, and Trzcinka (1999)'s transactions costs measure, but is less subject to estimation problems. To ensure that our results are not driven by infrequent trading, we require at least 30 percent of days to exhibit trading in the previous year. To gauge the relative size of firms across countries, we use common U.S. breakpoints and group all firms into five bins based on their U.S. dollar market capitalization.

Table I shows the percent of firms with foreign ownership coverage, the number of firms with foreign ownership, and the fraction of market capitalization held by foreign institutions for those firms with coverage in the Lionshares database over the January 1, 2000 to March 31, 2009 period.

Panel A is for developed markets, and Panel B is for developing (emerging) markets. The classification of emerging countries/markets is based on the Morgan Stanley Capital Index (MSCI) classification in 2006. Panel A shows that developed countries outside of the United States have on average foreign ownership coverage on Lionshares for 40.2 percent of firms in the smallest market capitalization quintile. From the second quintile to the largest quintile, the average percentages of firms with foreign ownership coverage are 71.9, 84.7, 87.6, and 91.7 percents. Across countries, in the largest size quintile the Lionshares foreign ownership coverage is above 80 percent in all countries except Cyprus, Iceland, Spain, and Switzerland. In the emerging markets in Panel B, the percentage of firms with some foreign ownership coverage ranges from 25.0, 42.8, 51.2, 56.9, and 85.6 percent as one moves from the smallest to the largest quintile. In the largest quintile, coverage is above 80 percent in all countries except China, Croatia, Indonesia, Morocco, and South Africa. In terms of the number of firms with foreign ownership coverage, the sample is naturally more heavily tilted towards developed markets, where all size bins have more than 1,000 firms compared to 314 to 597 firms per bin in emerging markets. Overall, our sample includes a total of 13,101 firms, 8,790 of which are from outside of the United States.

Finally, for stocks with foreign ownership, we report the percent of foreign institutional ownership. Panel A shows that firms in developed countries outside of the United States have 15.7 percent foreign ownership in the largest size quintile, and 2.5 percent in the smallest size quintile. For our regressions we will focus on non-U.S. firms since foreign ownership is small in the United States. Panel B shows similar coverage in emerging markets with 19.2 percent of shares held by foreigners in the largest quintile, and 2.9 percent in the smallest. These percentages vary widely across markets, but in most country-size bins foreigners hold more than one percent of a stock.

Appendix Table AIII shows descriptive statistics on local institutional ownership and market capitalization of firms in each country in our sample. In all countries other than the United States,

Canada, Sweden and the U.K., ownership of domestic institutions reported in Lionshares is rather low. For additional analyses on mutual fund flows, we use U.S. domiciled funds from CSRP Mutual fund holdings and returns data beginning in September 2003 and ending in May 2009.

B. Methodology

As an example of the foreign ownership return, consider the previous example of the Korean stock Samsung, where Capital World Investor is the largest foreign shareholder. We calculate the value-weighted return each period to Capital World Investor due to all of its positions outside of Korea. Capital World Investor's foreign return is then weighted by the proportion of its position in Samsung relative to all other foreign holders. Since Capital World Investor is the largest foreign holder of Samsung, it will take the largest weight in Samsung's ownership return. After performing the same calculation for all other foreign investors in Samsung and aggregating across investors, we obtain Samsung's foreign ownership return, $R_{i,F}$, which captures the return on the portfolio holdings of institutional shareholders of Samsung outside of Korea. Appendix B shows a simplified graph of this calculation.

The ownership return can be computed as the value-weighted average returns of the foreign holdings of a stock's owners. $R_{i,F}$ measures the return of stock *i*'s holders' stock holdings outside of stock *i*'s home country.

$$R_{i,F} = \sum_{n=1}^{N_i} W_{i,n} \left(\sum_{k=1}^{K_i} V_{k,n} R_k \right) \tag{1}$$

where n=1 to N_i denote the institutions that have ownership holdings of stock *i*. k=1 to K_i are the stocks outside of the country where firm *i* is located (i.e. foreign stocks). Note that we distinguish here by the country of incorporation of stock *i*, not the location of institution *n* owning the stock. $W_{i,n}$ is the percentage of market capitalization of stock *i* held by institution *n* at the end of the previous quarter. $V_{k,n}$ is the percentage of market capitalization of stock *k* in the equity portfolio that institution *n* holds at the end of the previous quarter. R_k denotes the return of stock *k*. For notational simplicity, we sup-

press the time subscript *t*, but it should be understood that the weights are as of the end of the last quarter, while the returns are over the course of the current quarter.

Foreign ownership return is the main variable of interest in the paper, and when we refer simply to the 'ownership return' we are referring to the foreign component. We also computed a domestic ownership return but we found that it was highly correlated (often above 0.95) with the local market index return, which led to severe multi-collinearity issues in initial analyses.[11] In contrast, the foreign ownership return ($R_{i,F}$) generally comes from a diverse set of countries where the owners hold shares, which leads to better identification.

In our empirical implementation of ownership return measures, we impose that the observed ownership weights sum up to one:

$$\sum_{n=1}^{N_i} W_{i,n} = 1 \quad \text{and} \quad \sum_{k=1}^{K_i} V_{k,n} = 1. \tag{2}$$

Summing these weights to one allows interpreting our results more easily since foreign ownership returns of different stocks will be comparable. The ownership return captures the composition of the holdings of the owners of a stock, but not level of foreign institutional ownership. Therefore, in order to capture the effect of different degrees of ownership on stocks, we also distinguish stocks by the level of foreign ownership (e.g. in Panel A of Table II).

For our control variables, to avoid introducing a bias by regressing a stock on itself, our local market exclude the stock of examination and are hence stock specific. For consistency, the value-weighted global industry return only includes stocks in a given industry outside of the country of examination. For the global return we use the MSCI world index.

[11] We examine the domestic component in Table VI.

III. Cross-sectional and Time-series Importance of Ownership Returns

To examine the potential economic and statistical importance of the ownership return, we evaluate the ownership returns with cross-sectional, time-series, sorts, and ADR tests.

A. Cross-sectional Regressions

Since the impact of ownership should be larger when foreigners hold a greater fraction of the security, we expect the impact of ownership returns and changes in ownership to increase in the level of foreign ownership.[12] Hence, Panel A of Table II reports results from quarterly cross-sectional Fama-MacBeth (1973) regressions for all non-U.S. stocks in three groups, based on different levels of foreign ownership. The advantage of quarterly regressions is that we can trace the direct effect of changes in foreign ownership as well as the ownership returns. In order to control for the expected local and global cost of capital changes, we use prior estimated betas times the contemporaneous local or global stock return movement.

For stocks with low foreign ownership (0-1 percent), a one percent increase in the ownership return is associated with a 21.7 basis point increase in the stock's return. If the ownership return enters by capturing returns in other stocks, it may proxy for how the investors in a stock will change their ownership. Hence, we include the change in foreign ownership in the cross-sectional regressions. The second specification shows that contemporaneous changes in foreign ownership are strongly related to a stock's quarterly return, similar to U.S. findings of a strong contemporaneous relation between quarterly institutional ownership and returns by Wermers (1999) and Nofsinger and Sias (1999). Interestingly, the coefficient on the foreign ownership return is not affected by the inclusion of quarterly ownership changes, indicating that the quarterly ownership return is doing much more than capturing changes in institutional ownership.

[12] As noted earlier, foreign ownership returns are defined as the weighted returns of other foreign holdings of a firm's stockholders. Hence, even when there is no foreign owner for a domestic stock, foreign ownership returns can still exist if domestic fund holders of the stock own other foreign stocks.

After controlling for returns on local and global costs of capital as well as industry indices, the coefficient on the ownership return is only 0.090. However, as expected, for stocks with one to five percent foreign ownership the size of this coefficient strengthens to 0.223 and then to 0.395 for stocks with over five percent foreign ownership. For changes in foreign ownership, the *t*-statistic strengthens substantially for the higher institutional ownership bins, yet the coefficient itself falls. One possible explanation for this effect is that a one percent increase in foreign ownership impacts the stock more if one moves from zero to one percent foreign ownership than it does from 20 to 21 percent foreign ownership.[13] We will later examine the importance of the components of the change in ownership in more detail, but now turn to further examination of the relation between ownership returns and stock returns. In particular, since the ownership return uses the previous quarter's holdings, the return can be constructed for higher frequencies than the quarterly changes in ownership, combining the previous quarter's holdings weights with the updated weekly and monthly stock returns.

Panel B only examines stocks with more than five percent foreign ownership but for weekly, monthly, and quarterly frequencies rather than just quarterly as in Panel A. In a univariate specification, we find that a one percent increase in contemporaneous weekly ownership returns is associated with a 48.4 basis point increase in a stock's return. After controlling for the local and global cost of capital, and the industry return, a one percent increase in the ownership return is still associated with a highly significant 0.224 return increase. The comparable specification (2) shows a stronger ownership effect (0.338) at the monthly frequency, and even stronger coefficient (0.391) at the quarterly frequency. Interestingly, these coefficients are only slightly less than those of the industry return at the weekly (0.256), monthly (0.344), and quarterly (0.405) frequencies.

[13] We also examine the level of foreign ownership interacted with the ownership return and indeed find that the importance of the ownership return is strongly increasing in the level of foreign institutional ownership (Supplementary Table SV).

In specifications 3 and 4, we include the lagged foreign ownership return. At the weekly frequency the lags are significant, especially in the prior week. These significant weekly effects are potentially consistent with portfolio rebalancing but with an adjustment period as highlighted in Duffie's (2010) presidential address. However, the effects dissipate rather quickly and would probably be difficult to trade on in real time. Lagged effects show no significance at the monthly frequency and potentially some significance at the quarterly frequency over the entire prior year, though our ten-year time-series sample seems too short to make such prior-year inferences.

In supplemental results (Panel A of Table SI), we also estimate panel regressions with time fixed effects and standard errors clustered by firm to account for firm and time effects.[14] After controls for the local and world cost of capital, and the industry return, the ownership return coefficient is 0.313 with a *t*-statistic of 5.35 for stocks with high foreign ownership. This is similar to the coefficient of 0.395 and *t*-statistic of 4.76 in Panel A of Table II.[15] Given that our sample size increases over time, the panel regressions put more weight on recent periods, while Fama-MacBeth regressions treat each period equally.

B. Time-series Regression

We now turn to examining the explanatory power of the ownership returns from a time-series approach following Bekaert, Hodrick, and Zhang (2009). In order for the coefficient estimates to vary fully across stocks, we estimate regressions at the individual stock level and then aggregate up the coefficients. Because we expect the effect of ownership returns to be increasing in foreign ownership, we report equal-weighted results for stocks with over five percent foreign ownership. Panels A-C of Table III shows the regressions estimates over three sub-periods with weekly data. In Panel D, we

[14] The dimensions of our dataset are too large to cluster standard errors by both firm and time. However, when there are only a few clusters in one dimension, clustering by the more frequent cluster yields results that are almost identical to clustering by both firm and time (Petersen, 2009, p. 460).

[15] Panel regressions with firm and quarter fixed effects indicate considerably larger *t*-statistics (in Panel B of Supplemental Table SI).

compare the statistical significance of the models using Mean Squared Errors (MSE) and the bootstrapping procedure of Bekaert, Hodrick, and Zhang.

We first examine the importance of the ownership return beyond the local market return. The average coefficient on the ownership return (specification 3) is 0.308 in the 2000 to 2002 period (Panel A), 0.207 from 2003 to 2005 (Panel B), and 0.208 from 2006 to the first quarter of 2009 (Panel C). A coefficient of 0.208 indicates that a weekly stock return increases by twenty basis points when the ownership return increases by 100 basis points even after controlling for variation in the local market. This coefficient is similar in size to that of the world market return (0.361, 0.183, and 0.171 for the three sub-periods in specification (2)) or global industry return (0.409, 0.247, and 0.237 in specification (4)).[16] Examining the incremental adjusted R^2 between specifications 2-4 as compared to specification 1 shows that the incremental explanatory power of the ownership return is higher than that of the world return, but not quite as large as that of the global industry return. Regressions (6) and (7) show similarly large coefficients and incremental explanatory power on the ownership return, above the local market, global market, and industry factors. This indicates that the importance of ownership is not attributable to fundamentals proxied for by global market or industry returns.

It is possible that the global market return is not able to fully capture the importance of global investment because it includes all stocks, including those not heavily held by foreign investors. If markets are partially segmented, then the global return would matter but only to the extent that it captures the returns of globally held stocks. To examine this possibility, we construct a separate global market return that weights stocks by their dollar amount of foreign ownership rather than their dollar amount

[16] Because the global market and the foreign ownership return are highly correlated, when both terms are included the global market coefficients are often negative (specification 6). Interestingly, the local market beta in specification (2) is 0.603, 0.815, and 0.874 across the three subperiods, whereas the world market betas average 0.361, 0.183, and 0171. Although not our focus, it is interesting that these results show much more importance for the local market index. These results are broadly in line with similar firm-level regressions in Griffin (2002), except that they show more importance for the world market factor, presumably because these stocks are held by foreign investors and the later time period.

of market capitalization. Regression (8) shows that the ownership return coefficients are still of large magnitude with this alternative world market control.

We now turn to a more formal evaluation of the various models. Bekaert, Hodrick, and Zhang (2009) convincingly argue that comparing models with the mean squared error of correlations is appropriate for examining which model best characterizes the covariance matrix of returns. We follow their procedures, except rather than using portfolios, we use individual stocks. In the context of standard asset pricing tests, Ang, Liu, and Schwartz (2008) propose that using individual stocks is more efficient than using portfolios. For specifications in Panel D, we follow Bekaert, Hodrick, and Zhang (2009) and estimate the regressions over six-month periods to allow for possible time-variation. Bootstrapped *p*-values are computed following their procedure where we bootstrap from the time-series of our MSEs to compute an empirical distribution.

Panel D shows that the MSE with only the local market is 0.038, whereas it improves to 0.026 when the ownership return is added. Interestingly, the improvement due to adding the global industry or world market return to the local market factor is extremely similar (MSEs of 0.026 and 0.025). Other specifications examine the incremental improvement from adding the ownership return onto models without the factor and find that the ownership return leads to smaller MSEs than using a model with the global market, industry returns, or global market with ownership cap weights.

C. Sorts

As another gauge of the economic importance of a stock's ownership return we sort all stocks over a given quarter into those with ownership returns above (below) a given threshold. We start by examining all stocks with more than five percent foreign ownership and with ownership returns above 2.5 percent as compared to those with returns below -2.5 percent in a quarter. Supplemental Table SII

shows that stocks with high ownership returns exhibit an excess return[17] of 3.3 percent on average versus -2.1 percent for stocks with low ownership returns. Interestingly, the effect is rather symmetric. Despite only 17 quarters, the differences are highly significant.[18]

D. An ADR test

As an additional test of our main ownership return finding we investigate whether the role of the ownership return is related to a change in ownership composition. The ownership composition of a stock often shifts around an ADR listing. If the explanatory power of the ownership return is driven by the ownership of the stock and not just some omitted firm characteristic that ownership proxies for, then the stock returns of firms that listed an ADR should become more correlated with the new owners' other stock positions after the ADR listing.[19] In order to keep the same comparison set of stock returns to form the ownership return, we use the same ownership return weights in forming both the pre- and post-listing return. The weights are the average ownership weights in one year after the listing. If the ownership composition shifts around the listing date, then the ownership return should be more strongly related to stock returns post-listing compared to pre-listing. We estimate pooled regressions in a framework similar to Foerster and Karolyi (1999) except for the ownership return variable. They find that dummy variables on the global market increase significantly after listing.

Table IV shows that the ownership return is significant both before and after the listing, but increases after the ADR listing. As one would expect, the increase in the ownership beta is stronger for stocks that experience an increase in the level of foreign ownership along with the ADR listing. The result is robust to controlling for local and U.S. market returns (specifications 2 and 3) and sub-

[17] Returns are in excess of the local market index excluding the respective stock.
[18] To compute the difference between high and low ownership return portfolios we require the quarter to have a return for both the high and low portfolios. As we increase the threshold of the ownership return the magnitude of the differences between the high and low return portfolios increases as expected. However, the number of quarters with ten stocks in both the high and low portfolio also shrinks.
[19] In addition to ADRs, Global Depository Receipts (GDR) and other types of cross-listings are also included. The listing dates are identified through the Bank of New York website and CRSP database.

sumes the increase in global betas documented by Foerster and Karolyi (1999). However, the shift in global betas might be important if the analysis were conducted for a larger sample.[20] The shift in ownership linkage betas in conjunction with the shift in ownership composition around the listing dates suggests that a firm's foreign ownership drives the ownership return relation rather than just proxying for some omitted firm characteristic.

IV. Basic Explanations for Ownership Returns

We now turn to our list of possible explanations as to why ownership is important.

A. Country of Origin

We first ask the question what part of the ownership return matters. Does the ownership return matter because of the specific composition of the stocks that the manager holds, or does it matter due to the fact that a shareholder is domiciled in a particular country? If a U.S. institutional investor is influenced by its views of the world from U.S. news and market conditions, then the manager may be pushing or pulling capital abroad based on U.S. market returns. Similar to our ownership return, we compute an owner's home market return that is based not on the holdings, but rather the country where the institution is domiciled (not where the capital is deployed). The home market returns are calculated as the weighted sum of index returns of the home country where the funds are incorporated; the weights are based on the relative size of the funds' holdings in the stock.

Results of cross-sectional regressions are shown in Panel A of Table V for all stocks with more than five percent foreign ownership (as in Panel B of Table II). The owners' home market return has some ability to explain returns with no controls (specification (1)), but has no explanatory power in the presence of the ownership return (specification (2)) and other important variables (specification (6) in

[20] Our sample period is restricted to the years 2000 to 2009 due to the requirement of ownership data, a period with limited new ADR listings.

Table II). More importantly specification (2) shows that the coefficients on the ownership return and changes in ownership are unaffected by the owners' home market return.

B. Foreign Exchange Returns and Foreign Sales

Since the foreign ownership return may capture variation related to foreign exchange or operations, in specification (3) and (4) of Panel A in Table V, we include the return on a trade-weighted currency index for the country in which the stock is incorporated. The currency index is in terms of local currency relative to a trade-weighted basket of foreign currencies computed by J.P. Morgan. Specifications (3) and (4) show that changes in trade-weighted currency indices are largely unimportant and unrelated to the ownership return.

It is also possible that the level of foreign ownership is simply proxying for the extent to which a stock has operations abroad, and this could be why the importance of the ownership return increases with the level of foreign ownership. To investigate this possibility, we interact the level of foreign sales with the ownership return. Since firms with high foreign ownership may have varying degrees of foreign sales, it allows us to see if foreign operations are important beyond ownership levels. Specifications (5) and (6) show that foreign operations are not driving the importance of the ownership return.

C. Style

The category based view of Barberis and Shleifer (2003) suggests that comovement is driven because investors classify stocks into bins, such as value and growth. Lionshares has seven style types: Aggressive, Deep Value, GARP, Growth, Index, Value, and Yield. We compute style returns as a value-weighted average of all the funds in a particular style. We then use the owners of each stock to construct its stock-specific style return. For example, if a stock is 40 percent owned by a value fund and 60 percent owned by a growth fund, we construct the style return to be: 0.4*global average value fund return + 0.6*global average growth fund return. Specifications (7) through (9) in Panel A of Table V show that style returns are important for explaining cross-sectional return variation. However, the size

of the coefficients on the ownership return and changes in ownership is largely unaffected, indicating that the importance of the ownership return is not from simple style investing.

D. Emerging and Developed Markets, Size and Liquidity

Panel B of Table V first examines our quarterly cross-sectional regression results (for stocks with more than 5 percent foreign ownership) separately for emerging and developed markets (except for the United States). Interestingly, the ownership return coefficient is highly significant in developed markets but not in emerging markets. The lack of statistical significance in emerging markets could simply be due to lack of power with the smaller sample, but the coefficient is much smaller as well. This result is opposite to theories such as Kodres and Pritsker (2002) which call for the effect to concentrate in emerging markets.

We also examine if the effect is greater for smaller stocks, or for those with less liquidity. Like most other tables, we require a minimum of trading on 30 percent of the days in the previous year. Surprisingly, the effect is greater in larger stocks. Similarly, when we sort our sample into those stocks with trading on more than 50 percent of the days in the previous year (and those with 30-50 percent of days traded), we find that our results are much more pronounced among more liquid stocks. This finding suggests that ownership returns are an important facet of international portfolio diversification for most investors.

E. Time Clustering and Asymmetries

Since contagion-related theories point to the effects of ownership mattering in periods of extreme stress, we examine weekly Fama-MacBeth cross-sectional regression and sum the coefficients over rolling 26-week periods.[21] Figure 1 plots the coefficients over the January 2000 to March 2009 period. Industry and ownership coefficients are of similar magnitude and relatively stable. The coefficients are

[21] The Fama-MacBeth coefficients and *t*-statistics over the entire period are summarized in Panel B of Table II.

never below zero and range between 0.10 and slightly over 0.60.[22] The coefficients do not seem to rise in recessions as predicted by contagion theories.

Supplemental Figure S2 plots the raw quarterly regression coefficients. This also shows generally positive coefficients on the ownership return and the change in foreign ownership across the entire 2000 to 2009 time period.[23] In Supplemental Table SVI we examine asymmetries by looking at the extreme bottom twenty and five percent of ownership returns. There is no evidence that the effect of the ownership return is stronger in such periods. The contagion literature postulates that when investors face imminent financial constraints, they would sell off their other holdings. This leads to higher correlation among stocks owned by these investors. However, we find that stocks experiencing large outflows do not experience a stronger ownership return.[24]

V. Ownership Decomposition, Habitat, and Portfolio Rebalancing

A. Ownership Decomposition

For closer analysis of the channels through which ownership may influence stock prices and whether these channels are driving the importance of the ownership return, it is useful to decompose the change in institutional ownership. We will show that changes of institutional holdings can be decomposed into four components: fund flows, equity appreciation, allocation in or out of equities, and stock picking. The equity appreciation component is essentially a re-weighted version of our ownership return variable.

[22] Supplemental Figure S1 shows coefficients from regressions that also include the local market index. Here industry is relatively more important than the ownership return in later parts of the sample period. Nevertheless, the ownership coefficient is always positive and typically greater than 0.10.

[23] Supplemental Figure S3 plots the quarterly stock return performance of stocks as a function of their ownership return. Stocks are sorted into high and low ownership return groups depending on whether their foreign ownership return in the period is above a threshold (2.5 or 5 percent) or below a threshold (-2.5 or -5 percent). For stocks in each group, we calculate the average dollar return in excess of the local market index. We find that stocks with high ownership returns tend to have high stock returns.

[24] As explained later in equation (7), we track investors' outflows by institution and compute an aggregate measure of outflows across all institutions who invest in a given stock. We then create a dummy variable for whether a stock's investors are in the bottom 5 and 20 percentile in terms aggregate outflows and create a dummy variable interaction term with the ownership return.

