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HOW IMPORTANT ARE FOREIGN OWNERSHIP LINKAGES FOR INTERNATIONAL STOCK RETURNS?

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HKIMR

How Important are Foreign Ownership Linkages for International Stock Returns?

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Abstract

We develop a simple measure of international ownership linkages and show that this measure is of similar importance as the traditional effects coming from country and industry fundamentals. International ownership linkages are not explained by omitted country/industry variations, wealth effects or other explanations like liquidity, investment style, or fund flows. We find that ownership linkages are a summary measure of investment locale that links investor capital around the world. Beyond the level of foreign ownership, the specific ownership composition of a stock is an important facet of international equity returns – a finding which has important implications for diversification.

What drives stock price variation in international securities? A large literature debates the relative importance of country and industry forces in affecting variation in stock returns and international diversification. 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 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) 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)].[1] Jotikasthira, Lundblad, and Ramadorai (2011) find compelling evidence that domestic flows can dislocate emerging market returns and induce higher correlations with developed markets. In a domestic context, Anton and Polk (2011) show that covariation between stock pairs is related to their common ownership. Bekaert and Wang's (2009) 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.

We add to the literature by: a) providing a new and intuitive measure to capture stock linkages, b) documenting the importance of foreign ownership on a large and systematic scale, and c) decomposing and empirically analyzing the channels through which ownership matters. By proposing a specific channel of foreign ownership linkage and showing that this channel has similar economic importance as stock return variations due to country and industry effects, our paper provides important evidence on how global investment connect stocks.

In order to capture a stock'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 of 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.[2] Using detailed holding data from the Lionshares

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[1]   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), Ferreira and Matos (2008 and 2009), Covrig, Fontaine, Jimenez-Garces, and Seasholes (2009), and Hau and Rey (2009).

[2]   The Samsung example is illustrated in Appendix A. We initially 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 the interpretation more difficult. Nevertheless, we also show similar effects for domestic ownership returns.

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 more than 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. 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. Here we show that the ownership return is important even beyond the inclusion of local and global versions of size, value, and momentum factors. To see if the ownership return is capturing some unobserved preferences of institutions for stocks in certain countries and industries, we calculate a 'non-ownership return' where each stock in a stock's ownership return is replaced with a stock with matching country, industry, and size characteristics, but with no ownership linkage. This 'non-ownership return' is completely unrelated to stock returns indicating that ownership is not capturing some unobserved country/industry fundamentals. The ownership return effects are also not explained by stock liquidity levels, the level of foreign ownership, even the change of ownership itself, nor market integration channels.[3] We use a quasi-natural experiment, which is a shift in ownership composition around an American Depository Receipt (ADR) or Global Depository Receipt (GDR) listing date. Consistent with the ownership linkage relation being driven by the owners of the stock rather than an omitted firm characteristic, we 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 additional explanations for why ownership returns matter. Our primary contenders are wealth effects and investor habitat. Inconsistent with wealth effects, we find that institutions are no more likely to invest in a stock when their other stocks' returns increase. Inconsistent with some related time-specific contagion explanations, we find no evidence of asymmetry around negative returns or the ownership return effect clustering in times of crisis. Bekaert, Harvey, and Ng (2005) define contagion as the correlation in excess of what one would expect from common global factors. From this more general perspective, our findings of return comovement from ownership and beyond common factors are consistent with contagion.

With an investor habitat, investors move capital in and out of related securities in a correlated fashion. Consistent with this explanation, we find that stocks with common ownership have strong related changes in institutional ownership. Additionally, we classify stocks into low, medium, and high ownership linkage and find that ownership changes in a stock are most closely related to stocks with

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[3]   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 can then be captured by a world index that is tilted towards stocks with high foreign ownership but this index has no effect on the ownership return.

the most similar ownership habitat. Return covariation is also strongest for stocks with the most common ownership habitat. We further explore the implication of a stock's habitat by regressing returns on a decomposition of the change in ownership where we are also able to separate out the effects of flows. We find that the return and ownership linkages are clearly distinct from investment flows. The value fluctuation of a stockholder's holdings in other securities in the investment locale bears the largest relation to returns. Although most of the paper focuses on foreign ownership, we find that the domestic return locale is of slightly larger importance than foreign ownership.

We briefly examine the practical diversification implications of our findings. Institutions can increase diversification by avoiding stocks with high ownership return linkages. If a fund adds a security with a high ownership linkage to its portfolio, the average covariation of that security with the fund portfolio is 77 percent higher than if the fund were to add a security with a low ownership linkage. While the level of foreign ownership is also important, the magnitude of ownership linkages is economically larger. Since investors hoping to obtain diversification cannot easily escape the effects of other foreign investors in a firm's investment habitat, investment locales transcend country and industry boundaries.

Section 1 briefly introduces our statistical measure and relates it to relevant theoretical and empirical literature. Section 2 describes the ownership data, followed by our main cross-sectional and time-series findings in Section 3. Section 4 examines more mechanical explanations for these findings and Section 5 examines the possible explanations of investor habitat and wealth effects. Section 6 describes our ownership decomposition, while Section 7 discusses diversification implications. Our conclusions are in Section 8.

1. 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.

1.1 Country/Industry Variations and the Ownership Return

The international finance literature most commonly decomposes realized return variation into common country and industry variations [Roll (1992), Heston and Rouwenhorst (1994)]. Returns of stock *i* can be written as follows:[4]

$$R_{i,t} = \alpha + \beta_C R_{C,t} + \beta_I R_{I,t} + e_{i,t} \tag{1}$$

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[4]   Other papers analyzing country and industry sources of variation include Griffin and Karolyi (1998), Carrieri, Errunza, and Sarkissian (2004), and Bekaert, Hodrick, and Zhang (2009). Papers analyzing the importance of exchange rates in determining return covariation (like Jorion (1990) and Ng (2004)) generally find only a small role for exchange rates.

where $R_{C,t}$ is stock i's country market return in period t, and $R_{I,t}$ is the industry return for stock i. Note that unlike Heston and Rouwenhorst (1994), this framework allows beta to differ from one, which is recommended by Bekaert, Hodrick, and Zhang (2009). The country component can also be refined into global and local components as follows:[5]

$$R_i = \alpha + \beta_G R_G + \beta_L R_L + \beta_I R_I + e_i \tag{2}$$

where R_G is the global market return and R_L is the local market return. All returns and errors are measured at time t.

If foreign investors facilitate the globalization of a security, stocks owned by foreign institutions have higher global betas (β_G) and lower local betas (β_L). Under this scenario the level of foreign ownership matters, but the specific composition of ownership is unimportant.[6] If the specific holders of a security influence the price of the stock, then we would expect to see stocks held by common owners as an important source of covariation. In that case, the ownership return is a part of the determinants of a stock's return in the following equation:

$$R_i = \alpha + \beta_G R_G + \beta_L R_L + \beta_I R_I + \beta_O R_{i,O} + e_i \tag{3}$$

where $R_{i,O}$ is the ownership return which is specific for each stock i.[7] To capture the combined effect of all ownership-linked securities, the ownership return is the value-weighted average return of the holdings of a stock's owners. $R_{i,O}$ measures the return of stock i's holders' stock holdings.

$$R_{i,O} = \sum_{n=1}^{N_i} W_{i,n} \left(\sum_{k=1}^{K_i} V_{k,n} R_k \right) \tag{4}$$

where n=1 to N_i denote the institutions that have ownership holdings of stock i. k=1 to K_i are the stocks held by these institutions. $W_{i,n}$ 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 simplicity, we suppress the time subscript t, but it should be understood that the

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[5]   We examine covariation of realized returns. In the international asset pricing literature, local and global factors depend on the degree of integration/segmentation [Stulz (1981a), Errunza and Losq (1985)]. This literature is surveyed in Bekaert and Harvey (2003) and Karolyi and Stulz (2003). Recently, Bekaert, Harvey, Lunblad, and Siegel (2011) measure the degree of international pricing in terms of valuation ratios.