A1. Decomposition Details

We compute stock-level components of the change in foreign institutional ownership as follows, where we measure the percentage change in equity holdings in a stock by a fund relative to the market value of the stock. For each of these quarterly institution stock-level positions, we decompose the percentage change of holdings into four components: fund flows, returns of the holdings (appreciation), allocation (asset allocation into equity from other asset classes), and stock picking (purely discretionary). We subsequently aggregate these components across institutional holders for a stock on a value-weighted basis according to the market capitalizations of their positions in the stock to obtain a stock-level measure.

The change in equity holdings for fund *n* of stock *i* is as follows:

$$\begin{aligned} \textit{Percentage Change Equity Holdings}_{i,n,t} &= \frac{q_{i,n,t}Z_{n,t}TNA_{n,t}}{M_{i,t}} - \frac{q_{i,n,t-1}Z_{n,t-1}TNA_{n,t-1}}{M_{i,t-1}} \\ &= \left(\frac{q_{i,n,t-1}Z_{n,t-1}(TNA_{n,t} - TNA_{n,t-1}(1+R_{n,t}))}{M_{i,t-1}}\right) + \left(\frac{q_{i,n,t-1}Z_{n,t-1}TNA_{n,t-1}}{M_{i,t-1}}R_{n,t}\right) + \\ &\left(\frac{q_{i,n,t-1}Z_{n,t}TNA_{n,t}}{M_{i,t-1}} - \frac{q_{i,n,t-1}Z_{n,t-1}TNA_{n,t}}{M_{i,t-1}}\right) + \left(\frac{q_{i,n,t}Z_{n,t}TNA_{n,t}}{M_{i,t}} - \frac{q_{i,n,t-1}Z_{n,t}TNA_{n,t}}{M_{i,t-1}}\right) \\ &= \textit{Fund Flow}_{i,n,t} + \textit{Appreciation}_{i,n,t} + \textit{Allocation}_{i,n,t} + \textit{Stock picking}_{i,n,t} \end{aligned} \quad (3)$$

where $TNA_{n,t}$ is total net assets of fund *n* at quarter *t*, $Z_{n,t}$ is the equity proportion of the fund's total net asset value at quarter *t*, $q_{i,n,t}$ is the portion of equity holdings of fund *n* that is invested in stock *i* at quarter *t*, and $M_{i,t}$ is the market value of stock *i* at quarter *t*..

We follow the standard approach in the literature to back out quarterly fund flows as the difference between total net assets and what assets would be if they simply grown passively:

$$\textit{Fund Flow}_{n,t} = TNA_{n,t} - TNA_{n,t-1}(1+R_{n,t}) \quad (4)$$

where $R_{n,t}$ is the return of fund n during quarter t, and $TNA_{n,t}$ is the total asset value at the end of quarter t.[25] We apply $Fund\ Flow_{n,t}$ for fund n proportionally to fund n's stock holdings i using the previous quarter's weights to obtain $Fund\ Flow_{i,n,t}$. Aggregating the components across funds yields measures of the change in the position in stock i due to fund flow, appreciation, allocation, and stock picking effects of its shareholders:

$$\begin{aligned} Fund\ Flow_{i,t} &= \sum_{n=1}^{N_i} Fund\ Flow_{i,n,t},\ Appreciation_{i,t} = \sum_{n=1}^{N_i} Appreciation_{i,n,t}, \\ Allocation_{i,t} &= \sum_{n=1}^{N_i} Allocation_{i,n,t},\ Stock\ picking_{i,t} = \sum_{n=1}^{N_i} Stock\ picking_{i,n,t} \end{aligned} \tag{5}$$

The appreciation component can be further split into returns from domestic equity holdings (the country where stock i is located but excluding stock i itself) and foreign equity holdings of fund n.

We first perform this decomposition with the international Lionshares dataset we have used throughout the paper. Here we have a much broader sample but must approximate flows and have no allocation component. Then, we separately examine the U.S. CRSP mutual fund return and holdings data, which also contains the holdings on international securities. Here we are able to precisely capture flows and measure the extent of reallocation.

A.2. Decomposition Results

Table VI presents cross-sectional regression results for the decomposition of stocks with high foreign ownership (> 5 percent) at the aggregate Lionshares institutional level in Panel A, and then with CRSP mutual fund flows in Panel B. In Panel A, we are able to separate the appreciation component due to domestic and foreign holdings. The foreign appreciation term is similar to our ownership return except for weighting. The ownership return constrains the holding weights of all foreign owners to sum to one, while the weights in the foreign appreciation term sum to the actual amount of dollars invested by the funds in that particular stock. For example, if the foreign holding is just 0.5 percent of the

[25] Our definition of the flow represents the dollar growth of a fund that is due to new investments at the end of the quarter. When we turn to the Lionshare data where we do not have TNA, we approximate this with the total equity positions.

funds' portfolios, the ownership return weights are normalized to one, while the weight of the foreign appreciation term is 0.5 percent.

The first specification starts off with the basic change in ownership, but specification (2) shows that the decomposition yields a higher average adjusted R^2. All of the components are statistically significant in specification (2) except for fund flows. However, our flow measure is only an approximation from changes in equity holdings since the aggregate institutional holding data does not contain total institutional flows. Interestingly, flow becomes significant with more extensive controls for the local and global market and industry in specification (7). Both domestic and foreign appreciation are strongly related to returns, indicating that a firm's stock price increases when the funds holding that stock experience increases in value from the other asset positions of the funds.

Ownership returns and foreign appreciation are computed similarly and should both be driven by the funds' returns on other securities. Since the ownership return and the appreciation component are highly correlated (correlation of 0.77), it is not surprising that the ownership return is highly significant when only controlling for fund flows and stock picking (in specification 6), but it is marginally insignificant after including the appreciation terms (specification 7).

In Panel B, we turn to using CRSP mutual fund data on non-U.S. securities. The more precise flow measure is positively related to stock returns, but not in the presence of market and industry controls (specifications 3 and 6). The new allocation component is insignificant, indicating that money managers switching cash position is not a main driver of stock returns. Unlike Lionshares institutional stock picking in Panel A, U.S. mutual fund stock picking is insignificant.

Overall, in terms of the relation between cross-sectional ownership changes and stock returns, both panels seem to indicate a strong role for stock appreciation, some role for stock picking, a less important role for fund flows, and no role for equity timing.

B. Investor Habitat and Portfolio Rebalancing

The appreciation (ownership return) component is conceptually consistent with two remaining explanations: investor habitat and portfolio rebalancing. With habitat, the appreciation component reflects value fluctuations due to changing viewpoints of the shareholder base. These changing viewpoints should be captured in correlated movements of capital as an investor habitat becomes attractive or undesirable to the group of investors that trade these types of securities. With portfolio rebalancing, the importance of appreciation is due to existing holders with positive gains in some securities causing them to rebalance capital away from the appreciating firms. When a stock has owners who have experienced large returns, these owners should be purchasing the stock. Thus, both channels provide predictions for drivers of changes in a stock's ownership.

B.1. Measuring Investor Habitat

Intuitively, referring back to the Samsung example, the habitat variable captures the net change in investments in and out of other stocks that are linked to Samsung through common shareholders. If habitat is important we expect to see investors purchasing Samsung at the same time as purchasing other stocks that have the same or similar owners. Hence, the habitat variable is a value-weighted average of all the change of holdings of the portfolio owners' other stocks. Note that this is not the change in holdings of the Samsung owners themselves, but the changes of the other holdings of all institutions that are linked to Samsung through the Samsung ownership composition. The habitat variable is constructed in a similar manner as the ownership return variable, but for changes in ownership instead of returns.

In more detail, we define the total habitat of stock *i* as follows:

$$Habitat_{i,t} = \sum_{n=1}^{N_i} W_{i,n,t-1} \left(\sum_{k=1}^{K_i} V_{k,n,t-1} C_{k,t} \right) \tag{6}$$

where $W_{i,n,t-1}$ is the percentage of market capitalization of stock i held by institution n at the end of the previous quarter. $V_{k,n,t-1}$ is the percentage of market capitalization of stock k in the equity portfolio that institution n holds at the end of the previous quarter. $C_{k,t}$ is the percentage change of equity holdings of each stock k in the current quarter that is, $\frac{\sum_{n=1}^{N_i} E_{k,n,t}}{M_{k,t}} - \frac{\sum_{n=1}^{N_i} E_{k,n,t-1}}{M_{k,t-1}}$. $E_{k,n,t}$ is the dollar equity holding of stock k by fund n at time t (i.e. $E_{k,n,t} = q_{k,n,t} w_{n,t} TNA_{n,t}$). $M_{k,t}$ is the dollar market value of stock k at time t. We impose the same assumption on ownership return weights $\sum_{n=1}^{N_i} W_{i,n,t-1} = 1$ and $\sum_{k=1}^{K_i} V_{k,n,t-1} = 1$ as in equation (2).

B. 2. Change in Ownership Regressions

Empirically, as discussed previously, the frequency of the ownership reporting varies. To avoid introducing measurement errors with changes in institutional ownership as the dependent variable, we only use institutions that report in at least three of the four previous quarters in regressions. We first look for direct evidence as to whether the ownership return of a stock is related to shifts in its ownership. In specifications 1 through 3 in Table VII we find that ownership shifts are not contemporaneously related to the ownership return but with a lag. The lag could be consistent with slow moving capital or delayed data reporting. However, delayed data reporting should not be the predominant driver as our sample is restricted to institutions which report at least one non-zero change in holdings in three or four out of the four previous quarters. Thus it appears that after a stock's owners experience positive returns elsewhere, the stock later receives an increase in ownership. However, the magnitude of the coefficient drops substantially after controlling for ownership changes due to an investor habitat, and it becomes insignificant after a few further controls (specification 7).

Specification (4) of Table VII shows that this habitat variable is indeed important for explaining changes in ownership. A one standard deviation change in a firm's ownership habitat is associated

with a 0.729 standard deviation change in the firm's quarterly ownership. Additional controls do not alter the finding that firms linked by ownership indeed experience common swings in ownership. Interestingly, the style return is insignificant and does not affect the magnitude of the habitat variable.[26] Since the ownership return variable captures variation due to both portfolio rebalancing and habitat but is subsumed by our specific habitat variable, we should conclude that habitat is more important for driving changes in institutional ownership.

B. 3. Institution-level Change in Ownership Regressions

We now turn to more directly investigating portfolio rebalancing through a detailed institution-level analysis. Suppose Samsung's two shareholders Capital World Investors and New York Retirement Funds have very different fund returns. Capital World Investors experiences high returns on its holdings, and New York Retirement has low returns. If investors exhibit portfolio rebalancing, Capital World Investors will increase their holdings in Samsung whereas New York Retirement will hold their position constant or sell. We test this proposition directly by examining the determinants of quarterly changes in each institution's holdings of each stock. In particular, we estimate panel regressions where the dependent variable is the quarterly ownership change for each institution of each firm. In order to control for unobserved variation and cross-sectional variation across stocks and to most closely correspond to the Samsung intuition above, we include firm-quarter fixed effects and firm-quarter clustered standard errors from bootstraps.

Table VIII presents the panel regression results and shows that both the contemporaneous and lagged institutional returns are related to the institution's change in holdings. However, the lagged effect is much more important. The coefficient of 0.021 indicates that a one-standard deviation increase in the returns of a fund last quarter lead to a 0.021 standard deviation increase in the fund holdings of

[26] Note that lagged habitat is not significant (Table SVIII). Note also that habitat is only useful for explaining changes in ownership, not returns (Table SVII). This is not surprising as changes in quarterly ownership are not a major source of explanatory power in returns (Table II).

the stock from last quarter to this quarter. While the effect is small, it is at the fund-stock level and a stock could have many funds with similar past performance. We control for the past quarter's stock return, the institution's position in the stock relative to the market capitalization of the stock, and the size of the institutions position relative to the average size of their positions. These controls do not materially affect the main inference regarding portfolio rebalancing. When institutional holders of a stock receive high returns elsewhere, they have a tendency to invest more in a stock, both contemporaneously and with a lag. Overall, our findings indicate that changes in institutional holdings are affected primarily by changes in a stock's habitat but also portfolio rebalancing of the institutions that hold the stock.

VI. Diversification Implications

Most of our results are focused on the ownership linkage channel controlling for world market returns. However, to fully explore diversification implications, we should be clear that the level of foreign ownership also plays a direct role in global market variation. Supplemental Tables SIII and SIV and Supplemental Figures S5 and S6 show that global market betas are largely increasing in the level of foreign ownership. We will now show the diversification implications of these ownership level findings in combination with ownership linkages. A simple but useful practical diagnostic is to compare the covariance between firms within a population relative to a representative firm's variance. Solnik (1974) used this to compare the power of U.S. and international diversification.

Panel A of Table IX shows that for stocks with no foreign ownership the average correlation is 0.103, but for stocks with more than five percent foreign ownership the average correlation is 0.21.[27] To gauge similar implications for ownership linkages, we take the perspective of a fund manager look-

[27] In Supplemental Figure S4, we graph the covariances as fraction of average variance. For stocks with no foreign ownership, the global limit of diversification is 7.1 percent of individual stock variance, whereas for stocks with more than five percent foreign ownership the limit is 18.8 percent. Panels B and C of Supplemental Figure S4 break the global diversification limit down into the country and industry component following Heston and Rouwenhorst (1994).

ing to diversify into non-U.S. stocks that he does not already hold. In order to focus on the set of stocks that fund managers typically select, we first require foreign ownership to exceed five percent. At the weekly frequency, we regress each stock's foreign ownership return on the return of each fund over the prior two-year rolling window to estimate ownership betas with respect to the fund. These ownership betas are a measure of how closely a fund covaries with the other foreign funds that hold a particular security. We sort all stocks into groups each year according to their ownership betas (<0.5, 0.5-0.75, 0.75-1, >1) and calculate the average betas between the return of a stock with each fund return (fund beta) over the following year. To preserve proper weighting on a fund and country level, we average these betas across stocks for each fund but within a country, year, and ownership beta bin. We then average across funds, across countries, and then years for each ownership beta bin. Panel B of Table IX shows that the average fund beta is 0.471, 0.635, 0.765, and 0.864 as one moves from low to high ownership betas.[28] If a fund manager adds a security with a high ownership linkage (beta) to their fund, the average beta is 1.83 times (0.864/0.471) what the average beta is for a stock with a low ownership linkage.

A remaining issue is that it seems probable that the level of foreign ownership is related to the strength of the ownership linkage. To address this issue we sort stocks into bins according to the level of foreign ownership, but also fund ownership betas with respect to a stock's foreign ownership return. In particular, we define five levels of foreign ownership (0, 0-1, 1-5, 5-15, and >15 percent) and sort stocks within each group into bins based on their ownership return beta (<0.5, 0.5-0.75, 0.75-1, >1). Panel C of Table IX shows the average fund beta according to both its level of foreign ownership as well as the stock's ownership beta on the fund. For stocks with zero foreign ownership, the average fund beta is 0.48, but for stocks with more than 15 percent foreign ownership the average covariance

[28] Because of computational considerations, we randomly draw one thousand of our 6,698 institutions to consider in the analysis in Panel B and C of Table IX. The analysis is computational intensive because of the high dimensionality of the combined analysis of all permutations of the time-series data of these 6,698 funds with the time-series stock return and ownership return data of 9,095 Non-U.S. stocks

with the fund is 0.74 or 1.54 times (0.74/0.48). For stocks with low ownership linkage to a fund the average beta with a fund is 0.42, whereas for stocks with high ownership linkage the fund beta averages 0.74 or 1.77 times as much (0.74/0.42). This indicates that a stock with high ownership linkages will have considerably less diversification benefits for portfolio managers, even after controlling for the level of foreign ownership. Our findings indicate that both ownership linkages and the level of foreign ownership are economically important factors to consider in international diversification. .

VII. Conclusion

The traditional view of international stock market comovement suggests that firms move together to the extent that their economic drivers are similar. In the international finance literature this debate has been cast in terms of two components of economic fundamentals, namely industry and country factors. Although many important papers have shown that a stock's trading location can affect its comovement, we go further by documenting the pervasiveness and importance of these ownership channels. In particular, this paper provides new evidence of the importance of international ownership, the channels of its transmission, and insight into theories for how ownership transmits price comovement.

To capture the importance of ownership connections between stocks, we construct a return that is the average return of the other stocks that an institution holds. We find that this very specific ownership composition of a stock is similar in importance as a stock's industry or sensitivity to global market conditions, both in the cross-section and in time-series.

There are a variety of reasons why international holdings may matter. We find evidence against explanations based on economic fundamentals, partial integration, country-of-capital origin, contagion, deleveraging, style investing, and fund flows as drivers of the ownership return. Ownership linkages appear to be determined by investor habitat effects (where the shareholder base of a stock causes ownership composition and returns of stocks to shift in tandem) and to a lesser extent by institu-

tional portfolio rebalancing (institutions shifting capital into a stock based on its gains and losses in other securities).

Our results have important practical implications to investors. Both the level and the ownership linkage of a stock are important facets of international diversification. We find that stocks with highly related ownership to an institution provide much less diversification potential compared to stocks with an unrelated ownership return. Our findings suggest that international investors should pay close attention not only to whether a stock is held by foreign investors, but the specific composition of a firm's shareholders. We hope to see additional research which investigates the importance of international stock return linkages for a variety of portfolio and risk management applications.

References

Ang, Andrew, Jun Liu, and Krista Schwartz, 2008, Using Stocks or Portfolios in Tests of Factor Models, Working paper, Columbia University.

Anton, Miguel, and Christopher Polk, 2010, Connected Stocks, Working paper, London School of Economics.

Bae, Kee-Hong, Andrew Karolyi, and René M. Stulz, 2003, A New Approach to Measuring Financial Contagion, *Review of Financial Studies* 16, 717-763.

Barberis, Nicholas, and Andrei Shleifer, 2003, Style Investing, *Journal of Financial Economics* 68, 161-199.

Barberis, Nicholas, Andrei Shleifer, and Jeffrey Wurgler, 2005, Comovement, *Journal of Financial Economics* 75, 283-317.

Bekaert, Geert, and Campbell R. Harvey, 1995, Time-varying World Integration, *Journal of Finance* 50, 403- 444.

Bekaert, Geert, and Campbell R. Harvey, 1997, Emerging Equity Market Volatility, *Journal of Financial Economics* 43, 29-77.

Bekaert, Geert, and Campbell R. Harvey, 2000, Foreign Speculators and Emerging Equity Markets, *Journal of Finance* 55, 565-613.

Bekaert, Geert, and Campbell R. Harvey, 2003, Emerging markets finance, *Journal of Empirical Finance* 10, 3-56.

Bekaert, Geert, Campbell Harvey, and Robin Lumsdaine, 2002, Dating the Integration of World Equity Markets, *Journal of Financial Economics* 65, 203-47.

Bekaert, Geert, Campbell R. Harvey, and Christian Lundblad, 2007, Liquidity and Expected Returns: Lessons from Emerging Markets, *Review of Financial Studies* 20, 1783-1831.

Bekaert, Geert, Campbell R. Harvey, Christian Lundblad, and Stephan Siegel, 2007, Global Growth Opportunities and Market Integration, *Journal of Finance* 62, 1081-1137.

Bekaert, Geert, Robert J. Hodrick, and Xiaoyan Zhang, 2009, International Stock Return Comovements, *Journal of Finance* 64, 2591-2626.

Bekaert, Geert, and Xiaozheng Wang, 2009, Globalization and Asset Prices, Working Paper, Columbia University.

Bohn, Henning, and Linda L. Tesar, 1996, U.S. Equity Investment in Foreign Markets: Portfolio Rebalancing or Return Chasing?, *The American Economic Review* 86, 77-81.

Boyer, Brian, Tomomi Kumagai, and Kathy Yuan, 2006, How Do Crises Spread? Evidence from Accessible and Inaccessible Stock Indices, *Journal of Finance* 61, 957-1003.

Broner, Fernando, R. Gaston Gelos, and Carmen M. Reinhart, 2006, When in peril, retrench: Testing the portfolio channel of contagion, *Journal of International Economics* 69, 203-230.

Calvo, Guillermo A., 1991, Contagion in Emerging Markets: When Wall Street is a Carrier, University of Maryland working paper.

Calvo, Guillermo A., and Enrique G. Mendoza, 2000, Rational Contagion and the Globalization of Securities Markets, *Journal of International Economics* 51, 79-113.

Carrieri, Francesca, Vihang Errunza, and Sergei Sarkissian, 2004, Industry Risk and Market Integration, *Management Science* 50, 207-221.

Chan, Kalok, Allaudeen Hameed, and Sie Ting Lau, 2003, What If Trading Location Is Different from Business Location? Evidence from the Jardine Group, *Journal of Finance* 58, 1221-1246.

Chan, Kalok, Vicentiu Covrig, and Lilian Ng, 2005, What Determines the Domestic Bias and Foreign Bias? Evidence from Mutual Fund Equity Allocations Worldwide, *Journal of Finance* 60, 1495-1534.

Choe, Hyuk, Bong-Chan Kho, and Rene M. Stulz, 1999, Do Foreign Investors Destabilize Stock Markets? The Korean Experience in 1997, *Journal of Financial Economics* 54, 227-264.

Coval, Joshua, and Erik Stafford, 2007, Asset fire sales (and purchases) in equity markets, *Journal of Financial Economics* 86, 479–512.

Covrig, Vicentiu M., Patrice Fontaine, Sonia Jimenez-Garces, and Mark S. Seasholes, 2009, Information and Cross-Border Equity Holdings, California State University at Northridge Working Paper.

Dorn, Daniel and Gur Huberman, 2010, Preferred Risk Habitat of Individual Investors, *Journal of Financial Economics,* forthcoming.

Duffie, Darrell, 2010, Asset Price Dynamics with Slow-Moving Capital, *Journal of Finance,* forthcoming.

Dumas, Bernard, and Bruno Solnik, 1995, The World Price of Foreign Exchange Risk, *Journal of Finance* 50, 445-479.

Dumas, Bernard, Campbell R. Harvey, and Pierre Ruiz, 2003, Are correlations of stock returns justified by subsequent changes in national outputs*?, Journal of International Money and Finance* 22, 777–811.

Dumas, Bernard, Karen Lewis, and Emilio Osambela, 2009, Differences of Opinion in an International Financial-Market Equilibrium, Carnegie Mellon Tepper School of Business, Working Paper.

Edison, Hali, and Francis Warnock, 2003, A Simple Measure of the Intensity of Capital Controls, *Journal of Empirical Finance* 10, 81-103.

Errunza, Vihang, and Etienne Losq, 1985, International Asset Pricing Under Mild Segmentation: Theory and Test, *Journal of Finance* 40, 105-124.

Fama, Eugene, and James MacBeth, 1973, Risk, Return, and Equilibrium: Empirical tests, *Journal of Political Economy* 81*,* 607-636.

Ferreira, Miguel, and Pedro Matos, 2008, The colors of investors' money: The role of institutional investors around the world, *Journal of Financial Economics* 88, 499–533.

Ferreira, Miguel, and Pedro Matos, 2009, Do Foreigners Know Better? A Comparison of the Performance of Local and Foreign Mutual Fund Managers, Universidade Nova de Lisboa and University of Southern California Working Paper.

Ferson, Wayne, and Campbell R. Harvey, 1994, Sources of Risk and Expected Returns in Global Equity Markets, *Journal of Banking and Finance* 18, 775-803.

Foerster, Stephen, and G. Andrew 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, 981-1014.

Forbes, Kristin, and Menzie Chinn, 2004, A Decomposition of Global Linkages in Financial Markets Over Time, *The Review of Economics and Statistics* 86, 705-722.

Frazzini, Andrea, and Owen Lamont, 2006, Dumb Money: The Fund Flows and the Cross-Section of Stock Returns, *Journal of Financial Economic* 88, 299-322.

Froot, Ken, Paul O'Connell, and Mark Seasholes, 2001, The Portfolio Flows of International Investors, *Journal of Financial Economics* 59, 151-193.

Froot, Ken, and Emile Dabora, 1999, How Are Stock Prices Affected by the Location of Trade?, *Journal of Financial Economics* 53, 189-216.

Froot, Ken, and Tarun Ramadorai, 2008, Institutional Portfolio Flows and International Investments, *Review of Financial Studies* 21, 937-972.

Goldstein, Itay, and Ady Pauzner, 2004, Contagion of self-fulfilling financial crises due to diversification of investment portfolios, *Journal of Economic Theory* 119, 151–183.

Green, Clifton and Byoung-Hyoun Hwang, 2009, Price-Based Return Comovement, *Journal of Financial Economics* 93, 37-50.Greenwood, Robin and David Thesmar, 2009, Stock price fragility, Working paper, Harvard Business School.

Griffin, John, 2002, Are the Fama and French Factors Global or Country Specific?, *Review of Financial Studies* 15, 783-803.

Griffin, John, and Andrew Karolyi, 1998, Another Look at the Role of the Industrial Structure of Markets for International Diversification Strategies, *Journal of Financial Economics* 50, 351-373.

Griffin, John, Patrick Kelly, and Federico Nardari, 2009, Are Emerging Markets More Profitable? Implications for Comparing Weak and Semi-Strong Form Efficiency, forthcoming in the *Review of Financial Studies*.

Griffin, John, Federico Nardari, and Rene Stulz, 2004, Are Daily Cross-border Equity Flows: Pushed or Pulled?, *The Review of Economics and Statistics* 86, 642-657.

Hau, Harald, and Helene Rey, 2009, Global Portfolio Rebalancing Under the Microscope, Working paper, London Business School.

Harvey, Campbell, 1991, The World Price of Covariance Risk, *Journal of Finance* 46, 111-157.

Heston, Steven, and Geert Rouwenhorst, 1994, Does Industrial Structure Explain the Benefits of International Diversification?, *Journal of Financial Economics* 36, 3-27.

Jotikasthira, Pab, Christian T. Lundblad, and Tarun Ramadorai, 2009, Asset Fire Sales and Purchases and the International Transmission of Financial Shocks, University of North Carolina at Chapel Hill Working Paper.

Jorion, Philippe, 1990, The Exchange Rate Exposure of US Multinationals, *Journal of Business* 63, 331-345.

Kaminsky, Graciela, Richard Lyons, and Sergio Schmukler, 2004, Managers, investors, and crises: mutual fund strategies in emerging markets, *Journal of International Economics* 64, 113– 134.

Karolyi, G. Andrew, and Rene M. Stulz, 2003, Are Financial Assets Priced Locally or Globally?, *Handbook of the Economics of Finance* 1, 975-1020.

Kim, Han, and Vijay Singal, 2000, Stock market openings: Experience of emerging economies, *Journal of Business* 73, 25-66.

Kodres, Laura E., and Matthew Pritsker, 2002, A Rational Expectations Model of Financial Contagion, *Journal of Finance* 57, 769-799.

Kumar, Alex, Jeremy Page, and Oliver Spalt, 2010, Investor Clienteles and Habitat-Based Return Comovements, University of Texas at Austin Working Paper.

Kyle, Albert S., and Wei Xiong, 2001, Contagion as a Wealth Effect, *Journal of Finance* 56, 1401-1440.

Lesmond, David A., Joseph P. Ogden, and Charles A. Trzcinka, 1999, A New Estimate of Transaction Costs, *The Review of Financial Studies* 12, 1113-1141.

Nofsinger, John, and Richard Sias, 1999, Herding and Feedback Trading by Institutional and Individual Investors, *Journal of Finance* 54, 2263-2295.

Petersen, Mitchell, 2009, Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches, *Review of Financial Studies* 22, 435-480.

Pirinsky, Christo, and Qinghai Wang, 2004, Institutional Investors and Comovement of Equity Prices, Working paper, George Washington University.

Roll, Richard, 1992, Industrial Structure and The Comparative Behavior of International Stock Market Indices, *Journal of Finance* 47, 3-41.

Solnik, Bruno, 1974, An Equilibrium Model of the International Capital Market, *Journal of Economic Theory* 8, 500-524.

Stulz, Rene, 1981a, On the Effects of Barriers to International Investment, *Journal of Finance* 36, 923-34.

Stulz, Rene, 1981b, A Model of International Asset Pricing, *Journal of Financial Economics* 9, 383-406.

Stulz, Rene, 1999, International Portfolio Flows and Security Markets, edited by Martin Feldstein, *University Chicago Press*, 257-293.

Sun, Zheng, 2008, Clustered Institutional Holdings and Stock Comovement, Working paper, New York University.

Wei, Chishen, 2010, Have Foreign Institutions Improved Liquidity Worldwide?, University of Texas Working paper.

Wermers, Russ, 1999, Mutual Fund Herding and the Impact on Stock Prices, *Journal of Finance* 2, 581-622.

Yuan, Kathy, 2005, Asymmetric price movements and borrowing constraints: a rational expectations equilibrium model of crisis, contagion, and confusion, *Journal of Finance* 50, 379-411.

Appendix A: Data sample cleaning

For the main part of the analysis, we use two datasets: a) Lionshare holdings data and b) returns and market values data from CRSP and DataStream. Holdings data is from Lionshare and structured using three identifiers describing who owns what and when. There are two unadjusted datasets within Lionshare, namely FUND and 13F. FUND is fund level holding data where holders are identified as funds. 13F is institution level data. We use the merged data of the two.

Stocks in Lionshares data are identified by CUSIP, ISIN and SEDOL. CUSIP is the main identifier for assets that funds and institutions hold. Other identifiers, such as ISIN and SEDOL are also available for each CUSIP. ISIN is later used to link DSCD to CUSIP.[29] Lionshares records how many shares a fund or an institution holds. From this number we construct the percentage of ownership by dividing by the number of shares outstanding. The number of shares is provided in a separate dataset offered by Lionshares. When the number of shares outstanding is missing or zero, we use the number of shares outstanding in the closest future date (provided that the stock price has not changed substantially).

U.S. stock returns and market values are from CRSP. International stock returns and market values are from DataStream. We use exchange rates downloaded from Datastream to convert the local currency stock returns into U.S. dollar terms. U.S. stocks are identified by CRSP's PERMNO, while International stocks in this data are identified by Datastream codes (DSCD).

For U.S. stocks, we use CRSP's event table to map CUSIP to PERMNO. For non-U.S. stocks, we use the aforementioned ISIN to get DSCD for each firm. DataStream provides a mapping between DSCD and ISIN. In case of depository receipts, DataStream also provides a mapping between DSCD of the underlying home listing and the ISIN. Using the above two datasets, we map

[29] In most countries, Lionshares covers companies with a market capitalization of more than $50 million and account for all positions equal to or larger than 0.1 percent of the issued shares. The coverage threshold for Latin American and some Asian (Indian, Chinese, South Korean, Phillippine and Indonesian) companies are between $100 and $200 million. There is no coverage threshold for U.K., U.S., and Japan companies.

each firm in Lionshares to CRSP for U.S. stocks and to DSCD for non-U.S. stocks. In case of depository receipts, we use the DSCD for its underlying stock.

Lionshares provides institution-level data as well as fund-level data. To utilize all of the holding data available, we make the two datasets to be institutional-level by aggregating the fund-level data at the institution level. We then merge these two datasets.[30] When there is overlap of the holding information, we prefer 13F data to FUND data.

There is a mismatch of reporting frequency and dates of the two datasets. The reporting frequency and dates of institution-level data (13F) are usually fixed and quite regular; reports are made at the end of each quarter and are in quarterly frequency. Fund level data does not have a fixed frequency, and it is not necessarily reported at the end of each quarter, for example a fund could be reporting semi-annually at the end of April and October. When there is a mismatch of reporting frequency and dates of the two datasets, we interpolate missing holding information in the fund level data before aggregating the fund level data to the institutional level. We merge the institution level holdings data and mutual fund holdings in the last month of each quarter. If the holdings data is missing, we fill in the holding data in the mutual fund dataset using the latest holding information.

We use two data screens for returns on stocks. First, we use filters following Griffin, Kelly, and Nardari (2009) with some modification to account for varying data frequencies. The screen for quarterly data is as follows. If returns are greater than 1000 percent, we exclude returns from -1 to +1 quarter around the extreme event. We exclude returns <-98 percent if the extreme return event

[30] If we only have institutional holding data on a stock in a quarter but no holding data by any of its funds on that stock, we use the institution data. Similarly, if we only have fund holding data on a stock in a quarter but not the fund's institution holding data, we take the fund data. When we have both institution and fund holding data on the stock in a quarter, we use the institution level observation. Ferriera and Matos (2008) also make the same assumptions in preferring institutional holding records to fund holdings. In the case that a stock holding only appears in the fund holding but not in the institutional holding record, we retain that stock holding record by the fund. To illustrate, if Fidelity (e.g. Magellan, International Discovery, etc.) held stocks X and Y in the fund dataset and Fidelity held stocks X and Y in the institution dataset, we would use Fidelity's holdings of X and Y. However, if the fund record showed various Fidelity funds owning stocks X and Y, and the institutional record showed Fidelity owning stock X only, then we would use Fidelity's holding of stock X and sum up various Fidelity funds' holding of stock Y.

occurs more than 30 days from the end of the time series available. If one quarter's return is greater than 500 percent but the cumulative return in the current and next quarter is less than 20 percent, we assume a data error and delete the return in both quarters. The screen for weekly data is as follows. If returns are greater than 500 percent, we exclude returns from -12 to +12 weeks around the extreme event. We take out returns <-98 percent, if the extreme return event occurs more than 30 days from the end of the time series available. If one week's return is greater than 300 percent, but the cumulative return over the current and next week is less than 50 percent i.e. R_t or $lag_1(R_t) > 3.00$ and $(1+R_t)*(1+ lag_1(R_t))<1.5$, then we assume a data error and delete the return in both weeks.

Second, we apply a liquidity filter. We require a stock to have more than 30 percent trading days of non-zero return in the previous year for cross-sectional regressions. For time-series regressions, we use three years of holding data and further require the stock to have at least 100 weeks of observations within the three year regression window.

Appendix B: Example of Ownership Linkage

This figure illustrates a hypothetical example of a stock (Samsung) which is held by two shareholders (Capital World Investors and New York Retirement Fund). The drawing demonstrates how Samsung is linked to other securities through the common shareholders.

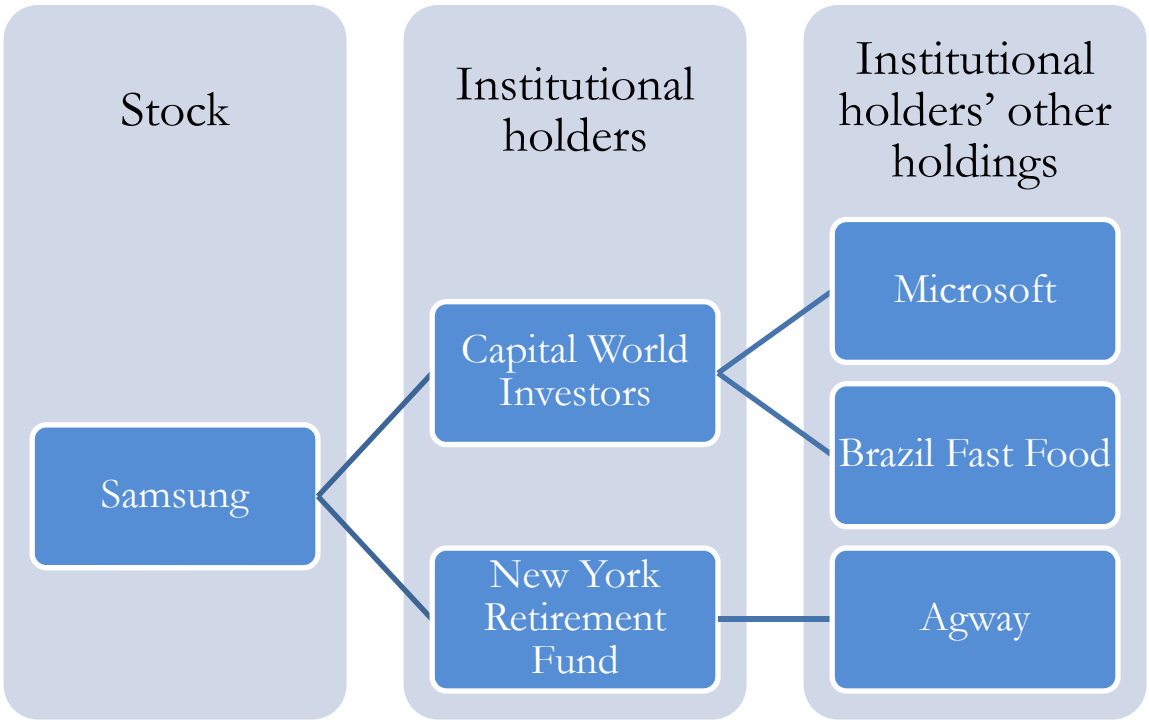


Table I: Summary Statistics

The table shows summary statistics on the percent of firms in the sample with foreign institutional ownership, the number of firms with foreign institutional ownership, and the percentage of foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. To be included in the sample, firms are required to have non-missing data on lagged foreign ownership and at least 30% non-zero trading days in the previous year. Panel A shows statistics for Developed Markets, while Panel B shows results for Emerging Markets (based on the MSCI classification as of June 2006). In each panel, results are broken down by country, region and size quintiles (small to large, using common U.S. breakpoints). Size is measured by market capitalization in U.S. Dollars as of December in the previous year. The first group of columns shows the percentage of firms in the sample that have data on foreign institutional ownership. The second group shows the number of firms with foreign ownership, and the third shows the average percentage of (free-float adjusted) foreign institutional ownership. Foreign Ownership is free-float adjusted by dividing it by one minus the percentage of closely held shares, where missing values of closely held shares are set to zero. Averages are first taken by year and subsequently across time. Ownership data is from Lionshares, market capitalization data is from DataStream, and data on closely held shares is from WorldScope.

(continued)

Table I: Summary Statistics (continued)

Panel A: Developed Markets

	% of Firms with Foreign Ownership					Number of Firms with Foreign Ownership					Foreign Institutional Ownership (%)				
	Small	2	3	4	Large	Small	2	3	4	Large	Small	2	3	4	Large
Australia	33.2	74.9	86.3	91.3	91.7	126	99	67	52	47	3.3	4.9	5.8	7.8	12.2
Austria	66.0	71.8	89.0	97.5	98.9	7	7	7	13	10	3.7	10.6	14.3	17.8	23.8
Belgium	78.8	74.5	79.2	74.6	88.5	12	13	13	10	15	1.3	8.1	17.8	13.0	14.7
Bermuda	0.0	100	44.4	66.7	100		1	1	2	2		61.6	85.9	45.9	44.6
Canada	35.6	79.4	85.5	90.0	93.6	390	144	87	70	67	3.5	7.3	14.2	17.3	26.3
Cyprus	5.8	14.5	26.1	45.0	69.2	3	4	2	2	2	1.5	0.0	0.1	6.7	4.5
Denmark	54.5	71.3	81.2	72.8	90.8	12	22	18	12	14	3.7	2.3	4.2	9.3	16.2
Finland	74.5	91.1	89.2	88.7	96.2	18	22	16	19	14	2.8	10.7	14.0	18.4	26.4
France	54.3	72.2	89.0	89.6	94.8	102	73	75	60	79	3.4	6.7	10.7	16.1	18.4
Germany	58.5	78.7	83.1	81.3	92.1	135	79	62	52	67	1.8	6.2	11.4	18.6	20.1
Greece	40.3	45.2	57.2	70.2	91.5	33	31	28	21	16	0.6	1.8	4.4	6.7	18.4
Hong Kong	34.2	56.9	70.9	84.1	91.6	61	80	68	42	37	2.6	7.1	13.3	25.1	22.9
Iceland	0.0	0.0	0.0	60.0	66.7				3	4				5.8	0.2
Ireland	68.0	81.9	81.4	83.5	91.6	6	7	6	8	11	13.4	18.0	22.5	32.8	34.3
Italy	61.4	75.1	79.0	84.0	82.5	13	32	38	34	46	1.8	4.5	8.4	10.9	15.5
Japan	27.5	69.1	89.1	95.1	97.3	205	551	572	434	351	1.2	1.7	3.2	5.7	9.5
Luxembourg	30.0	85.7	86.4	69.7	96.8	1	1	3	3	3	14.2	0.6	22.3	48.1	37.0
Malta		100	100	100			1	1	2			2.7	3.4	1.9	
Netherlands	35.5	59.2	69.7	69.7	84.2	7	12	14	18	23	3.2	12.5	24.3	24.2	31.0
New Zealand	53.3	89.7	93.8	92.0	100	8	15	12	9	3	1.3	6.6	10.7	8.1	37.6
Norway	66.0	81.4	93.7	96.8	95.1	17	21	23	20	11	2.0	4.5	12.7	19.3	28.1
Portugal	47.0	74.0	75.9	57.6	94.5	5	6	7	4	10	2.3	4.2	7.4	23.0	11.8
Singapore	34.3	63.1	72.8	85.5	84.4	45	54	32	20	14	1.9	4.3	11.6	17.3	39.9
Spain	93.8	79.5	82.9	72.2	79.0	3	11	18	17	33	1.0	2.3	6.9	10.6	15.5
Sweden	58.3	83.0	92.8	94.3	99.6	57	46	32	26	28	2.4	6.1	9.9	14.2	16.8
Switzerland	68.5	74.5	75.8	66.9	69.2	11	23	30	27	11	3.6	5.2	13.0	19.8	16.5
United Kingdom	73.0	88.4	88.2	82.9	84.8	144	155	151	124	135	1.8	3.4	5.3	8.4	11.6
United States	96.9	99.5	99.0	96.9	99.1	741	871	873	881	944	0.7	1.2	2.1	2.6	4.8
Developed	**50.4**	**80.1**	**89.7**	**91.5**	**95.0**	**2,153**	**2,372**	**2,251**	**1,979**	**1,990**	**1.8**	**3.2**	**5.3**	**7.5**	**10.7**
Developed ex US	**40.2**	**71.9**	**84.7**	**87.6**	**91.7**	**1,412**	**1,501**	**1,378**	**1,098**	**1,046**	**2.5**	**4.2**	**7.2**	**11.3**	**15.7**

(continued)

Table I: Summary Statistics (continued)
Panel B: Emerging Markets

	% of Firms with Foreign Ownership					Number of Firms with Foreign Ownership					Foreign Institutional Ownership (%)				
	Small	2	3	4	Large	Small	2	3	4	Large	Small	2	3	4	Large
Argentina	53.9	75.4	94.2	93.2	90.4	5	5	7	8	5	1.1	1.8	3.4	9.0	19.5
Bangladesh	6.3	16.1	13.6	14.3		2	2	2	1		2.5	0.8	0.6	2.4	
Brazil	52.6	58.3	63.6	75.6	86.5	3	5	9	14	19	7.0	2.4	5.5	13.5	16.2
Bulgaria	16.7	33.3	70.0	100		1	2	2	2		1.4	2.4	1.8	5.0	
Chile	38.1	57.1	61.8	77.6	88.1	2	4	7	13	13	2.8	2.6	1.7	12.1	20.2
China	9.9	3.4	8.1	17.0	54.5	5	10	39	53	31	3.0	15.4	10.8	9.1	17.1
Colombia	0.0	33.3	55.0	79.1	93.1		1	2	4	5		2.9	0.7	1.6	1.1
Croatia	0.0	55.6	85.7	100	71.4		1	2	1	1		2.7	5.0	24.6	21.7
Czech Republic	7.1	0.0	57.1	100	100	1		1	2	3	0.0		11.5	43.9	41.4
Egypt	8.2	24.1	57.4	71.4	100	2	3	6	6	5	1.0	1.0	1.6	7.5	15.9
Estonia	57.5	84.6	100	100		5	1	3	3		15.2	42.0	48.0	24.1	
Hungary	24.0	40.0	57.1	73.5	100	4	3	2	3	4	8.7	15.9	14.5	41.0	34.2
India	16.5	42.4	61.0	67.5	83.0	37	65	69	47	37	1.3	2.3	4.5	8.5	17.4
Indonesia	27.3	39.2	41.8	69.5	72.7	15	13	9	10	8	7.2	10.0	11.1	20.4	35.6
Israel	35.5	50.5	76.8	95.7	98.6	19	21	21	17	8	2.9	5.0	9.6	10.7	17.6
Kenya	32.8	64.4	51.6	88.9	100	3	4	3	4	1	1.8	0.6	0.6	0.9	1.3
Korea	21.0	52.7	83.2	93.5	98.4	100	137	86	55	40	1.9	4.4	8.1	13.5	19.4
Latvia	50.9	90.9	86.7	66.7		4	3	2	1		9.8	10.7	8.5	0.3	
Lithuania	53.5	83.1	42.3	94.1	100	9	8	2	3	1	8.1	8.0	3.9	10.9	2.8
Malaysia	32.6	57.0	84.5	96.3	100	73	74	60	40	20	2.2	2.1	6.7	7.7	14.6
Mauritius		80.0	87.5	100			2	4	1			0.3	1.5	6.3	
Mexico	23.8	54.5	69.0	80.4	98.1	1	2	4	8	11	0.5	6.2	8.1	11.9	15.4
Morocco	2.2	4.1	29.5	60.3	70.8	1	1	3	5	3	0.1	0.0	0.7	0.7	3.2
Pakistan	7.2	25.1	52.3	81.5	100	4	6	10	5	3	0.8	1.9	1.7	4.0	7.7
Peru	22.0	27.3	55.6	65.2	81.3	1	2	3	5	2	5.6	9.5	0.5	3.1	25.8
Philippines	38.6	73.0	78.0	83.3	85.7	8	9	8	7	5	22.2	19.9	24.8	63.2	93.2
Poland	43.7	76.2	89.1	95.7	100	41	22	15	12	7	1.7	6.6	13.9	16.7	36.4
Romania	46.8	81.8	90.0	100	100	10	5	2	2	2	6.4	10.5	4.5	2.1	2.5
Slovakia	25.0	50.0	100	100	100	1	1	1	1	1	23.7	1.2	17.0	13.8	7.4
Slovenia	66.7	54.5	45.0	81.8	100	10	5	4	3	3	2.3	0.0	0.4	1.8	2.5
South Africa	30.7	59.9	66.9	61.6	78.4	13	20	26	24	22	0.5	1.7	4.3	9.8	21.1
Sri Lanka	27.0	61.4	52.6	100		6	6	1	2		4.5	12.3	8.5	38.6	
Taiwan	20.8	45.3	65.8	87.1	97.4	53	108	109	72	42	1.0	2.4	3.8	7.2	13.2
Thailand	27.5	55.6	75.9	93.3	100	25	29	25	18	12	5.3	7.2	12.6	14.9	24.9
Turkey	27.9	72.0	80.2	93.4	99.0	22	37	29	20	12	2.2	5.3	9.4	21.4	27.1
United Arab Em.			100	100	100			1	1	1			27.5	35.6	38.7
Venezuela	77.3	90.0	62.5	66.7	100	3	2	2	2	2	4.4	0.3	1.3	21.2	91.8
Emerging	**25.0**	**42.8**	**51.2**	**56.9**	**85.6**	**436**	**597**	**549**	**459**	**314**	**2.9**	**4.0**	**6.5**	**11.1**	**19.2**
All countries	**43.0**	**68.1**	**78.2**	**82.1**	**93.6**	**2,589**	**2,969**	**2,800**	**2,439**	**2,304**	**2.0**	**3.3**	**5.5**	**8.1**	**11.7**