[6]   In a related fashion, the model of Dumas, Lewis and Osambela (2011) predicts 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, again the level of foreign ownership is important as it proxies for the familiarity of foreign investors with the stock.

[7]   It is important to note that since the ownership return is unique for each stock, it is not a factor. To avoid introducing a bias by regressing a stock on itself, our local market indices also exclude the stock of examination and are hence technically stock specific. For consistency, the value-weighted global industry return only includes stocks in a given industry outside of the country of examination.

weights are as of the end of the last quarter, while the returns are over the course of the current period.

For empirical analysis, it can be advantageous to divide the ownership returns into a part due to foreign stocks that investors hold, and a part due to domestic stocks. Note that we identify foreign and domestic distinction relative to the country of incorporation of stock *i* and not the location of institution *n* owning the stock. Since the foreign ownership return comes from a diverse set of countries, it leads to clear identification, whereas a domestic ownership return can be highly correlated with local market returns. Hence, we first focus on foreign ownership returns in most of the paper but for robustness also examine the domestic ownership return. An example of the ownership return calculation for Samsung is discussed and illustrated in Appendix A.

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

$$\sum_{n=1}^{N_i} W_{i,n} = 1 \quad \text{and} \quad \sum_{k=1}^{K_i} V_{k,n} = 1 . \tag{5}$$

This makes it easier to interpret our results 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 the level of foreign institutional ownership. We expect (and confirm in Table S1) that the ownership return is more important for stocks where the holders represent a large fraction of the shares. Therefore, for our main results, we examine securities with more than five percent foreign ownership. The ownership return can be constructed for higher frequencies than the quarterly changes in ownership by combining the previous quarter's holdings weights with the updated weekly and monthly stock returns.[8]

1.2 Hypotheses for the Ownership Return

The ownership return fits closely with a few different explanations in the literature. We consider whether ownership return is acting as a proxy for omitted country/industry variation, wealth effects, or investor habitat.

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[8] It is interesting to think of the possible role played by measurement error. The returns not involving ownership in equation (3) simply involve weighted averages of global, country, and industry returns, and hence, are easily measured. The ownership return depends on knowing ownership, which is often incompletely measured or updated infrequently. Such effect will lead to more error in estimating foreign ownership returns, decreasing the power of our tests and biasing results against the significance of the ownership return.

1.2.1   Omitted Country/Industry Variation

As shown in equation (3), global, local, and industry factors are separately examined. Additionally, we will perform several checks to examine if an empirical regression like equation (3) is properly controlling for these effects. Most notably, institutions may purchase stocks with similar country and industry characteristics and the ownership return could be a more precise proxy of these characteristics. We examine this hypothesis by creating a non-ownership return, which has identical country and industry composition as the ownership return but from stocks with no common ownership connection. Additionally, we perform robustness checks based upon different market and industry return definitions.

1.2.2   Habitat Investing

Building on the empirical evidence in papers like Froot and Dabora (1999), Barberis, Shleifer, and Wurgler (2005) formalize 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.[9] Kumar, Page, and Spalt (2010) provide evidence for the habitat view of comovement by documenting correlated trading and comovement among stocks with similar geography, price ranges, and lottery features.[10]

In our setting, heterogeneous global investors with different market perceptions could influence stock prices as their holdings and preferences for stocks in particular investment locales oscillate in ways that cut across national borders and industries. For each stock, the ownership return could be thought of as the weighted average of the actions of the investors in all related stocks. If there truly exists a common investment locale or 'habitat' for groups of stocks, institutions should move capital in and out of these habitats in a similar fashion. The changes in ownership for a stock i should be related to the value-weighted holding changes in stocks held by the firm's owners. Moreover, we also examine habitat by grouping stocks into those with low, medium, and high ownership linkages to stock i and identifying where the covariation of ownership changes as well as returns is strongest.

In a related vein, 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 examine this category based view, we use detailed size, value, and momentum proxies both at the local and global level.