Table II: Cross-Sectional Regressions with Ownership Returns and Ownership Change

The table shows the results of Fama-MacBeth regressions of stock returns on an intercept (not reported), the foreign institutional ownership return (Ownership Return), the change in foreign ownership (Ownership Change), expected returns from a CAPM with local and world market index, and global industry index returns excluding the industry in the local market (Industry). Local Beta and World Beta are first estimated from rolling regressions using past two-year returns, where the returns of each stock is regressed on the returns on the value-weighted local country market returns, and the returns of the MSCI world market index: $R_{jt} = \alpha_j + \beta_L R_{L,t} + \beta_W R_{MSCI,t} + \varepsilon_{jt}$. The Local Beta is then multiplied with the contemporaneous local market returns (Local Beta*Local Market), and the World Beta is multiplied with the contemporaneous MSCI world market returns (World Beta * World Market) to construct the CAPM expected returns. The sample period is 01/01/2000-03/31/2009. The sample is limited to non-U.S. stocks with at least 30% non-zero trading days in the previous year. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Panel A shows results for stocks with alternative levels of foreign institutional ownership of 0%-1%, 1%-5%, and >5% using quarterly returns. Panel B shows results for stocks with at least 5% lagged foreign institutional ownership for regressions with weekly, monthly and quarterly returns, respectively. Since Ownership Change is in quarterly frequency, we do not include this variable in Panel B. However, we do include Ownership Return lagged by one period, as well as the average of Ownership Return lagged by 2-4 periods Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

Panel A: Alternative Levels of Foreign Institutional Ownership (Quarterly Returns)

	0-1%						1%-5%						>=5%					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Ownership Return	0.217	0.217	0.132	0.203	0.197	0.090	0.259	0.257	0.272	0.361	0.376	0.223	0.710	0.705	0.553	0.653	0.591	0.395
	(5.40)	(5.39)	(2.94)	(4.27)	(5.28)	(2.43)	(6.29)	(6.23)	(4.60)	(5.06)	(5.26)	(3.54)	(7.11)	(7.15)	(5.14)	(6.17)	(6.83)	(4.76)
Ownership Change		1.781	2.316	2.371	1.762	2.150		1.315	1.140	1.279	1.124	1.028		0.451	0.500	0.515	0.427	0.455
		(5.35)	(2.77)	(2.79)	(5.69)	(2.65)		(6.77)	(4.52)	(5.69)	(6.50)	(4.45)		(9.78)	(6.82)	(6.81)	(9.68)	(6.66)
Local Beta*Local Market			0.726			0.795			0.763			0.792			0.731			0.764
			(9.81)			(10.1)			(11.0)			(11.0)			(14.6)			(15.3)
World Beta*World Market				-0.108		0.181				-0.408		-0.153				0.000		0.209
				(-0.23)		(0.40)				(-0.75)		(-0.35)				(-0.00)		(0.42)
Industry					0.325	0.235					0.303	0.270					0.505	0.399
					(6.52)	(4.98)					(5.81)	(8.23)					(13.0)	(10.0)
Average Adjusted R^2	0.006	0.009	0.067	0.020	0.024	0.091	0.006	0.009	0.098	0.029	0.037	0.126	0.015	0.020	0.094	0.039	0.052	0.137
Average Number of Firms per Quarter	2,020	2,020	1,091	1,091	2,015	1,091	3,627	3,627	1,226	1,226	1,606	1,226	1,981	1,981	1,524	1,524	1,979	1,524

(continued)

Table II: Cross-Sectional Regressions with Ownership Returns and Ownership Change (continued)

Panel B: Foreign Institutional Ownership >= 5%

	Weekly				Monthly				Quarterly			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Ownership Return	0.484	0.224	0.448	0.215	0.625	0.340	0.550	0.309	0.710	0.391	0.669	0.358
	(21.4)	(13.6)	(19.8)	(12.6)	(11.5)	(9.51)	(9.54)	(7.41)	(7.11)	(4.76)	(5.56)	(3.71)
Ownership Return (lagged)			0.114	0.097			0.076	0.064			-0.098	-0.069
			(4.80)	(5.64)			(1.69)	(1.63)			(-1.28)	(-1.01)
Ownership Return (lagged, avg. of 2, 3, 4)			0.094	0.080			0.023	-0.034			0.300	0.376
			(2.30)	(2.54)			(0.29)	(-0.55)			(1.68)	(3.07)
Local Beta*Local Market		0.784		0.782		0.788		0.787		0.768		0.746
		(81.3)		(82.2)		(32.1)		(32.7)		(15.4)		(15.3)
World Beta*World Market		1.354		1.347		0.277		0.263		0.203		0.223
		(2.33)		(2.39)		(0.74)		(0.68)		(0.40)		(0.47)
Industry		0.256		0.255		0.344		0.339		0.405		0.408
		(25.4)		(25.7)		(13.6)		(13.4)		(9.78)		(10.2)
Average Adjusted R^2	0.008	0.105	0.014	0.108	0.012	0.120	0.018	0.123	0.015	0.132	0.030	0.138
Average Number of Firms	2,117	1,997	2,108	1,990	2,118	1,970	2,077	1,937	2,088	1,607	1,622	1,441

Table III: Time-Series Regressions with Ownership Returns

The table shows the results of time-series regressions of weekly stock returns on an intercept (not reported), the local market index excluding own stock (Local Market), the foreign institutional ownership return (Ownership Return), the world market index excluding the local market (World Market), global industry index returns excluding the industry in the local market (Industry), and an ownership-weighted world market index (World Market with Ownership Weights). The sample period is 01/01/2000-03/31/2009. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The regression models are as follows:

$$(1)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \varepsilon_{jt}$$

$$(2)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{WorldMarket,t} + \varepsilon_{jt}$$

$$(3)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \delta_j R_{Ownership,t} + \varepsilon_{jt}$$

$$(4)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \phi_j R_{Industry,t} + \varepsilon_{jt}$$

$$(5)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{WorldMarket,t} + \phi_j R_{Industry,t} + \varepsilon_{jt}$$

$$(6)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{WorldMarket,t} + \delta_j R_{Ownership,t} + \varepsilon_{jt}$$

$$(7)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{WorldMarket,t} + \delta_j R_{Ownership,t} + \phi_j R_{Industry,t} + \varepsilon_{jt}$$

$$(8)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \delta_j R_{Ownership,t} + \phi_j R_{Industry,t} + \lambda_j R_{WorldOwnership,t} + \varepsilon_{jt}$$

$$(9)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \phi_j R_{Industry,t} + \lambda_j R_{WorldOwnership,t} + \varepsilon_{jt}$$

The table reports the mean coefficients and adjusted R^2 across firms, as well as the number of firms. Panels A, B and C show results for the sub-periods 2000Q1-2002Q4, 2003Q1-2005Q4 and 2006Q1-2009Q1, respectively. Panel D shows the average Mean Squared Error (MSE) of correlations following Bekaert, Hodrick and Zhang (2009) for each of the models (1)-(9) as well as the difference in the MSE. Tests of significance of differences in MSE are based on bootstrapped standard errors using 1,000 randomly drawn samples with replacement. Ownership data is from Lionshares, while return data for individual stocks, market indices and industry indices is from DataStream.

Panel A: First Quarter 2000 – Fourth Quarter 2002

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Local Market	0.808	0.603	0.599	0.566	0.609	0.594	0.603	0.590	0.607
Ownership Return			0.308			0.298	0.150	0.370	
World Market		0.361			-0.128	0.028	-0.277		
Industry				0.409	0.444		0.428	0.417	0.464
World Market with Ownership Weights								-0.455	-0.141
Average Adjusted R^2	0.164	0.179	0.183	0.210	0.216	0.188	0.221	0.221	0.215
Number of Firms	233	233	233	233	233	233	233	233	233

Panel B: First Quarter 2003 – Fourth Quarter 2005

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Local Market	0.892	0.815	0.779	0.761	0.780	0.775	0.744	0.709	0.791
Ownership Return			0.207			0.299	0.264	0.408	
World Market		0.183			-0.082	-0.113	-0.333		
Industry				0.247	0.286		0.279	0.267	0.325
World Market with Ownership Weights								-0.411	-0.144
Average Adjusted R^2	0.217	0.227	0.229	0.236	0.241	0.232	0.245	0.247	0.241
Number of Firms	1,408	1,408	1,408	1,408	1,408	1,408	1,408	1,408	1,408

(continued)

Table III: Time-Series Regressions of Ownership Returns (continued)

Panel C: First Quarter 2006 – First Quarter 2009

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Local Market	0.985	0.874	0.818	0.815	0.850	0.818	0.805	0.772	0.863
Ownership Return			0.208			0.364	0.315	0.369	
World Market		0.171			-0.174	-0.186	-0.482		
Industry				0.237	0.339		0.339	0.309	0.360
World Market with Ownership Weights								-0.480	-0.217
Average Adjusted R^2	0.339	0.349	0.351	0.355	0.362	0.356	0.368	0.369	0.361
Number of Firms	3,126	3,126	3,126	3,126	3,126	3,126	3,126	3,126	3,126

Panel D: MSE Tests of Model Comparison

	Regres-sion #	MSE	Regres-sion #	MSE	Regres-sion #	MSE	Regres-sion #	MSE
Incremental Contribution of the Ownership Return								
Base Model	(1)	0.038	(2)	0.025	(5)	0.021	(9)	0.022
Base Model with Ownership Return	(3)	0.026	(6)	0.023	(7)	0.019	(8)	0.020
Difference		*0.012*		*0.002*		*0.002*		*0.003*
p-value		*<.0001*		*<.0001*		*<.0001*		*<.0001*
Incremental Contribution of the Industry Return								
Base Model	(1)	0.038	(2)	0.025	(6)	0.023		
Base Model with Industry Return	(4)	0.026	(5)	0.021	(7)	0.019		
Difference		0.012		0.004		0.004		
p-value		<.0001		<.0001		<.0001		
Incremental Contribution of the World Return								
Base Model	(1)	0.038	(4)	0.026	(3)	0.026		
Base Model with World Return	(2)	0.025	(5)	0.021	(6)	0.023		
Difference		0.013		0.005		0.003		
p-value		<.0001		<.0001		<.0001		

Table IV: ADR Listing and Ownership Returns

The table shows the results of pooled regressions of weekly stock returns of companies that listed a depository receipt or other cross-listing on an intercept (not reported), the foreign institutional ownership return (Ownership Return), the local market index excluding own stock (Local Market), and the U.S. market index. All regressors are interacted with a dummy variable (ADR-Dummy) that takes the value 1 after the effective date of the ADR/GDR listing, and 0 otherwise. The sample period used is four quarters before and after the effective date, with the effective date between 01/01/2000-03/31/2009. The sample is limited to non-U.S. stocks. The table reports the coefficients, associated t-statistics as well as the adjusted R^2. Results are shown separately for all firms, firms with an increase in foreign ownership, and firms with an increase in foreign ownership of at least 5%. The Ownership Return is calculated using average weights during the first year of the ADR/GDR listing. These fixed weights are used to calculate the Ownership Return before and after the listing. Ownership data is from Lionshares, while data on returns for individual stocks and market indices is from DataStream. ADRs/GDRs are identified based on Lionshares and DataStream information. Effective dates for ADRs/GDRs are identified through the Bank of New York website (http://www.adrbnymellon.com/dr_directory.jsp) as well as CRSP. We take the first listing date.

	All Firms			**Firms with Increased Foreign Ownership**			**Firms with increased foreign ownership > 5%**		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Ownership Return		0.083	0.117		0.093	0.164		0.086	0.138
		(3.16)	(2.88)		(2.88)	(2.96)		(2.24)	(1.92)
Ownership Return * ADR-Dummy		0.042	0.069		0.101	0.159		0.108	0.255
		(1.22)	(1.30)		(2.41)	(2.26)		(2.19)	(2.81)
Local Market	1.032	1.016	1.016	1.060	1.040	1.039	1.056	1.042	1.039
	(61.1)	(56.7)	(56.7)	(51.4)	(46.9)	(46.8)	(46.7)	(42.3)	(41.9)
Local Market * ADR-Dummy	0.025	0.000	-0.001	0.015	-0.018	-0.020	0.006	-0.032	-0.043
	(1.11)	(0.01)	(-0.05)	(0.54)	(-0.59)	(-0.69)	(0.21)	(-0.97)	(-1.29)
U.S. Market	0.043		-0.040	0.040		-0.076	0.046		-0.051
	(1.8)		(-1.10)	(1.4)		(-1.57)	(1.4)		(-0.85)
U.S. Market * ADR-Dummy	0.018		-0.043	0.056		-0.090	0.042		-0.184
	(0.55)		(-0.84)	(1.41)		(-1.37)	(0.95)		(-2.25)
Adjusted R^2	0.250	0.252	0.252	0.275	0.276	0.276	0.277	0.278	0.278
Number of Observations	35,430			22,576			18,356		
Number of Firms	358			232			191		

Table V: Alternative Explanations and Small, Illiquid and Emerging Market Stocks

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on various ownership variables and control variables. Panel A shows results with an intercept (not reported), the owners' home market return (Owners' Home Market Return), returns on the multilateral exchange rate index of the country of incorporation (Foreign Exchange Return), the interaction between the percentage of foreign sales and the ownership return (Foreign Sales*Ownership Return), investment style returns (Style Return), the foreign institutional ownership return (Ownership Return), the change in foreign ownership (Ownership Change), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). The owners' home market return is a weighted average of the home market index returns where the owners are incorporated; the weights are based on the relative size of the funds' holdings of the stock. Foreign exchange returns are the returns on a trade-weighted currency index for the country in which the stock is incorporated. The currency index is in terms of the local currency relative to a trade-weighted basket of foreign currencies. In the Lionshares database, each fund is classified as one of the following styles: Aggressive, Deep Value, GARP, Growth, Index, Value, or Yield. To construct style returns, we first create fund style returns in each quarter by computing the value weighted return of its holdings. We then construct style index returns as the value-weighted average return of all funds in each style. Then, for each stock, we construct its stock specific style return as the holdings-weighted average of the returns of the styles into which its owners are classified. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with four lags. Panel B uses only the main variables, but shows results for the full sample (All), as well as broken down by degree of market development (Emerging, Developed), market capitalization size (Small, Medium, Large), and trading activity (High, Medium, Low). Stocks are classified into emerging and developed markets based on the MSCI classification as of June 2006. Stocks are classified into market capitalization buckets on the basis of lagged market capitalization in U.S. dollars, where small is the bottom 40%, medium is the next 30%, and large is the top 40%. Stocks are classified according to trading activity on the basis of the number of trading days in the prior year as liquid (stocks with more trading days, i.e. top half) or illiquid (stocks with few trading days, i.e. bottom half). Ownership data and information on investment styles is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream. Data on foreign exchange rates is from J.P. Morgan. Data on the % of foreign sales is from WorldScope (and set to zero if missing).

(continued)

Table V: Alternative Explanations and Small, Illiquid and Emerging Market Stocks (continued)

Panel A: Alternative Explanations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Owners' Home Market Return	0.319	0.039							0.039
	(3.40)	(0.51)							(0.55)
Foreign Exchange Return			0.026	0.015					-0.083
			(0.24)	(0.31)					(-1.15)
Foreign Sales*Ownership Return					0.571	0.177			0.179
					(4.34)	(1.84)			(2.08)
Style Return							2.474	0.826	0.997
							(6.14)	(3.12)	(2.96)
Ownership Return		0.372		0.409		0.382		0.373	0.323
		(4.54)		(4.73)		(4.17)		(5.04)	(3.18)
Ownership Change		0.460		0.459		0.624		0.458	0.636
		(6.76)		(6.80)		(6.35)		(7.01)	(6.82)
Local Beta*Local Market		0.763		0.751		0.748		0.759	0.717
		(15.7)		(15.4)		(13.0)		(16.1)	(12.0)
World Beta*World Market		0.190		0.206		0.142		0.205	0.117
		(0.38)		(0.42)		(0.31)		(0.40)	(0.25)
Industry		0.397		0.407		0.380		0.389	0.385
		(10.3)		(10.4)		(10.7)		(10.0)	(11.3)
Average Adjusted R^2	0.004	0.138	0.010	0.139	0.013	0.146	0.011	0.139	0.152
Average Number of Firms per Quarter	2,072	1,607	2,056	1,595	1,420	1,136	2,066	1,606	1,131

(continued)

Table V: Alternative Explanations and Small, Illiquid and Emerging Market Stocks (continued)

Panel B: Small, Illiquid and Emerging Market Stocks

		Market Development		Market Capitalization			Trading	
	All	Emerging	Developed	Small	Medium	Large	Illiquid	Liquid
Ownership Return	0.395	0.150	0.436	0.115	0.334	0.413	0.184	0.629
	(4.76)	(1.26)	(4.44)	(0.66)	(3.38)	(4.24)	(2.19)	(6.78)
Ownership Change	0.455	0.457	0.463	0.579	0.504	0.536	0.325	0.588
	(6.66)	(4.21)	(5.96)	(2.45)	(4.73)	(5.28)	(4.04)	(5.80)
Local Beta*Local Market	0.764	0.813	0.676	0.761	0.779	0.783	0.693	0.785
	(15.3)	(21.3)	(8.32)	(5.94)	(14.2)	(20.6)	(10.5)	(15.5)
World Beta*World Market	0.209	-0.634	0.245	0.270	0.160	0.168	0.397	-0.009
	(0.42)	(-1.56)	(0.47)	(0.53)	(0.30)	(0.31)	(0.71)	(-0.02)
Industry	0.399	0.471	0.398	0.658	0.285	0.394	0.442	0.386
	(10.0)	(5.88)	(9.92)	(5.13)	(5.47)	(8.75)	(8.16)	(10.06)
Average Adjusted R^2	0.137	0.221	0.113	0.081	0.130	0.188	0.098	0.172
Average Number of Firms per Quarter	1,607	272	1,335	192	427	988	706	901

Table VI: Decomposition of Funds' Change in Holdings

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), the change in fund holdings, fund flows, domestic appreciation, foreign appreciation, stock picking, the foreign institutional ownership return (Ownership Return), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). Change in holdings, flows, domestic and foreign appreciation, and stock picking are all scaled by lagged market capitalization and are standardized. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Panel A considers non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. Ownership data is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream. Panel B shows results for funds on CRSP. Elton, Gruber, and Blake (2001) show that there are a large number of errors associated with mutual fund mergers and splits in the CRSP mutual fund database, which leads to extreme values of flows. Consequently, we trim the top and bottom 1% tails of the net flows data based on the flow ratios. All holdings and flow related variables in this panel, including the ownership return, are based on CRSP data. The sample period is 08/01/2003-03/31/2009. Ownership data is from the CRSP Mutual Fund Database, while data on returns for individual stocks, market indices and industry indices is from DataStream.

Panel A: Stocks with Foreign Institutional Ownership > 5%

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Change in Holdings	0.007						
	(8.68)						
Flows		0.003	0.000		0.003	0.003	0.004
		(1.40)	(-0.18)		(1.40)	(1.82)	(2.49)
Domestic Appreciation		0.040			0.040		0.017
		(5.51)			(5.51)		(6.79)
Foreign Appreciation		0.013		0.016	0.013		0.013
		(4.30)		(4.96)	(4.30)		(4.26)
Stock picking		0.008			0.008	0.005	0.009
		(7.65)			(7.65)	(3.42)	(5.81)
Ownership Return						0.076	0.022
						(7.32)	(1.74)
Local Beta*Local Market							0.706
							(14.6)
World Beta*World Market							0.164
							(0.35)
Industry							0.380
							(10.0)
Average Adjusted R^2	0.003	0.032	0.002	0.007	0.032	0.020	0.145
Average Number of Firms per Quarter	2,262	2,262	2,262	2,262	2,262	2,088	1,607

(continued)

Table VI: Fund's Change in Holdings Decomposition (continued)

Panel B: CRSP Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Change in Holdings	0.004					
	(0.70)					
Flows		0.026	0.007	0.048	0.048	0.007
		(4.28)	(0.78)	(7.16)	(8.49)	(0.76)
Appreciation		0.076	0.043			0.041
		(7.83)	(3.37)			(3.31)
Allocation		0.026	0.025		0.021	0.027
		(1.49)	(2.11)		(1.39)	(2.18)
Stock picking		-0.000	-0.005		-0.005	-0.005
		(-0.06)	(-1.05)		(-0.71)	(-1.08)
Ownership Return					0.148	0.054
					(4.04)	(2.29)
Local Beta*Local Market			0.643			0.616
			(6.64)			(6.46)
World Beta*World Market			0.709			0.695
			(2.11)			(2.12)
Industry			0.534			0.525
			(7.89)			(7.74)
Average Adjusted R^2	0.003	0.030	0.142	0.016	0.046	0.147
Average Number of Firms per Quarter	1,002	1,002	923	1,008	997	921

Table VII: Habitat vs. Wealth Effect at the Stock Level

The table shows the results of Fama-MacBeth regressions of quarterly change in the fraction of total institutional ownership of a stock on an intercept (not reported), the foreign institutional ownership return (Ownership Return), previous quarter's ownership returns, the value-weighted change in the other holdings of a stock's owner from last quarter to the current quarter (Habitat), a stock's style return (Style Return), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). For each stock, we examine its owners' holdings in other stocks and then track the change in foreign ownership in those stocks as a fraction of the market capitalization. The habitat variable is then a value-weighted average of all the changes of foreign ownership of the portfolio owners' other stocks. All variables are standardized. In the Lionshares database, each fund is classified as one of the following styles: Aggressive, Deep Value, GARP, Growth, Index, Value, or Yield. To construct style returns, we first create fund style returns in each quarter by computing the value weighted return of its holdings. We then construct style index returns as the value-weighted average return of all funds in each style. Second, for each stock, we construct its stock specific style return as the holdings-weighted average of the returns of the styles into which its owners are classified. The sample period is 01/01/2000-03/31/2009. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The table reports the average coefficients, associated *t*-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 1 lag. Ownership data and information on investment styles is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ownership Return	0.126		0.133					
	(0.96)		(1.12)					
Ownership Return (lagged)		0.427	0.369		0.266	0.257	0.271	0.250
		(3.07)	(2.52)		(2.02)	(1.90)	(1.94)	(1.72)
Habitat				0.727	0.761	0.763	0.729	0.742
				(4.20)	(4.65)	(4.48)	(3.64)	(3.62)
Style Return						0.520		0.741
						(1.28)		(1.39)
Local Beta*Local Market							0.005	-0.013
							(0.11)	(-0.24)
World Beta*World Market							-0.068	-0.065
							(-1.18)	(-1.07)
Industry							0.033	0.028
							(0.79)	(0.69)
Average Adjusted R^2	0.001	0.003	0.003	0.013	0.016	0.017	0.027	0.029
Average Number of Firms per Quarter	998	986	986	998	986	985	836	835