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[9]   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 an investors' habitat of stocks is determined by certain intertemporal hedging properties.

[10]   Pirinsky and Wang (2004), Greenwood (2005 and 2008), Sun (2008), and Green and Hwang (2009) also find evidence of different channels of direct or indirect ownership changes influencing comovement.

Coval and Stafford (2007) find that common flows in or out of a stock can cause long-term price dislocations. Jotikasthira, Lundblad, and Ramadorai (2011) find that mutual fund flows from domestic markets can drive emerging market returns. Greenwood and Thesmar (2011) find that U.S. mutual funds with highly correlated fund flows exhibit higher volatility and correlations.[11] To separate out this related flow channel, and to examine which capital movements drive the common investor habitat, we decompose the change in institutional ownership into various components, including institutional fund flow.

1.2.3 Wealth Effects

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.[12] We will test this basic feature of portfolio rebalancing by examining if owners experiencing an increase in wealth through high returns on other securities increase their holdings in a stock in the form of a wealth effect.

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, she has lower wealth and is more likely to sell her foreign holdings. However, the investor is also more averse to the strategic risk that other international investors will be in a similar position and want to sell their international holdings. This generates international comovement in returns of assets that are held by the same investors, even without common fundamentals.[13] Thus, in addition to basic portfolio rebalancing mechanisms, some of these models call for asymmetries surrounding negative returns and particularly in periods of crisis.

2.   Data and Methodology

2.1   Data

Our international institutional holdings are from Factset/Lionshares. Ferreira and Matos (2008) is the first academic paper to use the annual institutional filings from this data source. We follow many of their data cleaning procedures augmented with other standard checks for 13f filings as described in

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[11]   Frazzini and Lamont (2008) and Lou (2011) find domestic evidence of flows moving prices. Ellul, Jotikasthira, and Lundblad (2011) find fire sales in the bond market. Hau and Lai (2011) find evidence of fire sales pressuring prices through examining losses due to financial firms during the financial crisis. Calomiris, Love, and Peria (2011) argue that negative global equity returns during the financial crisis are related to price pressure as proxied for by previous turnover.

[12]   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).

[13]   Calvo (1999) finds that leveraged losses in one market will cause forced liquidations in another, and Kyle and Xiong (2001) propose that when convergence traders suffer trading losses they have a reduced capacity for risk bearing and sell positions in both countries. Such effects are 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 (1999), Kodres and Pritsker (2002), and Yuan (2005)]. Empirically, Choe, Kho, and Stulz (1999), Bae, Karolyi, and Stulz (2003), and Boyer, Kumagai, and Yuan (2006), among others, examine contagion.

Supplemental Appendix A. Like Ferreira and Matos (2008), we obtain the historical Lionshares database that is free from survivorship bias. Factset/Lionshares do 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 capital originating outside of the United States. Wei (2011) finds that the United States and the United Kingdom account for slightly over 70 percent of Lionshares' 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.

Appendix Table A1 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. Appendix Table A2 details the number of institutions and mutual funds in the database through time and shows that the sample grows rapidly from 2001 to 2005.

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 the local currency and convert it into U.S. dollars using exchange rates from DataStream. We use filters for common equity as well as reversion and extreme return filters to smooth potential data errors. For ADRs and GDRs, 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. Further details are provided in Supplemental Appendix A. To ensure that our results are not driven by infrequent trading, we require stocks to exhibit trading for at least 30 percent in the previous year.[14]

Table 1 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. We use common U.S. breakpoints based on U.S. dollar market capitalization. Panel A is for developed markets, and Panel B is for developing (emerging) markets. 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 384 to 760 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 U.S.

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[14]   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's (1999) transactions costs measure, but is less subject to estimation problems. Higher trading filters of 50 and 75 percent yield similar results (as shown in Panel B of Table S4).

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 15.0 percent foreign ownership in the largest size quintile, and 2.6 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 20.1 percent of shares held by foreigners in the largest quintile, and 2.6 percent in the smallest. Our main tests focus on stocks with more than five percent foreign ownership. Table 1 indicates that this sample is tilted toward large stocks but still capture many stocks in the bottom three size bins.