Table VIII: Wealth Effect at the Stock-Fund Level

The table shows the results of panel data regressions of quarterly changes in holdings at the stock-fund level. The dependent variable is the change of holdings from the previous quarter to this quarter of a stock by a fund. The regressors include an intercept (not reported), the foreign fund's return (Owner Fund Return), the foreign fund's return in the previous quarter, last quarter's stock return, the percentage change in holdings (i.e. the dependent variable) lagged by one quarter, last quarter's fund holdings of the stock as a percent of the stock's market capitalization (Percent Stock Holdings (lagged)), and last quarter's fund holding of the stock as a percentage of fund's total assets minus the last quarter's average percentage holdings of the fund across stocks in the fund (Stock Holdings (lagged) – Average Stock Holdings (lagged)). All variables are standardized. Stock-quarter fixed effects are added, with stock-quarter clustered standard errors calculated from bootstraps with 100 replications. The sample period is 01/01/2000-03/31/2009. The sample is limited to non-U.S. stocks with at least 30% non-zero trading days in the previous year. The table reports the coefficients, associated t-statistics as well as average adjusted R^2. Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

	(1)	(2)	(3)	(4)	(5)	(6)
Owner Fund Return			0.008	0.008		0.008
			(4.20)	(3.44)		(4.54)
Owner Fund Return (lagged)	0.021	0.023		0.023		0.025
	(8.66)	(8.73)		(9.04)		(9.88)
Stock Return (lagged)					-0.008	-0.014
					(-2.50)	(-4.67)
Percentage Change in Holdings (lagged)						0.002
						(0.70)
Percent Stock Holdings (lagged)		-0.026	-0.026	-0.026	-0.025	-0.026
		(-10.77)	(-11.48)	(-11.48)	(-12.03)	(-10.44)
Stock Holdings (lagged) - Average Stock Holdings		0.039	0.039	0.039	0.039	0.039
(lagged)		(7.93)	(8.08)	(7.03)	(6.40)	(8.12)
Adjusted R^2	0.203	0.204	0.204	0.204	0.204	0.205
Average Number of Firm-Fund per Quarter	79,182	79,182	79,182	79,182	79,182	79,182

Table IX: Ownership Level, Ownership Beta and Portfolio Diversification

The sample consists of all non-U.S. stocks with data between 01/01/2000 and 03/31/2009 with at least 30% non-zero trading days in the previous year. Firms are also required to have at least 30 non-missing observations over the sample period. In Panel B and C firms are also required to have at least 30 non-missing observations in a rolling two-year window. Panel A shows the effect of global portfolio diversification for alternative levels of foreign institutional ownership (FO) (0%, 0%-1%, 1%-5%, >5%) measured at the beginning of a three year period. To insure equal number of firms across bins, for each country, year and institutional ownership group, we restrict the number of firms to the smallest number of firms across institutional ownership groups. We compute the average stock return covariance and correlation between all pairs of stocks in the bin for each year and subsequently average across years. Panel B and C are computed based on random draws of 1,000 of our 6,698 funds. Panel B shows the effect of alternative levels of foreign institutional ownership return betas estimated over rolling two year windows over the years 2003-2009 for firms with at least 5% lagged foreign institutional ownership. For each fund, the universe of stocks is restricted to those not held by a fund. Over rolling two-year windows (always shifted by one year), we regress the foreign ownership return of each stock (not held by the institution) on the return of each Lionshares institution: $R_{Ownership,t} = \alpha + \beta_{Ownership\ Beta} R_{Fund,t} + \varepsilon_t$. Subsequently, we sort each year the observations into four groups based on the estimated ownership betas (<0.5, 0.5-0.75, 0.75-1, >1) and calculate the average beta of the stock return with the fund return (Fund Beta) in the next year: $R_{i,t} = \alpha + \beta_{Fund\ Beta} R_{Fund,t} + \varepsilon_t$. To compute averages which compare observations within the fund level, we first average by fund, country, year, and ownership beta bucket. Subsequently we average across funds by country, year and ownership beta bucket. Then we average across countries by year and ownership beta bucket, and finally we average across years by ownership beta bucket. The t-statistics are computed from this last cross-country average. The panel shows the average ownership beta and fund beta of stocks in each of the four ownership beta bins, as well as those of a high-low portfolio based on ownership betas, and corresponding *t*-statistics. Panel C follows the procedure in Panel B except that it breaks out the results by both the lagged level of foreign institutional ownership (FO) and lagged ownership beta. It also shows averages across different groups, as well as values for high-low portfolios (based alternatively on FO betas or FO levels) and corresponding *t*-statistics.

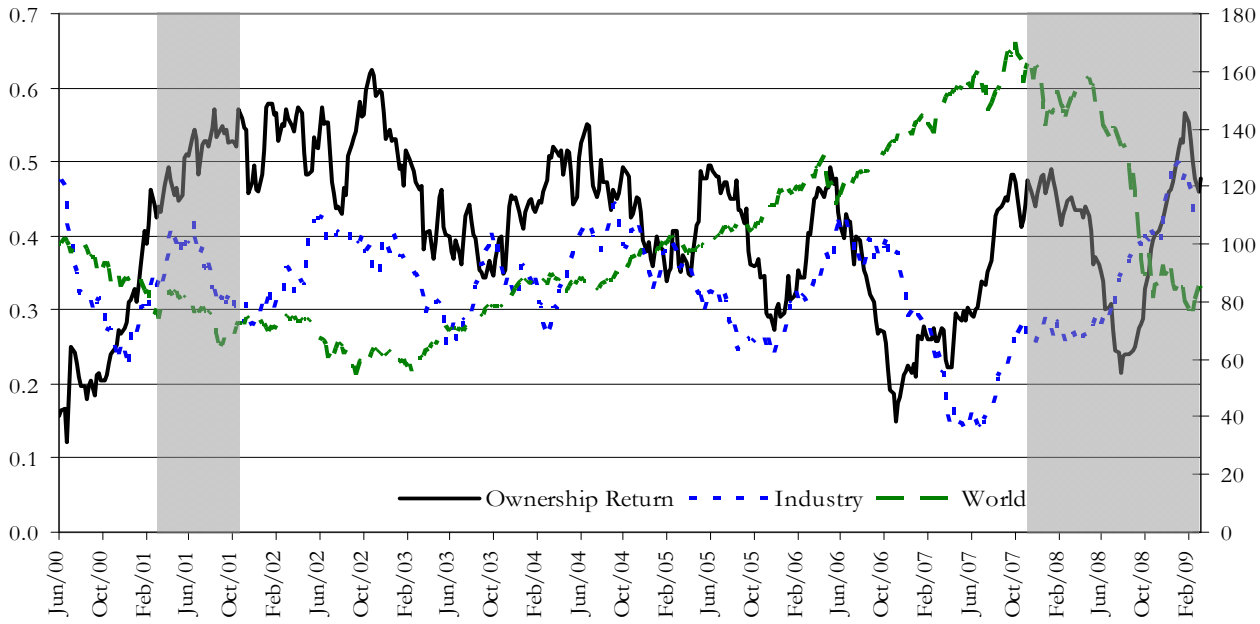
Panel A	**FO=0%**	**0%<FO<1%**	**1%<FO<5%**	**5%<FO**
Average Covariance	0.00058	0.00053	0.00062	0.00077
Average Correlation	0.103	0.128	0.162	0.210

Panel B	**Ownership Beta bin**					
	<0.5 (Low)	**0.5-0.75**	**0.75-1**	**>1 (High)**	**High-Low**	**t-stat**
Average Ownership Beta	0.380	0.648	0.867	1.080	0.699	
Average Fund Beta	0.471	0.635	0.765	0.864	0.394	5.4

Panel C	**Ownership Beta bins**						
FO Level	**<0.5 (Low)**	**0.5-0.75**	**0.75-1**	**>1 (High)**	**Average**	**High FO – Low FO**	**t-stat**
			Fund Betas				
0%	0.34	0.45	0.53	0.58	0.48	0.24	4.1
0%-1%	0.39	0.51	0.57	0.61	0.52	0.22	4.4
1%-5%	0.45	0.56	0.66	0.75	0.60	0.30	4.4
5%-15%	0.46	0.58	0.70	0.81	0.64	0.35	6.0
>15%	0.47	0.67	0.83	0.98	0.74	0.50	5.4
Average	0.42	0.56	0.66	0.74		0.31	9.9
High FO-Low FO	0.12	0.21	0.27	0.34	0.23		
t-stat	9.75	6.26	14.2	6.87	11.3		

Figure 1: Foreign Ownership Regression Coefficients Over Time

The figure shows the average coefficients of Fama-MacBeth cross-sectional regressions. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. Each week, a cross sectional regression is run over all firms in the sample. We then take the rolling average of these coefficients in the regressions over the past 26 weeks. The figure shows the moving average. Shaded areas are NBER recession periods. Stock returns are regressed on an intercept (not reported), the foreign institutional ownership return, global industry index returns excluding the industry in the local market (Industry ex loc) and world market index returns (World). Ownership data is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream. Data on recession periods is from the NBER (http://www.nber.org/cycles/main.html).



Appendix

Table AI: Summary Statistics on Update Frequency of Ownership Data

The table shows the percentage of institutions by country and data source in Lionshares, i.e. institutional level data (13F in the US and its equivalent in other countries), the mutual funds database (MF), and in the merged dataset (13F+MF). Results are split by updating frequency, i.e. annual, biannual, triannual and quarterly frequency. The last column shows the total percentage of institutions across the years 2000-2009. The total percentage can add up to above 100 if an institution appears in both 13F and MF. Ownership data is from Lionshares.

	Annual			**Biannual**			**Triannual**			**Quarterly**			**Total**	
	13F	MF	13F+MF	13F	MF	13F+MF	13F	MF	13F+MF	13F	MF	13F+MF	13F	MF
Australia	7	62	63	2	28	27	1	4	5	2	3	6	12	98
Austria	2	22	22	8	58	59	1	4	4	2	15	15	13	99
Belgium	3	20	19	8	58	60	0	4	4	0	17	17	11	100
Canada	10	25	26	17	50	49	2	6	6	13	11	19	42	91
Denmark	3	35	36	3	46	45	1	9	9	3	8	10	10	99
Finland	1	37	37	7	54	56	0	3	3	0	3	3	9	98
France	4	54	55	2	16	16	1	14	14	6	12	15	13	95
Germany	2	22	22	2	39	40	0	7	7	2	31	31	7	99
Ireland	8	24	23	21	61	65	1	4	4	3	6	8	33	95
Italy	10	83	85	0	13	13	0	2	2	0	1	1	10	98
Japan	12	46	48	3	15	14	2	2	3	33	1	35	50	64
Luxembourg	4	20	20	9	62	63	1	5	6	2	10	11	17	98
Netherlands	7	30	30	4	50	46	2	2	4	14	6	20	26	88
New Zealand	0	89	89	0	11	11	0	0	0	0	0	0	0	100
Norway	1	40	37	4	44	44	1	11	12	2	4	6	9	100
Portugal	3	27	28	2	26	26	0	6	6	5	38	41	9	97
Spain	1	12	12	0	13	13	0	14	14	1	60	60	2	99
Sweden	3	30	29	4	41	42	1	11	11	3	15	17	12	97
Switzerland	4	23	25	5	51	53	1	4	4	9	11	18	19	89
United Kingdom	9	23	26	9	38	38	1	6	7	17	19	29	36	86
United States	17	6	18	2	9	6	4	3	5	67	12	71	89	31
Developed	**5**	**35**	**36**	**5**	**37**	**37**	**1**	**6**	**6**	**9**	**14**	**21**	**20**	**91**
Developed ex US	**5**	**36**	**37**	**6**	**39**	**39**	**1**	**6**	**6**	**6**	**14**	**18**	**17**	**94**

(continued)

Table AI: Summary Statistics on Update Frequency of Ownership Data (continued)

	Annual			Biannual			Triannual			Quarterly			Total	
	13F	MF	13F+MF	13F	MF	13F+MF	13F	MF	13F+MF	13F	MF	13F+MF	13F	MF
Andorra	0	67	67	0	33	33	0	0	0	0	0	0	0	100
Argentina	0	0	0	0	33	33	0	33	33	0	33	33	0	100
Bahamas	22	28	50	0	0	0	0	0	0	50	0	50	72	28
Bahrain	0	100	100	0	0	0	0	0	0	0	0	0	0	100
Barbados	50	0	50	0	0	0	0	0	0	50	0	50	100	0
Bermuda	9	34	38	0	24	23	0	6	4	32	2	34	41	67
Brazil	75	0	75	0	0	0	25	0	25	0	0	0	100	0
British Virgin Islands	26	50	58	4	39	41	0	1	1	0	0	0	30	91
Cayman Islands	3	49	49	4	47	47	0	2	2	0	2	2	7	100
Chile	0	100	100	0	0	0	0	0	0	0	0	0	0	100
China	0	25	25	0	74	74	0	2	2	0	0	0	0	100
Cook Islands	0	100	100	0	0	0	0	0	0	0	0	0	0	100
Croatia	0	100	100	0	0	0	0	0	0	0	0	0	0	100
Cyprus	25	0	25	25	0	25	0	0	0	50	0	50	100	0
Czech Republic	0	38	38	0	62	62	0	0	0	0	0	0	0	100
Estonia	0	35	35	0	53	53	0	12	12	0	0	0	0	100
Gibraltar	0	0	0	0	100	100	0	0	0	0	0	0	0	100
Greece	0	32	32	0	68	68	0	0	0	0	0	0	0	100
Hong Kong	13	13	26	4	46	46	0	0	0	27	0	27	45	59
Hungary	0	32	32	0	68	68	0	0	0	0	0	0	0	100
Iceland	33	67	100	0	0	0	0	0	0	0	0	0	33	67
India	0	45	45	0	37	37	0	4	4	0	15	15	0	100
Latvia	0	67	67	0	33	33	0	0	0	0	0	0	0	100
Liechtenstein	1	32	32	2	67	67	0	0	0	0	1	1	3	100
Lithuania	0	83	83	0	17	17	0	0	0	0	0	0	0	100
Malaysia	0	27	27	0	31	31	0	14	14	0	28	28	0	100
Malta	0	0	0	0	33	33	0	67	67	0	0	0	0	100
Mauritius	0	43	43	0	57	57	0	0	0	0	0	0	0	100
Monaco	60	0	60	0	0	0	0	0	0	40	0	40	100	0
Namibia	0	47	47	0	33	33	0	20	20	0	0	0	0	100
Netherlands Antilles	0	100	100	0	0	0	0	0	0	0	0	0	0	100
Pakistan	0	100	100	0	0	0	0	0	0	0	0	0	0	100
Philippines	0	100	100	0	0	0	0	0	0	0	0	0	0	100
Poland	0	36	35	4	64	65	0	0	0	0	0	0	4	100
Romania	0	100	100	0	0	0	0	0	0	0	0	0	0	100
Saudi Arabia	0	100	100	0	0	0	0	0	0	0	0	0	0	100
Singapore	6	18	23	6	71	65	0	1	1	10	2	12	22	91
Slovakia	0	25	25	0	75	75	0	0	0	0	0	0	0	100
Slovenia	0	52	52	0	47	47	0	2	2	0	0	0	0	100
South Africa	2	43	43	2	40	40	0	15	15	0	2	2	4	100
South Korea	100	0	100	0	0	0	0	0	0	0	0	0	100	0
Taiwan	31	38	69	0	0	0	0	0	0	31	0	31	62	38
Thailand	0	38	38	0	27	27	0	10	10	0	25	25	0	100
Turkey	0	50	50	0	50	50	0	0	0	0	0	0	0	100
Virgin Islands	13	0	13	0	0	0	6	0	6	81	0	81	100	0
Emerging	**10**	**45**	**54**	**1**	**30**	**30**	**1**	**4**	**5**	**8**	**2**	**11**	**21**	**81**
All countries	**9**	**42**	**48**	**2**	**32**	**32**	**1**	**5**	**5**	**8**	**6**	**14**	**20**	**84**

Table AII: Number of Institutions and Mutual funds by Year and Country

The table shows the number of institutions and mutual funds that come from a particular country by year and country in Lionshares. Results are split by data source, i.e. institutional level data (13F in the US and its equivalent in other countries) and the mutual funds database (MF). Coverage is from 2001 to 2009. In order to keep the table brief, we report the coverage in three years: 2001, 2005, and 2008. Ownership data is from Lionshares.

	2001		**2005**		**2008**	
	13F	MF	13F	MF	13F	MF
Australia	1	10	1	55	4	83
Austria		29		43		55
Belgium		22		31	1	31
Canada	20	146	44	164	69	173
Denmark		18	1	33	2	35
Finland		18		32		31
France	4	53	13	159	14	135
Germany	2	107	4	144	5	205
Ireland	3	9	2	13	5	17
Italy		35		58	1	59
Japan	8	37	12	70	12	76
Luxembourg		34	1	64	3	58
Netherlands	3	11	9	28	11	27
New Zealand				4		3
Norway	1	18	1	25	1	24
Portugal		3		24		28
Spain	1	100	1	123	2	127
Sweden	1	20	1	58	1	74
Switzerland	4	56	13	163	14	205
United Kingdom	36	168	71	268	108	299
United States	1,924	845	2,424	845	2,892	899
Developed	**2,008**	**1,739**	**2,598**	**2,404**	**3,145**	**2,644**
Developed ex US	**84**	**894**	**174**	**1,559**	**253**	**1,745**

Table AII: Summary Statistics on Data Sources (continued)

	2001		2005		2008	
	13F	MF	13F	MF	13F	MF
Andorra				3		3
Argentina		1		3		3
Bahamas	1	2	2	3	4	1
Bahrain						1
Barbados			1	1	1	
Bermuda	4	1	4	6	5	6
Brazil		4		4	3	8
British Virgin Islands				1	1	
Cayman Islands				1		1
Chile				1		1
China		1		1		54
Cook Islands						
Croatia						5
Cyprus					1	1
Czech Republic		1		7		8
Estonia		1		3		7
Gibraltar				1		
Greece				4		16
Hong Kong	2	35	5	41	5	51
Hungary				8		5
Iceland				2		2
India		3		28		38
Latvia						3
Liechtenstein		1		13		19
Lithuania						3
Malaysia				14		21
Malta						
Mauritius				1		
Monaco			1		1	
Namibia				1		2
Netherlands Antilles						
Pakistan						16
Philippines				1		
Poland				16		29
Romania				6		19
Saudi Arabia						5
Singapore		38	2	43	3	44
Slovakia				6		6
Slovenia				13		13
South Africa		3		30		69
South Korea		2		4	1	4
Taiwan		1	1	1	2	3
Thailand		1		8		19
Turkey				3		4
Virgin Islands	1		2		2	
Developing	**8**	**95**	**18**	**278**	**29**	**490**
All countries	**2,016**	**1,834**	**2,616**	**2,682**	**3,174**	**3,134**

Table AIII: Descriptive Statistics

The table shows descriptive statistics on the percentage of local institutional ownership and market capitalization of firms in the sample. To be included in the sample, firms are required to have non-missing data on lagged foreign ownership and at least 30% non-zero trading days in the previous year. Panel A shows statistics for Developed Markets, while Panel B shows results for Emerging Markets (based on the MSCI classification as of June 2006). In each panel, results are broken down by country, region and by size quintiles (small to large, using common U.S. breakpoints), where size is measured by market capitalization in U.S. Dollars. The first column shows the average percentage of (free-float adjusted) local institutional ownership. Ownership is free-float adjusted by dividing it by 1 minus the percentage of closely held shares, where missing values of closely held shares are set to zero. The second column shows the average market capitalization (in millions of U.S. Dollars). Averages are first taken by year and subsequently across time. The sample period is 01/01/2000-03/31/2009. Ownership data is from Lionshares, market capitalization data is from DataStream, and data on closely held shares is from WorldScope.