3. Cross-Sectional and Time-Series Importance of Ownership Returns

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

3.1 Cross-Sectional Regressions

Table 2 reports results from cross-sectional Fama-MacBeth (1973) regressions for all non-U.S. stocks with more than five percent foreign ownership for weekly, monthly, and quarterly frequencies. In the 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. In order to control for the expected local and global cost of capital changes due to both returns and betas, we use prior estimated betas times the contemporaneous local or global stock return movement.[15] After controlling for the local and global cost of capital, and the industry return, a one percent increase in the ownership return is associated with a 0.224 return increase. The comparable specification 2 shows a stronger ownership effect (0.338) at the monthly frequency, and an even stronger coefficient (0.391) at the quarterly frequency. Interestingly, these coefficients are nearly as large as those of the industry return at the weekly (0.256), monthly (0.344), and quarterly (0.405) frequencies.

In specification 3, we include the lagged foreign ownership return. At the weekly frequency the lags are significant, especially in the prior week. These lag effects are potentially consistent with portfolio rebalancing but the effects are small and dissipate rather quickly. We imagine that they would be difficult to trade on in real time. Lag 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.

We also examine stocks with low (0-1 percent), medium (1-5 percent), and high (greater than 5 percent) foreign ownership in Panel A of Supplemental Table S1. The coefficients and *t*-statistics are increasing in the level of foreign ownership. In the supplemental results (Panel A of Table S2), for

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[15]   We later perform other risk adjustments as well.

stocks with foreign ownership greater than five percent, we also estimate panel regressions with time fixed effects and standard errors clustered by firm to account for firm and time effects. 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. 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.[16]

3.2   Time-Series Regression

We now turn to examining the explanatory power of the ownership returns using the time-series approach of Bekaert, Hodrick, and Zhang (2009). The approach is advantageous in that we can control for multiple forms of risk in the standard time-series regression framework. 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. For stocks with more than five percent foreign ownership, Panels A-C of Table 3 shows the regressions estimates over three sub-periods with weekly data.

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).[17] 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, over and 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.

We also wish to control for variation due to common styles such as value and growth. To do so we construct the weekly regional and global value, size and momentum factors (i.e. HML, SMB and WML) following Bekaert, Hodrick and Zhang (2009) and Fama and French (2011).[18] Regression (9) shows that the ownership return coefficients are still of large magnitude with these alternative controls,

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[16]   The ownership return factor will be inaccurate to the extent that institutions sell off their stocks over the quarter. In Supplemental Figure S1 we show weekly ownership return coefficients averaged over the course of quarters, and find that the ownership return coefficients reduce only very slightly at the end of the quarter, and are generally quite stable.

[17]   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).

[18]   We include both local and global factors to give maximum chance to the factor model. Similar to Griffin (2002), Fama and French (2011) find that the local factors perform better in time-series tests. Karolyi and Wu (2011) show that global factors are more important with globally traded ADR/GDR assets.

indicating that the ownership return effect is not simply due to the common movement of global style or factors.

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.[19] 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 style factors.

4.   Does the Ownership Return Simply Proxy for Missing Economic Characteristics?

Here we examine possible explanations for whether the ownership return proxies for an omitted stock characteristic.

4.1   A Simulation Experiment

The ownership return may capture a common set of country and industry characteristics held by the institutional base in the stock. Institutional shareholders may specialize in country and industry characteristics beyond what our linear country and industry classifications can capture. Thus, we create a non-ownership return that has the exact same country, industry, and size composition as our ownership return, except that we sever the ownership link. For example, for Samsung's largest shareholder Capital World Investors, we look at each stock held by Capital World Investors and replace that stock with a stock in the same country, industry, and size bin that is not held by any of the owners of Samsung.[20] The results reported in Table 4 show that the coefficient on the non-ownership return is close to zero. We repeat this process with two-digit SIC industries that are potentially more

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[19]   In the context of standard asset pricing tests, Ang, Liu, and Schwartz (2010) propose that using individual stocks is more efficient than using portfolios.