Panel A: Developed Markets

	Local Institutional Ownership (%)					Market Capitalization (USD)				
	Small	2	3	4	Large	Small	2	3	4	Large
Australia	2.0	2.6	2.8	2.6	2.5	34	110	294	911	8,879
Austria	1.5	2.9	2.2	1.7	1.1	29	95	499	879	5,650
Belgium	2.3	5.5	11.7	9.5	6.3	34	98	263	895	10,565
Bermuda		0.0	0.0	0.0	0.0		236	579	1,074	2,329
Canada	6.0	13.3	18.9	25.3	27.8	28	108	291	884	8,982
Cyprus	0.3	0.4	0.2	0.0	0.0	24	193	357	1,110	3,613
Denmark	12.4	16.8	16.7	15.1	13.0	35	108	275	1,008	6,324
Finland	7.1	15.5	10.4	11.6	9.2	30	106	281	903	12,514
France	4.5	8.0	8.6	10.4	9.9	27	98	275	829	16,294
Germany	4.1	7.3	8.5	8.9	10.7	23	94	295	884	14,319
Greece	0.1	0.2	0.4	0.4	0.6	30	107	277	777	5,262
Hong Kong	0.9	3.7	5.2	6.5	6.1	39	100	271	836	10,364
Iceland				0.0	0.0				250	1,609
Ireland	0.7	1.6	1.9	2.0	0.8	42	75	242	900	6,884
Italy	1.4	2.2	2.5	2.1	2.2	42	99	280	849	11,257
Japan	0.7	0.9	1.7	2.2	1.5	37	100	263	814	7,568
Luxembourg	1.5	1.7	1.4	1.8	2.0	43	95	374	1,275	14,614
Malta		0.0	0.0	0.0			149	247	869	
Netherlands	7.9	13.3	15.2	5.0	1.8	29	108	302	907	16,538
New Zealand	0.3	1.3	2.7	1.3	2.3	33	98	260	966	3,318
Norway	5.3	12.7	24.2	25.2	14.2	42	108	339	792	9,055
Portugal	5.6	13.4	16.3	11.6	3.0	20	112	254	1,030	5,353
Singapore	0.7	1.7	4.1	3.8	6.7	36	88	262	885	7,206
Spain	2.7	6.0	10.1	7.6	5.2	46	128	305	994	14,049
Sweden	6.1	18.3	26.1	28.9	25.3	28	95	254	822	8,768
Switzerland	12.6	11.5	12.1	9.1	4.6	42	114	287	896	7,444
United Kingdom	17.2	25.4	26.2	23.0	11.2	27	97	258	795	13,913
United States	27.8	49.4	79.7	99.7	92.3	29	98	269	831	12,763
Developed	**13.6**	**22.4**	**35.4**	**49.0**	**47.6**	**31**	**100**	**271**	**835**	**11,464**
Developed ex US	**5.3**	**7.1**	**8.2**	**8.7**	**7.3**	**31**	**101**	**271**	**839**	**10,286**

(continued)

Table AIII: Descriptive Statistics (continued)

Panel B: Emerging Markets

	Local Institutional Ownership (%)					Market Capitalization (USD)				
	Small	2	3	4	Large	Small	2	3	4	Large
Argentina	0.0	0.0	0.0	0.1	0.2	24	128	288	814	5,239
Bangladesh	0.0	0.0	0.0	0.0		43	147	512	484	
Brazil	2.3	0.1	0.3	0.3	0.2	42	164	373	1,043	7,531
Bulgaria	0.0	0.0	0.0	0.0		62	37	501	138	
Chile	0.0	1.4	1.1	1.1	0.8	93	117	332	922	3,922
China	0.0	0.6	2.0	2.2	5.1	68	181	463	1,278	7,669
Colombia		0.0	0.0	0.0	0.0		306	279	1,131	2,616
Croatia		0.0	0.3	0.1	0.0		167	292	1,347	1,705
Czech Republic	0.4		0.9	2.8	1.1	56		325	1,184	7,195
Egypt	0.4	0.5	0.4	0.2	0.1	69	171	348	1,166	4,352
Estonia	0.4	1.4	0.4	0.9		88	1,033	124	402	
Hungary	3.1	2.6	1.2	1.2	0.4	52	96	258	661	5,061
India	3.7	4.8	6.0	5.1	3.3	40	130	325	1,116	6,230
Indonesia	0.0	0.0	0.0	0.0	0.0	41	100	313	947	4,300
Israel	0.0	0.0	0.0	0.0	0.0	34	91	261	900	5,485
Kenya	0.0	0.0	0.0	0.0	0.0	92	140	430	848	877
Korea	0.2	0.4	0.3	0.1	0.1	44	105	309	979	7,483
Latvia	0.0	0.1	0.1	0.0		45	111	353	536	
Lithuania	0.2	0.1	0.1	0.1	0.0	37	104	466	772	2,742
Malaysia	1.1	1.6	1.6	0.8	0.7	36	103	265	844	4,509
Mauritius		0.0	0.0	0.0			97	238	133	
Mexico	0.0	0.0	0.5	0.6	0.6	36	124	362	973	4,703
Morocco	0.0	0.0	0.0	0.0	0.0	52	831	499	1,038	5,037
Pakistan	0.2	0.9	0.6	0.6	0.9	42	91	304	784	2,621
Peru	0.0	0.0	0.0	0.0	0.0	63	151	338	723	3,242
Philippines	0.0	0.0	0.2	0.4	0.4	32	138	311	686	2,914
Poland	11.2	25.7	19.9	15.7	13.6	36	111	309	969	5,142
Romania	1.8	1.1	2.2	0.5	1.3	33	205	433	954	5,919
Slovakia	0.0	0.0	0.3	0.1	0.0	95	95	504	1,443	1,699
Slovenia	12.0	11.1	6.5	4.5	5.3	435	86	267	717	1,400
South Africa	5.1	21.4	10.9	6.5	4.7	43	102	299	962	5,791
Sri Lanka	0.0	0.0	0.0	0.0		17	85	261	739	
Taiwan	0.0	0.0	0.1	0.1	0.1	49	107	259	786	5,440
Thailand	0.6	0.8	1.4	0.9	1.4	33	96	287	861	3,912
Turkey	0.0	0.3	0.3	0.3	0.2	40	103	279	843	3,878
United Arab Em.			0.0	0.1	0.0			602	1,866	1,155
Venezuela	0.0	0.0	0.0	0.0	0.0	282	628	425	834	931
Emerging	**1.9**	**2.9**	**2.6**	**2.3**	**2.6**	**43**	**111**	**294**	**924**	**5,613**
All countries	**12.1**	**18.8**	**29.0**	**40.5**	**41.9**	**33**	**103**	**276**	**852**	**10,698**

Supplemental Appendix

Table SI: Panel Regressions

Panel A shows the results of panel regressions, with standard errors clustered by firm and with quarter fixed effects, of stock returns on an intercept (not reported), the contemporaneous and lagged foreign institutional ownership return (Ownership Return), the change in foreign ownership (Ownership Change), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). Panel B shows the results of panel estimations with firm and quarter fixed effects. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. The table reports the coefficients, associated t-statistics as well as the adjusted R^2 and the number of observations. Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

Panel A: Panel Regressions with Clustered Standard Errors and Quarter Fixed Effects

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
Ownership Return	0.801	(15.3)	0.559	(10.6)	0.353	(5.96)	0.732	(10.7)	0.705	(8.33)	0.768	(14.8)	0.313	(5.35)
Ownership Return (lagged)							-0.021	(-0.52)	-0.241	(-5.11)				
Ownership Return (lagged, avg. of 2, 3, 4)							0.236	(3.61)	0.249	(2.74)				
Ownership Change											0.409	(7.36)	0.455	(6.53)
Local Beta*Local Market					0.529	(20.0)			0.565	(21.6)			0.524	(19.9)
World Beta*World Market					0.035	(0.82)			0.044	(0.96)			0.029	(0.66)
Industry			0.542	(21.9)	0.489	(19.0)							0.483	(18.8)
Adjusted R^2	0.27		0.30		0.35		0.28		0.33		0.28		0.35	
Observations	37,154		37,154		30,120		36,479		29,939		37,154		30,120	

Panel B: Panel Regressions with Firm and Quarter Fixed Effects

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
Ownership Return	0.815	(17.3)	0.662	(14.2)	0.677	(12.6)	0.813	(17.0)	0.803	(14.8)	0.811	(17.3)	0.670	(12.6)
Ownership Return (lagged)							0.127	(2.68)	0.012	(0.23)				
Ownership Return (lagged, avg. of 2, 3, 4)							0.363	(6.07)	0.459	(6.06)				
Ownership Change											0.395	(11.6)	0.484	(12.4)
Local Beta*Local Market					0.555	(39.2)			0.581	(40.4)			0.550	(38.9)
World Beta*World Market					0.042	(1.88)			0.016	(0.69)			0.040	(1.77)
Industry			0.533	(32.1)	0.493	(27.6)							0.490	(27.5)
Adjusted R^2	0.30		0.32		0.38		0.30		0.36		0.30		0.38	
Observations	37,154		37,154		30,120		36,479		29,939		37,154		30,120	

Table SII: Portfolio Sorts

The table shows the stock return performance and change in ownership of stocks as a function of their ownership return. Stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership are sorted into high and low ownership return groups depending on whether their foreign ownership return in the period is above 2.5% (5%, 7.5%) ("High") or below -2.5% (-5%, -7.5%) ("Low"). For stocks in each group, we calculate the average change in ownership (ownership at end of quarter minus ownership at beginning of quarter), the average USD return, and the average USD return in excess of the local market index excluding the respective stock. Each ownership return portfolio is required to have at least 10 stocks on a given date. We also form a High-Low portfolio as the difference between the values for the high foreign ownership return portfolio and the low foreign ownership return portfolio (requiring at least 10 observations in each portfolio). The table reports the time-series average (Mean), corresponding t-statistic (t-stat), and number of observations (N) of the USD returns and change in foreign ownership. T-statistics are corrected for autocorrelation and heteroskedasticity with the Newey-West (1987) procedure with 4 lags. Results for the USD returns of the high and the low foreign ownership return portfolios are based on USD returns in excess of the local market index excluding the respective stock, while results for the High-Low foreign ownership return portfolio are based on raw USD returns. The sample period is 01/01/2000-03/31/2009. Ownership data is from Lionshares, while data on returns for individual stocks and market indices is from DataStream.

		Returns (USD)			Change in Foreign Ownership		
Ownership Return		Mean	t-stat	N	Mean	t-stat	N
>2.5%	High	0.033	(2.10)	23	-0.0027	(-1.57)	23
<-2.5%	Low	-0.021	(-1.58)	22	-0.0054	(-3.14)	22
	High-Low	0.059	(2.55)	17	0.0025	(1.17)	17
>5%	High	0.030	(1.37)	17	-0.0008	(-0.59)	17
<-5%	Low	-0.029	(-1.75)	18	-0.0065	(-3.60)	18
	High-Low	0.069	(1.43)	10	0.0079	(2.79)	10
>7.5%	High	0.031	(1.00)	12	-0.0028	(-2.91)	12
<-7.5%	Low	-0.021	(-0.97)	16	-0.0101	(-5.92)	16
	High-Low	0.120	(1.85)	6	0.0083	(2.31)	6

Table SIII: Equally-Weighted World Market Betas and Explanatory Power of Ownership Portfolios

The table shows regression results using portfolios of stocks with different degree of foreign institutional ownership. In particular, stocks with at least 30% non-zero trading days in the previous year are sorted into 4 portfolios, depending on whether lagged foreign institutional ownership is equal to 0%, between 0% and 1%, between 1% and 5%, or larger than 5%. Equally-weighted portfolios of weekly USD returns are formed by foreign institutional ownership, country and date, requiring at least 10 stocks per country and ownership group on a given date. Moreover, for a given window of weekly observations within rolling 24 months, non-missing observations in each of the four ownership groups are required for each day and country, each country/ownership portfolio has to have at least 30 weekly observations, and there have to be non-missing observations for each ownership group for at least 5 countries. We also form a High-Low ownership portfolio as the difference between the returns of the high foreign ownership portfolio and the low foreign ownership portfolio for each country. For a given window of weekly observations within rolling 24 months, the returns of these portfolios are regressed on an intercept (not reported) and the USD returns of the MSCI world market index: $R_{jt} = \alpha_j + \beta_j R_{WorldMarket,t} + \varepsilon_{jt}$. Results across countries are aggregated using equal weights. The table shows the average world market beta estimates and R-squares for the respective portfolio, as well as the t-statistics of tests that the average world market beta and R^2, respectively, of the high minus low ownership portfolio is different from zero. T-statistics are corrected for autocorrelation and heteroskedasticity with the Newey-West (1987) procedure with 3 lags. Panel A shows results for Developed Countries, while Panel B shows results for Emerging Markets (based on the MSCI classification as of June 2006). The sample period is 01/01/2000-03/31/2009. Ownership data is from Lionshares, while data on returns for individual stocks and the world market index is from DataStream.

Panel A: Developed Countries

	World Market Beta						R^2					
	0%	0%-1%	1%-5%	>5%	High-Low	t-stat	0%	0%-1%	1%-5%	>5%	High-Low	t-stat
Australia	0.75	0.80	0.88	1.06	0.31	7.3	0.26	0.28	0.31	0.33	0.12	5.32
Canada	0.84	0.94	1.01	1.11	0.27	11.1	0.24	0.34	0.38	0.47	0.11	8.90
Denmark	0.59	0.69	0.97	1.31	0.72	14.1	0.29	0.34	0.44	0.68	0.41	19.7
France	0.46	0.57	0.77	1.03	0.57	20.7	0.20	0.29	0.38	0.58	0.46	13.5
Germany	0.57	0.63	0.95	1.16	0.59	19.5	0.24	0.33	0.43	0.59	0.34	9.48
Hong Kong	0.66	0.73	0.83	0.98	0.32	13.9	0.21	0.30	0.37	0.50	0.12	6.02
Italy	0.68	0.47	0.64	0.61	-0.07	-3.28	0.09	0.13	0.20	0.23	0.00	2.70
Japan	0.42	0.54	0.63	0.73	0.31	20.7	0.10	0.15	0.22	0.30	0.18	6.99
Norway	0.82	0.87	0.97	1.17	0.35	6.62	0.23	0.28	0.33	0.41	0.14	4.18
Singapore	1.13	0.95	0.93	1.02	-0.11	-2.06	0.31	0.32	0.36	0.45	0.02	3.99
Sweden	0.95	0.98	1.19	1.22	0.27	19.9	0.39	0.44	0.50	0.60	0.08	11.5
Switzerland	0.39	0.44	0.63	0.85	0.46	10.4	0.08	0.17	0.21	0.36	0.17	6.80
United Kingdom	0.50	0.56	0.71	0.93	0.43	19.0	0.21	0.30	0.39	0.55	0.28	9.33
United States	0.63	1.03	1.22	1.20	0.58	31.4	0.48	0.72	0.79	0.78	0.39	18.4
Developed	**0.64**	**0.73**	**0.89**	**1.04**	**0.40**	**49.5**	**0.25**	**0.33**	**0.40**	**0.51**	**0.23**	**14.9**
Developed ex US	**0.64**	**0.70**	**0.86**	**1.02**	**0.38**	**40.9**	**0.22**	**0.29**	**0.36**	**0.48**	**0.21**	**12.8**

(continued)

Table SIII: Equally-Weighted World Market Betas and Explanatory Power of Ownership Portfolios (continued)

Panel B: Emerging Markets

	World Market Beta						R^2					
	0%	0%-1%	1%-5%	>5%	High-Low	t-stat	0%	0%-1%	1%-5%	>5%	High-Low	t-stat
China	0.26	0.44	0.55	1.01	0.75	24.7	0.01	0.04	0.08	0.35	0.16	7.97
India	1.38	1.31	1.40	1.33	-0.05	-1.02	0.24	0.26	0.30	0.35	0.02	4.15
Korea	0.88	0.96	1.07	1.11	0.23	7.30	0.22	0.24	0.26	0.34	0.11	4.88
Malaysia	0.52	0.57	0.65	0.65	0.13	7.92	0.17	0.19	0.23	0.25	0.06	3.82
Poland	1.26	1.08	1.18	1.20	-0.06	-1.35	0.32	0.29	0.35	0.35	0.03	4.75
South Africa	0.62	0.71	0.94	1.11	0.49	12.5	0.21	0.25	0.32	0.35	0.15	6.23
Thailand	0.55	0.53	0.61	0.73	0.18	12.9	0.36	0.30	0.30	0.39	0.11	7.11
Emerging	**0.74**	**0.76**	**0.90**	**0.95**	**0.21**	**13.0**	**0.18**	**0.19**	**0.24**	**0.28**	**0.07**	**6.66**
All countries	**0.67**	**0.74**	**0.89**	**1.02**	**0.35**	**36.7**	**0.23**	**0.29**	**0.35**	**0.45**	**0.18**	**15.2**

Table SIV: Value-Weighted World Market Betas and Explanatory Power of Ownership Portfolios

The table shows rolling regression results using portfolios of stocks with different degree of institutional ownership. In particular, stocks with at least 30% non-zero trading days in the previous year are sorted into 4 portfolios, depending on whether lagged foreign institutional ownership is equal to 0%, between 0% and 1%, between 1% and 5%, or larger than 5%. Value-weighted portfolios of weekly USD returns are formed by foreign institutional ownership, country and date, requiring at least 10 stocks per country and ownership group on a given date. Moreover, for a given window of weekly observations within rolling 24 months, non-missing observations in each of the four ownership groups are required for each day and country, each country/ownership portfolio has to have at least 30 weekly observations, and there have to be non-missing observations for each ownership group for at least 5 countries. We also form a High-Low ownership portfolio as the difference between the returns of the high foreign ownership portfolio and the low foreign ownership portfolio for each country. For a given window of weekly observations within rolling 24 months, the returns of these portfolios are regressed on an intercept (not reported) and the USD returns of the MSCI world market index: $R_{jt} = \alpha_j + \beta_j R_{WorldMarket,t} + \varepsilon_{jt}$. Results across countries are aggregated using lagged USD country market capitalization as weights. The table shows the world average market beta estimates and R-squares for the respective portfolio, as well as the t-statistics of tests that the average world market beta and R^2, respectively, of the high minus low ownership portfolio is different from zero. T-statistics are corrected for autocorrelation and heteroskedasticity with the Newey-West (1987) procedure with 3 lags. Panel A shows results for Developed Countries, while Panel B shows results for Emerging Markets (based on the MSCI classification as of June 2006). The sample period is 01/01/2000-03/31/2009. Ownership data is from Lionshares, while data on returns for individual stocks and the world market index is from DataStream.

Panel A: Developed Markets

	World Market Beta						R^2					
	0%	0%-1%	1%-5%	>5%	High-Low	t-stat	0%	0%-1%	1%-5%	>5%	High-Low	t-stat
Australia	0.72	0.67	0.84	0.99	0.27	11.5	0.24	0.27	0.35	0.40	0.08	4.21
Canada	0.86	0.76	0.81	1.00	0.14	7.94	0.32	0.45	0.45	0.59	0.04	4.27
Denmark	0.56	0.93	1.03	1.31	0.75	10.6	0.27	0.35	0.53	0.64	0.34	17.5
France	0.41	0.54	1.03	1.17	0.76	19.9	0.16	0.31	0.46	0.67	0.38	10.7
Germany	0.22	0.50	1.09	1.37	1.15	17.6	0.12	0.29	0.50	0.71	0.55	18.2
Hong Kong	0.62	0.85	0.84	1.19	0.57	12.4	0.19	0.25	0.45	0.58	0.18	10.1
Italy	0.66	0.51	0.71	0.66	0.00	-0.03	0.13	0.13	0.25	0.23	0.01	2.48
Japan	0.42	0.54	0.71	0.87	0.45	22.8	0.11	0.17	0.28	0.39	0.22	6.96
Norway	0.72	0.81	1.09	1.13	0.41	5.83	0.21	0.28	0.38	0.35	0.13	4.50
Singapore	1.12	0.83	1.01	0.97	-0.15	-3.82	0.29	0.30	0.34	0.45	0.01	4.04
Sweden	0.96	1.00	1.22	1.44	0.48	7.94	0.40	0.45	0.51	0.64	0.23	6.80
Switzerland	0.24	0.37	0.89	1.48	1.24	13.9	0.05	0.11	0.27	0.49	0.41	12.1
United Kingdom	0.51	0.73	0.95	1.01	0.49	14.1	0.24	0.42	0.57	0.64	0.26	8.06
United States	0.62	1.07	1.00	1.00	0.39	15.2	0.57	0.76	0.85	0.82	0.25	9.11
Developed	**0.56**	**0.86**	**0.95**	**1.03**	**0.47**	**23.0**	**0.39**	**0.55**	**0.65**	**0.69**	**0.26**	**10.9**
Developed ex US	**0.49**	**0.62**	**0.89**	**1.06**	**0.57**	**31.7**	**0.18**	**0.30**	**0.42**	**0.54**	**0.27**	**12.4**

(continued)

Table SIV: Value-Weighted World Market Betas and Explanatory Power of Ownership Portfolios (continued)

Panel B: Emerging Markets

	World Market Beta						R^2					
	0%	0%-1%	1%-5%	>5%	High-Low	t-stat	0%	0%-1%	1%-5%	>5%	High-Low	t-stat
China	0.24	0.43	0.67	0.54	0.30	10.0	0.01	0.04	0.13	0.06	0.03	5.13
India	1.38	1.40	1.42	1.37	-0.01	-0.32	0.25	0.29	0.33	0.40	0.01	4.57
Korea	0.93	1.13	1.14	1.18	0.25	4.32	0.24	0.24	0.30	0.40	0.05	5.43
Malaysia	0.56	0.49	0.59	0.63	0.07	3.71	0.18	0.22	0.28	0.26	0.03	3.17
Poland	1.21	0.95	1.16	1.42	0.21	2.51	0.25	0.31	0.35	0.36	0.06	3.08
South Africa	0.63	0.78	0.99	1.15	0.52	9.13	0.21	0.26	0.29	0.34	0.16	6.18
Thailand	0.56	0.58	0.71	0.96	0.40	26.8	0.34	0.26	0.30	0.41	0.19	15.2
Emerging	**0.80**	**0.87**	**0.94**	**1.00**	**0.20**	**8.38**	**0.19**	**0.21**	**0.25**	**0.29**	**0.05**	**7.86**
All countries	**0.57**	**0.86**	**0.96**	**1.04**	**0.46**	**23.0**	**0.38**	**0.54**	**0.64**	**0.68**	**0.25**	**10.9**

Table SV: Cross-Sectional Regressions with Interactions of Ownership Return and Ownership Change

Panel A of the table shows the results of Fama-MacBeth regressions of stock returns on an intercept, and interactions of the foreign institutional ownership return (Ownership Return) and the change in foreign institutional ownership (Ownership Change) with the level of foreign institutional ownership (Foreign Ownership), as well as lagged ownership returns, lagged changes in ownership, the local market index excluding own stock (Local Market), and global industry index returns excluding the industry in the local market (Industry). Panel B shows the results of Fama-MacBeth regressions of stock returns on an intercept, the foreign institutional ownership return (Ownership Return) and interactions of this variable with the level of foreign institutional ownership (Foreign Ownership), the percentage of foreign sales (Foreign Sales), the percentage of foreign earnings (Foreign Earnings), as well as the change in foreign institutional ownership (Ownership Change), the local market index excluding own stock (Local Market), and global industry index returns excluding the industry in the local market (Industry). The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Ownership data is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream.

Panel A: Interactions with Foreign Ownership

	(1)	(2)	(3)	(4)	(5)
Intercept	0.016	0.015	0.015	0.005	0.003
	(0.86)	(0.60)	(0.83)	(0.34)	(0.19)
Ownership Return	0.290		0.291	0.140	0.148
	(5.88)		(5.99)	(4.81)	(3.44)
Ownership Return*Foreign Ownership		0.575	0.578	0.580	0.521
		(8.77)	(10.7)	(9.95)	(7.83)
Ownership Change	2.172		2.017		1.229
	(4.90)		(4.3)		(3.10)
Ownership Change*Foreign Ownership		0.054			0.127
		(0.17)			(0.48)
Ownership Return (lagged)				-0.011	
				(-0.28)	
Ownership Change (lagged)				-0.048	
				(-1.16)	
Local Market				0.896	0.883
				(16.7)	(16.1)
Industry				0.438	0.439
				(11.5)	(11.3)
Average Adjusted R^2	0.011	0.003	0.013	0.104	0.102
Average Number of Firms per Quarter	5,911	6,297	5,911	5,488	5,902

(continued)

Table SV: Cross-Sectional Regressions with Interactions of Ownership Return and Ownership Change (continued)

Panel B: Interactions with Foreign Business

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.015	0.009	0.008	0.008	0.007	0.003
	(0.83)	(0.43)	(0.40)	(0.41)	(0.32)	(0.20)
Ownership Return	0.291	0.245	0.255	0.232	0.150	0.150
	(5.99)	(4.81)	(4.84)	(4.11)	(2.51)	(3.45)
Ownership Change	0.578	0.673	0.761	0.762	0.660	0.544
	(10.7)	(8.51)	(9.81)	(9.76)	(9.87)	(10.1)
Ownership Return*Foreign Ownership	2.017			1.399	1.630	1.177
	(4.33)			(3.36)	(2.75)	(3.06)
Ownership Return*Foreign Income		0.092			-0.072	
		(1.08)			(-0.91)	
Ownership Return*Foreign Sales			0.254	0.203	0.266	
			(2.15)	(1.82)	(1.68)	
Local Market						0.882
						(16.1)
Industry						0.439
						(11.3)
Average Adjusted R^2	0.013	0.013	0.020	0.022	0.021	0.101
Average Number of Firms per Quarter	5,911	2,042	3,495	3,495	1,992	5,902

Table SVI: Asymmetries in Ownership Returns

Panel A of the table shows the results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), the foreign institutional ownership return (Ownership Return), dummy variables for the stocks with the lowest 20% (or alternatively 5%) Ownership Returns, dummy variables for the stocks with the lowest 20% (or alternatively 5%) outflows interacted with the Ownership Return as explained below, the change in foreign ownership (Ownership Change), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). To construct firm-level outflows, we track investors' outflows by institution and compute an aggregate measure of outflows across all institutional investors in a given stock. We then create a dummy variable for whether a stock's institutional investors are in the bottom 20% (or alternatively 5%) percentile aggregate outflows and create a dummy variable interaction term with the ownership return. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Panel B table shows the results of time-series regressions of stock returns on an intercept (not reported), the local market index excluding own stock (Local Market), negative observations of the local market index excluding own stock (Local Market (negative)), the foreign institutional ownership return (Ownership Return), and negative observations of the foreign institutional ownership return (Ownership Return (negative)). The sample is limited to non-U.S. stocks with foreign ownership above 5% in the beginning of 3 year periods. Results are shown for the subperiods 01/01/2001-12/31/2002, 01/01/2003-12/31/2005 and 01/01/2006-03/31/2009. The regression models are as follows:

$$(1)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \delta_j R_{Ownership,t} + \varepsilon_{jt}$$

$$(2)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \delta_j R_{Ownership,t} + \phi_j R_{OwnershipNegative,t} + \varepsilon_{jt}$$

$$(3)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{LocalMarketNegative,t} + \delta_j R_{Ownership,t} + \phi_j R_{OwnershipNegative,t} + \varepsilon_{jt}$$

The table reports the mean and median coefficients and adjusted R-Squares, as well as the number of firms. The panel also shows the average Mean Squared Error (MSE) following Bekaert, Hodrick and Zhang (2009) for models (1) and (2) as well as the difference in the MSE. Tests of significance of differences in MSE are based on bootstrapped standard errors using 1,000 randomly drawn samples with replacement. Ownership data is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream.

(continued)

Table SVI: Asymmetries in Ownership Returns (continued)

Panel A: Cross-sectional Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ownership Return	0.694	0.372	0.765	0.410	0.691	0.352	0.690	0.388
	(7.22)	(4.39)	(7.21)	(5.06)	(6.09)	(3.72)	(6.63)	(4.56)
Lowest 20% Ownership Return	-0.154	-0.066						
	(-1.42)	(-0.52)						
Lowest 5% Ownership Return			-0.144	0.870				
			(-0.60)	(1.75)				
Lowest 20% flows * Ownership Return					0.014	0.108		
					(0.18)	(1.43)		
Lowest 5% flows * Ownership Return							0.061	0.080
							(0.94)	(1.22)
Ownership Change		0.453		0.458		0.452		0.457
		(6.52)		(6.68)		(6.42)		(6.48)
Local Beta*Local Market		0.762		0.763		0.763		0.765
		(15.28)		(15.25)		(15.20)		(15.30)
World Beta*World Market		0.220		0.213		0.212		0.204
		(0.43)		(0.42)		(0.42)		(0.41)
Industry		0.399		0.400		0.399		0.400
		(10.00)		(10.06)		(10.00)		(9.98)
Average Adjusted R^2	0.017	0.137	0.016	0.137	0.017	0.138	0.016	0.137
Average Number of Firms per Quarter	2,088	1,607	2,088	1,607	2,088	1,607	2,088	1,607

(continued)

Table SVI: Asymmetries in Ownership Returns (continued)

Panel B: Time-series Regressions

		2001Q1-2002Q4			2003Q1-2005Q4			2006Q1-2009Q1		
		(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Local Market	Mean	0.60	0.60	0.61	0.78	0.77	0.72	0.82	0.82	0.82
	Median	0.56	0.55	0.56	0.76	0.76	0.70	0.80	0.80	0.80
Local Market (negative)	Mean			-0.03			0.13			-0.01
	Median			0.00			0.08			0.01
Ownership Return	Mean	0.31	0.21	0.20	0.21	0.17	0.19	0.21	0.21	0.20
	Median	0.21	0.15	0.14	0.13	0.12	0.14	0.14	0.14	0.11
Ownership Return (negative)	Mean		0.20	0.22		0.11	0.04		-0.003	0.02
	Median		0.18	0.19		0.09	0.03		0.003	0.01
Adjusted R^2	Mean	0.18	0.18	0.19	0.35	0.23	0.23	0.35	0.35	0.36
	Median	0.14	0.14	0.14	0.35	0.20	0.21	0.35	0.36	0.36
Number of Firms		233	233	233	3,126	1,408	1,408	3,126	3,126	2,316

	Regression #	MSE
Incremental Contribution of Negative Ownership Return		
Base Model	(1)	0.026
Base Model with Negative Ownership Return	(2)	0.025
Difference		*0.002*
p-value		*<.0001*

Table SVII: Regression of Returns on Habitat

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), the value-weighted change in the other holdings of a stock's owner from last quarter to the current quarter (Habitat), Habitat lagged by one quarter, Habitat lagged by two to four quarters, the change in foreign ownership (Ownership Change), the foreign institutional ownership return (Ownership Return), the foreign institutional ownership return lagged by one quarter, the foreign institutional ownership return lagged by two to four quarters, expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). The sample period is 01/01/2000-03/31/2009. The sample is limited to non-U.S. stocks with at least 30% non-zero trading days in the previous year. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Habitat	0.199		-0.220	-0.011	0.275	-0.134	0.175	-0.492
	(0.42)		(-0.31)	(-0.02)	(0.57)	(-0.26)	(0.51)	(-0.71)
Habitat (lagged)					-0.632			
					(-1.36)			
Habitat (lagged, avg. of 2, 3, 4)					0.727			
					(1.03)			
Ownership Change		0.522	0.562	0.629				
		(5.36)	(4.84)	(4.77)				
Ownership Return						0.597	0.354	0.342
						(5.29)	(5.39)	(2.34)
Ownership Return (lagged)								0.051
								(0.42)
Ownership Return (lagged, avg. of 2, 3, 4)								0.469
								(1.93)
Local Beta*Local Market				0.739			0.792	
				(6.33)			(17.9)	
World Beta*World Market				0.248			0.157	
				(0.48)			(0.33)	
Industry				0.451			0.397	
				(8.91)			(9.42)	
Average Adjusted R^2	0.003	0.007	0.012	0.119	0.008	0.010	0.137	0.017
Average Number of Firms per Quarter	2,207	1,037	998	836	1,914	2,207	1,739	1,914

Table SVIII: Habitat Regressions at the Stock Level

The table shows the results of Fama-MacBeth regressions of changes in holdings on an intercept (not reported), the value-weighted change in the other holdings of a stock's owner from last quarter to the current quarter (Habitat), Habitat lagged by one quarter, Habitat lagged by two to four quarters, fund flows, domestic appreciation, foreign appreciation, the foreign institutional ownership return (Ownership Return), global industry index returns excluding the industry in the local market (Industry), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and investment style returns (Style Return). In the Lionshares database, each fund is classified as one of the following styles: Aggressive, Deep Value, GARP, Growth, Index, Value, or Yield. To construct style returns, we first create fund style returns in each quarter by computing the value weighted return of its holdings. We then construct style index returns as the value-weighted average return of all funds in each style. Second, for each stock, we construct its stock specific style return as the holdings-weighted average of the returns of the styles into which its owners are classified. The sample period is 01/01/2000-03/31/2009. The sample is limited to non-U.S. stocks with at least 30% non-zero trading days in the previous year. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 1 lag. Ownership data and information on investment styles is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Habitat	0.011	0.013	0.009	0.011	0.008	0.009	0.008
	(4.93)	(6.50)	(4.11)	(4.36)	(3.08)	(3.05)	(3.03)
Habitat (lagged)		0.002					
		(1.10)					
Habitat (lagged, avg. of 2, 3, 4)		-0.002					
		(-0.77)					
Flows			0.002		0.001	0.001	0.001
			(2.16)		(0.85)	(0.88)	(0.85)
Domestic Appreciation					0.000	0.000	
					(0.09)	(0.05)	
Foreign Appreciation					0.000	0.000	0.000
					(0.67)	(0.45)	(0.45)
Ownership Return				-0.001			
				(-0.43)			
Industry					0.004	0.004	0.004
					(0.88)	(0.84)	(0.88)
Local Beta*Local Market					0.007	0.005	0.006
					(1.26)	(0.77)	(1.32)
World Beta*World Market					0.007	0.007	0.007
					(0.52)	(0.55)	(0.51)
Style Return						0.075	
						(1.51)	
Average Adjusted R^2	0.013	0.022	0.064	0.016	0.098	0.099	0.085
Average Number of Firms per Quarter	998	910	998	998	836	836	836

Figure S1: Foreign Ownership Regression Coefficients Over Time

The figure shows the average coefficients of Fama-MacBeth cross-sectional regressions. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. Each week, a cross sectional regression is run over all firms in the sample. We then take the rolling average of these coefficients in the regressions over the past 26 weeks. The figure shows the moving average. Shaded areas are NBER recession periods. Stock returns are regressed on an intercept (not reported), the foreign institutional ownership return, global industry index returns excluding the industry in the local market (Industry ex loc), the local market index return (Local Market) and world market index returns (World). Ownership data is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream. Data on recession periods is from the NBER (http://www.nber.org/cycles/main.html).

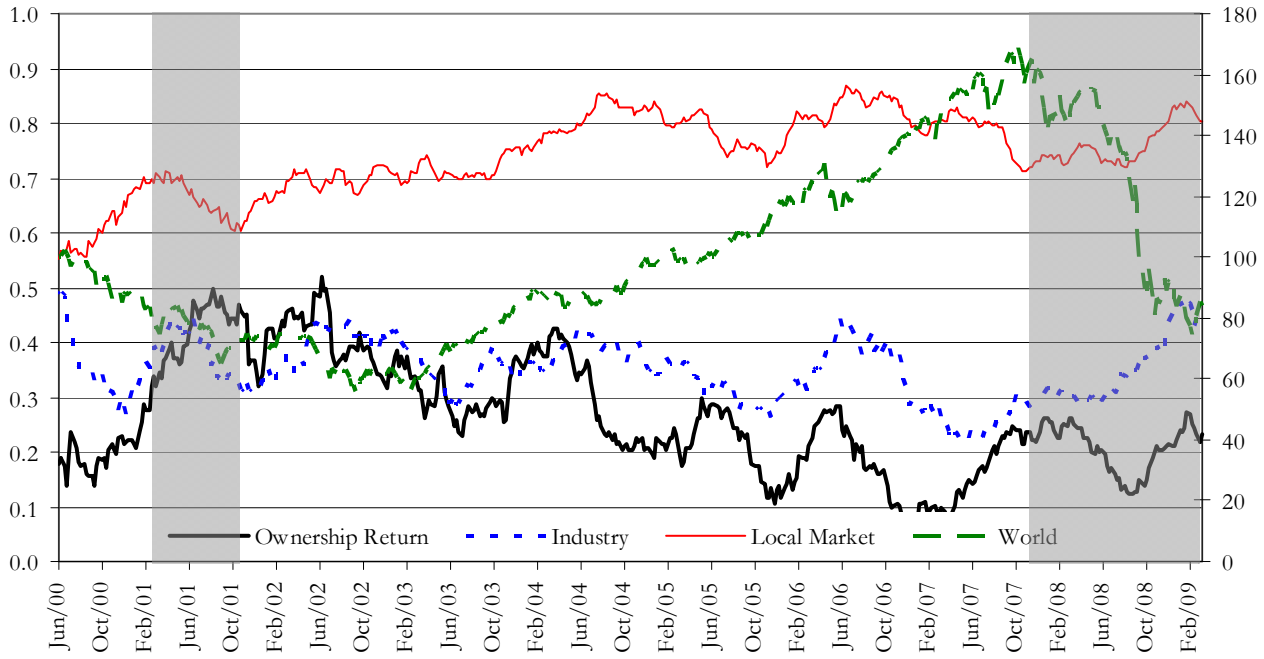


Figure S2: Foreign Ownership Regression Coefficients Over Time

The figure shows the average coefficients of Fama-MacBeth cross-sectional regressions. Each quarter, a cross sectional regression is run over all firms in the sample. We then take the rolling average of these coefficients in the regressions over the past 26 weeks. The figure shows the moving average. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. In Panel A, stock returns are regressed on an intercept (not shown), the foreign institutional ownership return (RtO_F) and changes in foreign institutional ownership (Change in FO). In Panel B, stock returns are regressed on an intercept (not shown), the foreign institutional ownership return (RtO_F), changes in foreign institutional ownership (Change in FO), and global industry index returns excluding the industry in the local market (Industry) (Industry ex loc). Ownership data is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream.

Panel A: Coefficients on Foreign Ownership Return and Change in Foreign Ownership

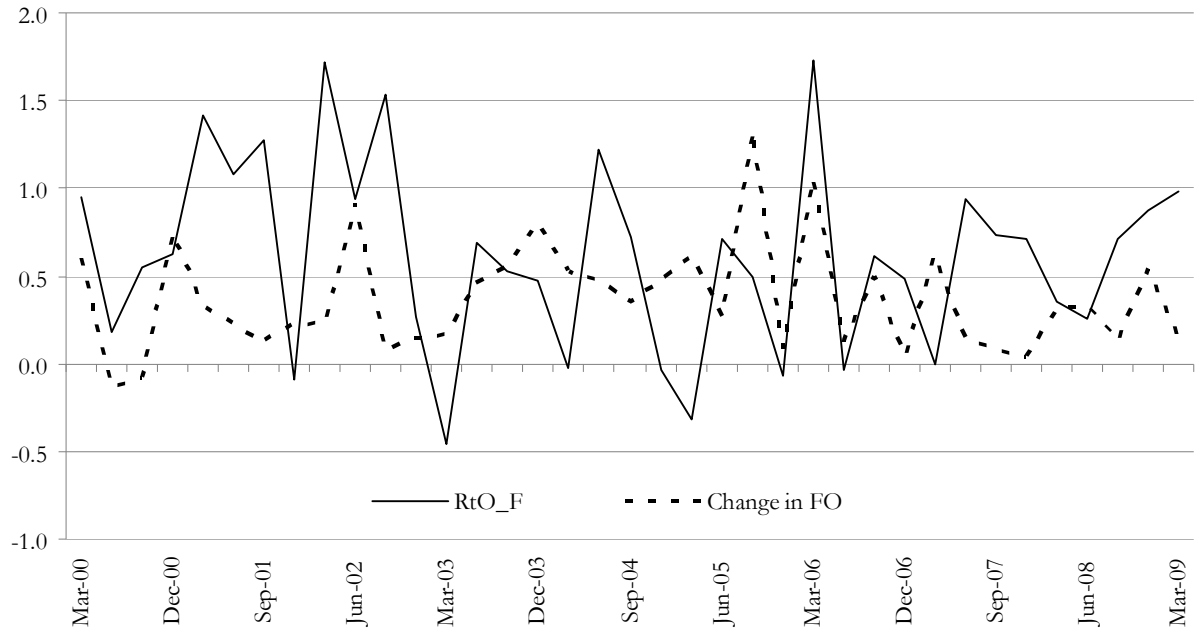


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Figure S2: Foreign Ownership Regression Coefficients Over Time (continued)

Panel B: Coefficients on Foreign Ownership Return, Change in Foreign Ownership and Industry Returns

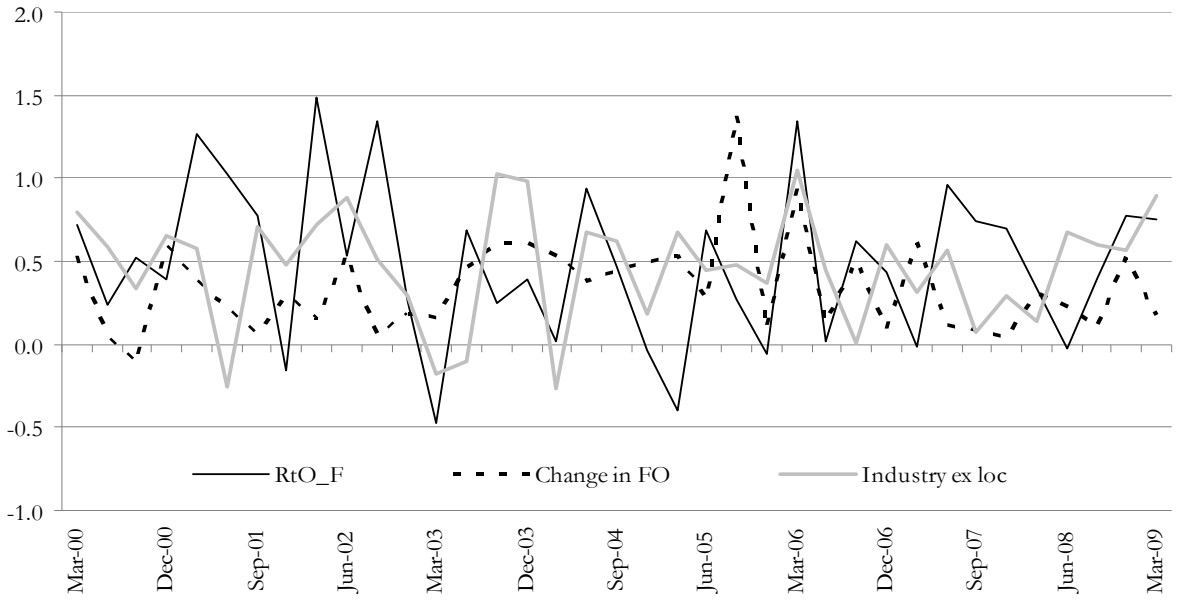
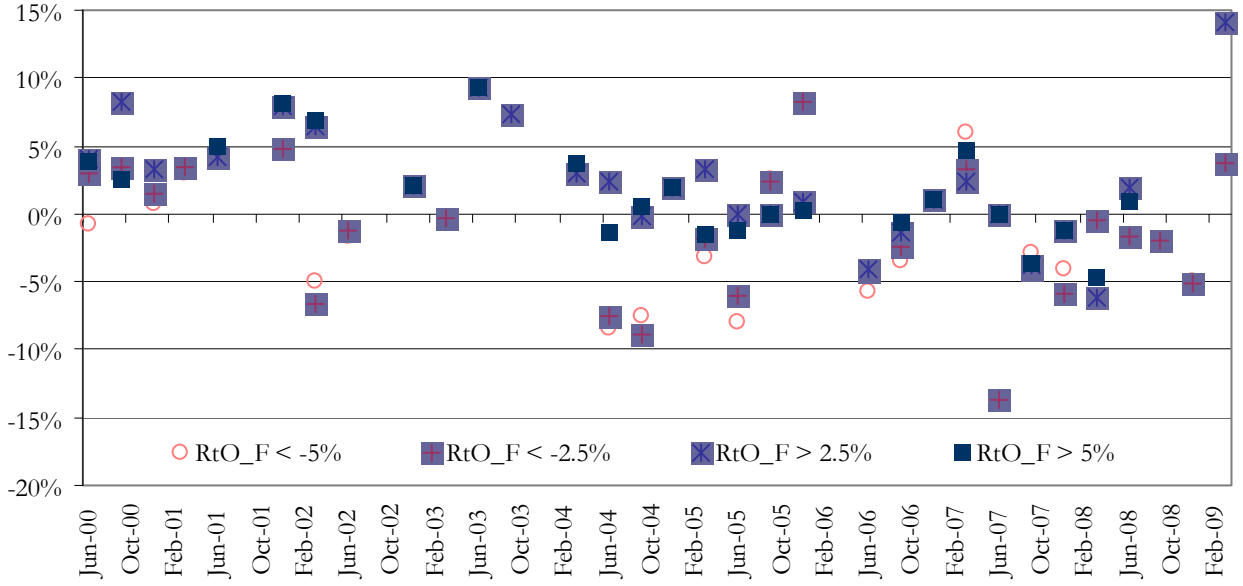


Figure S3: Performance of Stocks by Ownership Return

The figure shows the stock return performance of stocks as a function of their ownership return. Stocks with at least 30% non-zero trading days in the previous year as well as at least 2.5% (5%) lagged foreign institutional ownership, respectively, are sorted into high and low ownership return groups depending on whether their foreign ownership return (RO) in the period is above 2.5% (5%) ("High") or below -2.5% (-5%) ("Low"). For stocks in each group, we calculate the average USD return in excess of the local market index excluding the respective stock. Each ownership return portfolio is required to have at least 10 stocks on a given date. The figure shows the excess returns of the high and low ownership return portfolios. Results in Panel A are based on observations with at least 2.5% lagged foreign institutional ownership, while results in Panel B are based on observations with at least 5% lagged foreign institutional ownership. The sample period is 01/01/2000-03/31/2009. Ownership data is from Lionshares, while data on returns for individual stocks and market indices is from DataStream.

Panel A: Excess Returns of High and Low Ownership Return (RO) Portfolios 2.5% Lagged Ownership



Panel B: Excess Returns of High and Low Ownership Return (RO) Portfolios 5% Lagged Ownership

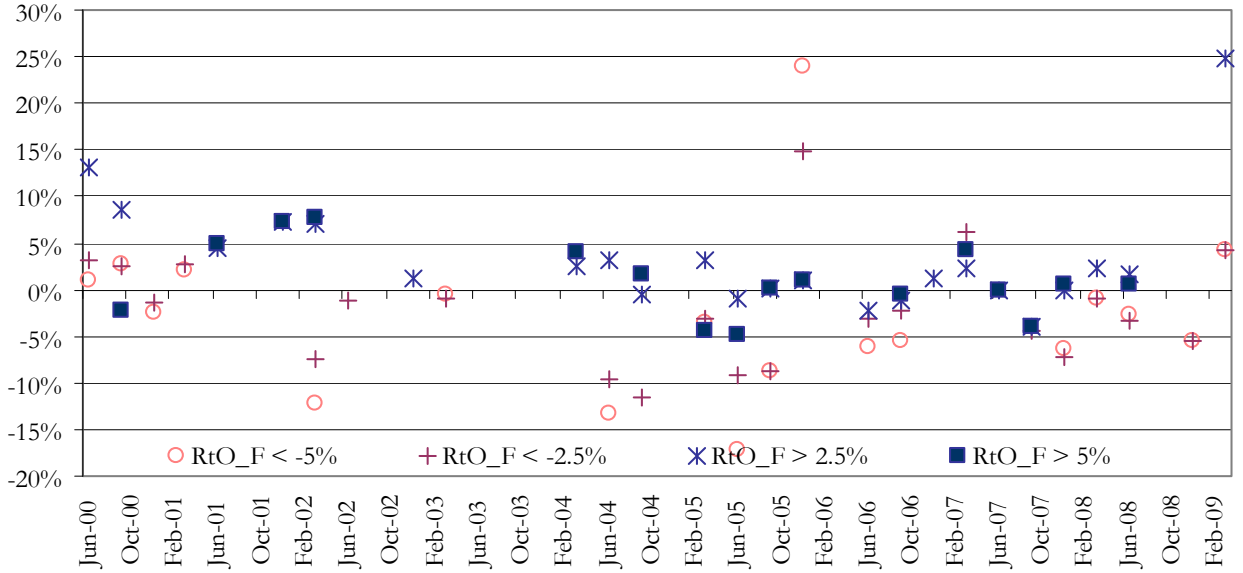


Figure S4: Ownership Level and Portfolio Diversification

The figure shows the effect of global, country and industry portfolio diversification for alternative levels of foreign institutional ownership (0%, 0%-1%, 1%-5%, >5%) measured at the beginning of a three year period. The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year. The sample period is 01/01/2000-03/31/2009. Firms are required to have at least 30 non-missing return observations. For each country, year and institutional ownership groups, the number of firms is restricted to the smallest number of firms across institutional ownership groups to have the same number of stocks in each institutional ownership group. For each year, the average variance and covariance is calculated for alternatively global, pure industry or pure country diversification, as in Griffin and Karolyi (1998), and subsequently the average across years is calculated. Panel A shows global portfolio diversification, while Panel B shows country portfolio diversification, and Panel C shows industry portfolio diversification. Ownership data is from Lionshares, while data on returns for individual stocks is from DataStream.

Panel A: Global Portfolio Diversification

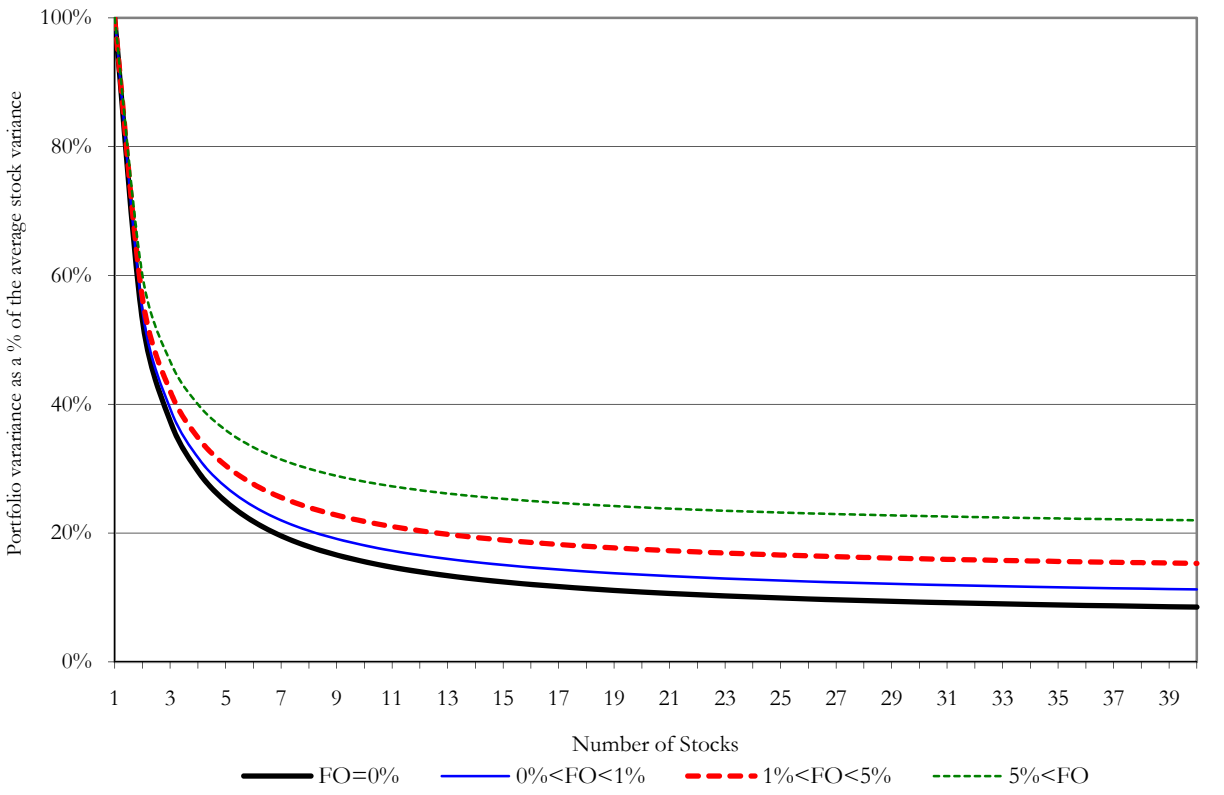


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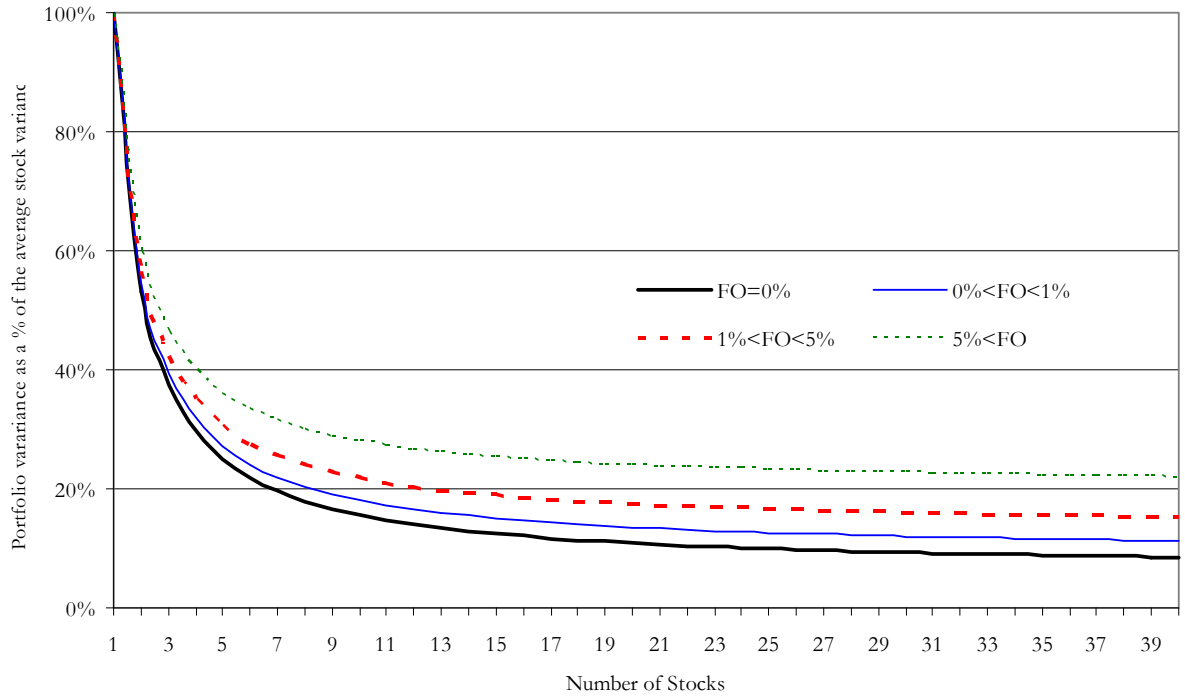
Figure S4: Ownership Level and Portfolio Diversification (continued)

Panel B: Country Portfolio Diversification



Panel C: Industry Portfolio Diversification

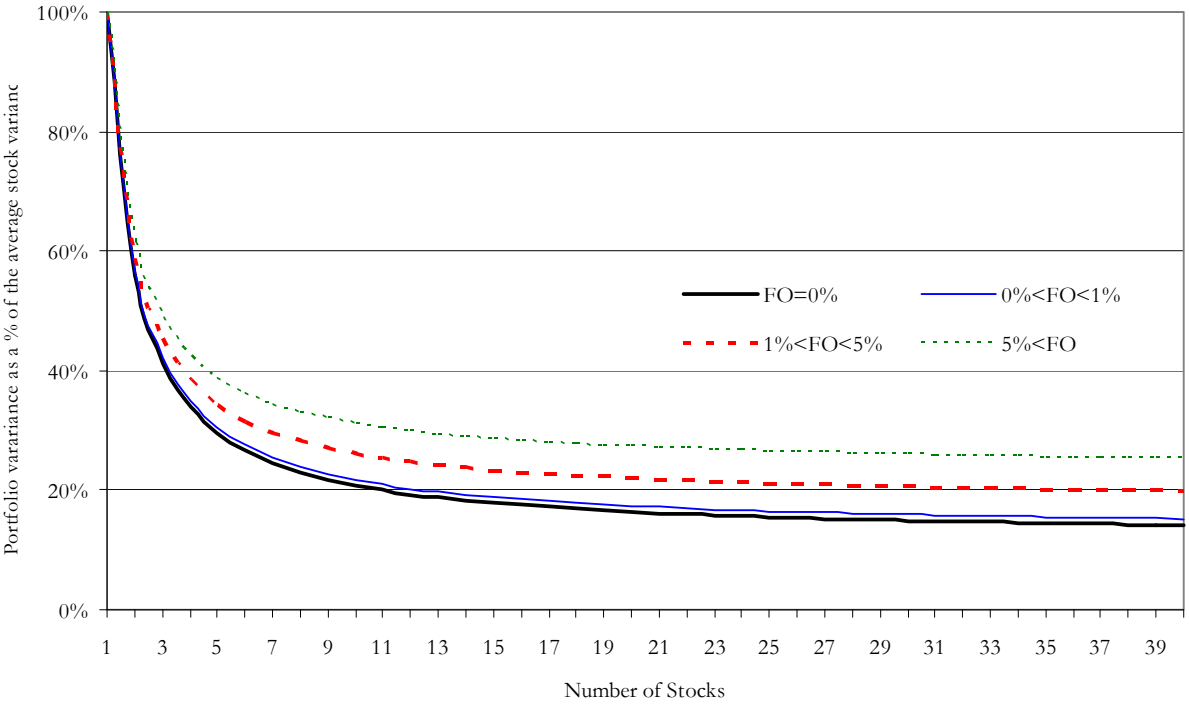
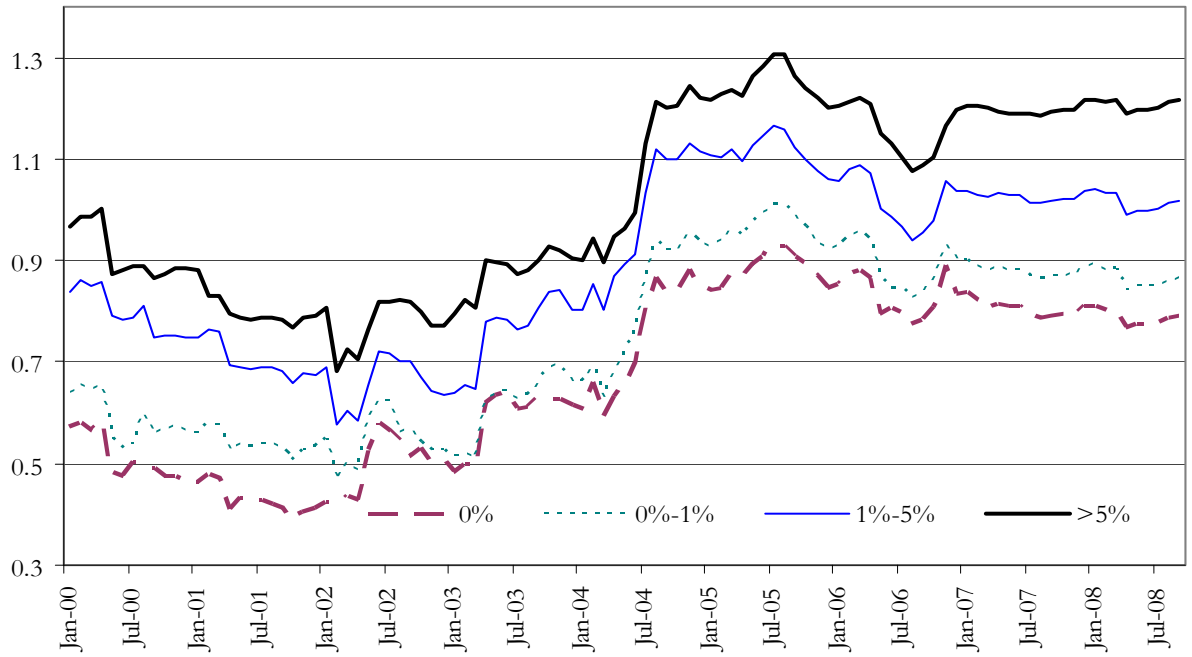


Figure S5: Equally-Weighted Market Sensitivity and Explanatory Power of Ownership Portfolios

The figure shows rolling regression results using portfolios of stocks with different degrees of institutional ownership. In particular, stocks with at least 30% non-zero trading days in the previous year are sorted into 4 portfolios, depending on whether lagged foreign institutional ownership is equal to 0%, between 0% and 1%, between 1% and 5%, or larger than 5%. Equally-weighted portfolios of weekly USD returns are formed by foreign institutional ownership, country and date, requiring at least 10 stocks per country and ownership group on a given date. Moreover, for a given window of weekly observations within rolling 24 months, non-missing observations in each of the four ownership groups are required for each day and country, each country/ownership portfolio has to have at least 30 weekly observations, and there have to be non-missing observations for each ownership group for at least 5 countries. For a given window of weekly observations within rolling 24 months over the period is 01/01/2000-03/31/2009, the returns of these portfolios are regressed on an intercept and the USD returns of the MSCI world market index: $R_{jt} = \alpha_j + \beta_j R_{WorldMarket,t} + \varepsilon_{jt}$ Results across countries are aggregated using equal weights. Panel A shows the time-series of the average world market betas, while Panel B shows the time-series of the average R^2 for the four ownership portfolios. Figure C shows rolling regression results using iShares. For a given window of daily observations within rolling 24 months over the period 1/1996-6/2009, the returns of all iShares on CRSP are regressed on the value-weighted U.S. market index. Results across iShares are aggregated using equal weights. The figure shows the time-series of the average of market betas and R^2. Ownership data is from Lionshares, while data on returns for individual stocks and the world market index is from DataStream. Data on iShares is from CRSP.

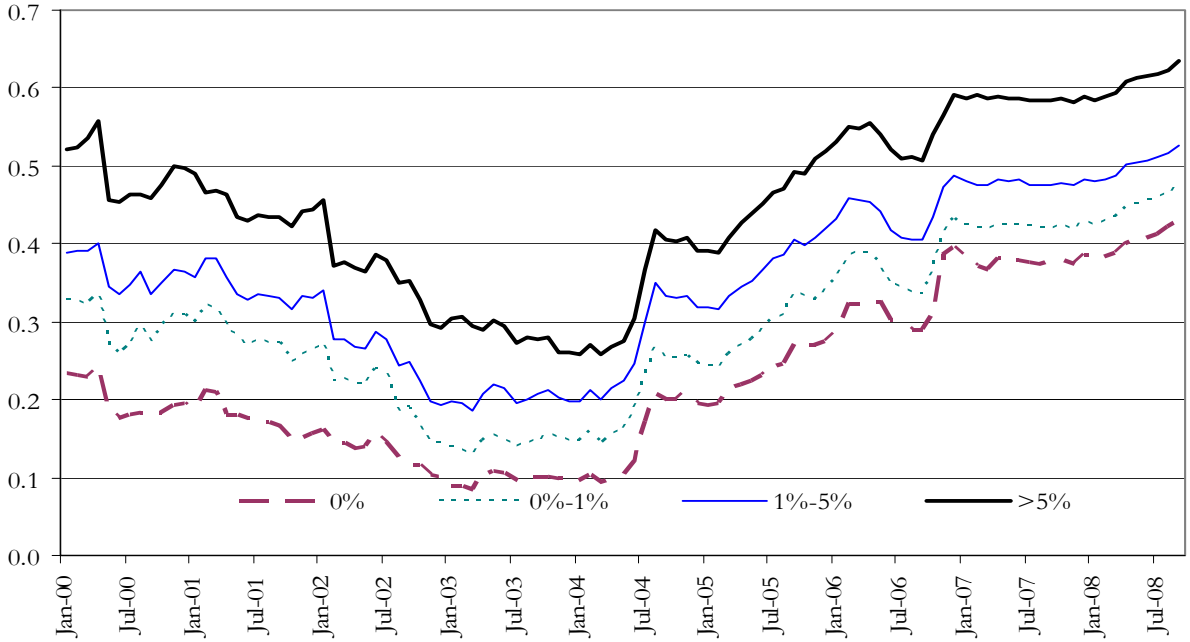
Panel A: Equally-Weighted World Market Betas



(continued)

Figure S5: Equally-Weighted Market Sensitivity and Explanatory Power of Ownership Portfolios (continued)

Panel B: Equally-Weighted R^2



Panel C: U.S. Market Sensitivity and Explanatory Power of Ownership Portfolios of iShares

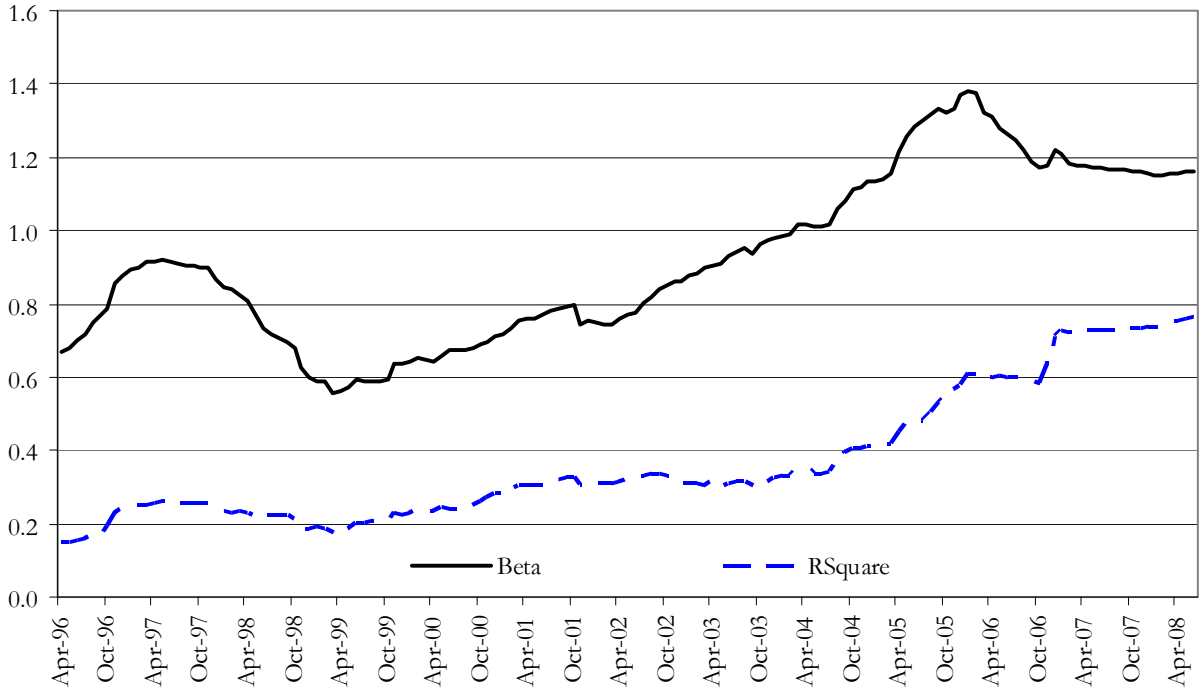
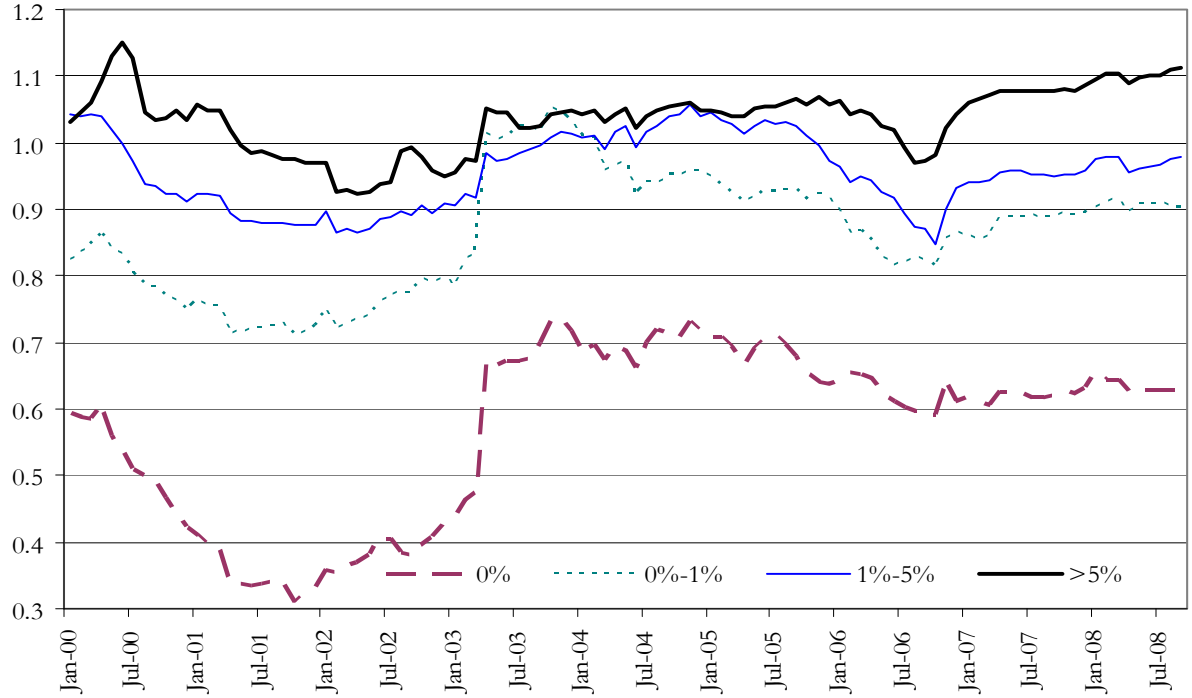


Figure S6: Value-Weighted Market Sensitivity and Explanatory Power of Ownership Portfolios

The figure shows rolling regression results using portfolios of stocks with different degree of institutional ownership. In particular, stocks with at least 30% non-zero trading days in the previous year are sorted into 4 portfolios, depending on whether lagged foreign institutional ownership is equal to 0%, between 0% and 1%, between 1% and 5%, or larger than 5%. Value-weighted portfolios of weekly USD returns are formed by foreign institutional ownership, country and date, requiring at least 10 stocks per country and ownership group on a given date. Moreover, for a given window of weekly observations within rolling 24 months, non-missing observations in each of the four ownership groups are required for each day and country, each country/ownership portfolio has to have at least 30 weekly observations, and there have to be non-missing observations for each ownership group for at least 5 countries. For a given window of weekly observations within rolling 24 months over the period is 01/01/2000-03/31/2009, the returns of these portfolios are regressed on an intercept and the USD returns of the MSCI world market index: $R_{jt} = \alpha_j + \beta_j R_{WorldMarket,t} + \varepsilon_{jt}$ Results across countries are aggregated using lagged USD country market capitalization as weights. Panel A shows the time-series of the average world market betas, while Panel B shows the time-series of the average R^2 for the four ownership portfolios. Ownership data is from Lionshares, while data on returns and market capitalization for individual stocks and the world market index is from DataStream.

Panel A: Value-weighted World Market Betas



(continued)

Figure S6: Value-Weighted Market Sensitivity and Explanatory Power of Ownership Portfolios (continued)

Panel B: Value-weighted R-Squares