[20]   We take two approaches in sampling comparable stocks. First, we take the average of stocks in the same country, industry, and size bucket. Second, because stocks less likely to be held by foreign investors are typically smaller, we sample the largest stock in the same country and industry that is not owned by any existing shareholder. When there are fewer than five stocks in the country, industry, and size bucket not owned by any existing shareholder, which happens in 44% of the cases, we pick stocks from the same country bucket.

precise. We also perform the analysis where we always pick the largest non-ownership stock within the country-industry bucket to make sure the non-ownership return is of similar or larger size composition. We also combine the industry and large stocks analysis. All of these coefficients in specifications 2-4 are close to zero, indicating that ownership returns are not simply proxying for stocks of similar country and industry characteristics.

A potential concern of our non-ownership return is that it is just one realization. To further investigate the importance of the returns with the same country and industry structure, we slightly modify our approach and conduct a simulation based on non-ownership returns. In each draw, we do the following. For each stock (e.g. Samsung) held by the foreign investor (e.g. Capital World Investor), we randomly draw another stock from the same country, industry, and size bin that is not held by any of the stock's shareholders. We then create a non-ownership return. This non-ownership return is added to an artificial data set that also includes the original ownership returns and other control variables. We create 200 such datasets based on alternative random draws of non-ownership returns. We then estimate univariate and multivariate regressions and generate regression coefficients for each of the datasets to obtain an empirical distribution of regression statistics. Our simulation regression coefficients have a mean of 0.0034 and range from 0.0018 to 0.061 (Panel A of Table S3). In none of the 200 datasets is the coefficient of the non-ownership return anywhere close to that of the actual ownership return of 0.710 shown for quarterly data frequency in Table 2.

Additionally, we bootstrap the coefficient estimates from the regression using the standard approach of bootstrapping residuals as described in the Supplemental Appendix (Panel B of Table S3). Based on 1,000 draws, the result confirms that the non-ownership return is insignificant, while the ownership return is highly significant.

4.2   Alternative Factor and Industry Controls

For robustness, rather than estimating expected returns (beta*market), we examine the components separately as controls.[21] In specification 7 of Table 4, we show that controlling for prior betas has little effect on the ownership return inferences. Specification 8 shows that the inclusion of both local SMB, HML, and Momentum factors (constructed by Fama and French (2011)), as well as prior local and global on these factors betas does not drive out the significance of the ownership return coefficient.

It is also feasible to control for factor variation by first purging the left hand side returns from all factor variation as is commonly done with benchmark adjusted returns. We first construct the expected returns by using estimated local and global betas over the prior 36 months times the contemporaneous local and global market return in specifications 9 of Table 4. The adjusted return is the difference between the actual return and the expected return. In Specification 10, we use the same approach with the local and global factors Fama and French (2011) factors in the model. Using

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[21]   Since the global market is constant at each point in time, it cannot be used in the cross-sectional regression but the local market return varies across countries. Similarly, global style factors are also the same at each point in time.

risk-adjusted returns implicitly assumes that all variation due to the factors is more fundamental and the approach rules out capturing variation due to the ownership return that is correlated with the factors. Nevertheless, specifications 9 and 10 in Table 4 show that ownership returns remain highly significant.

The ownership return may simply be capturing the relation between changes in ownership and returns as found in the United States by Wermers (1999) and Nofsinger and Sias (1999). Table 5 also shows that contemporaneous changes in foreign ownership are strongly related to a stock's quarterly return consistent with the U.S. evidence. Interestingly, the coefficient on the foreign ownership return is not affected by the inclusion of quarterly ownership changes (in Specification 2) – the quarterly ownership return is doing much more than capturing changes in institutional ownership.

Recall that for ease of interpretation, the ownership return is a foreign ownership return constructed as the sum of the returns coming from the holders of the security for all stocks outside of the country of origin of the stock. However, we can also examine, with more caution, the return coming from all owners of the security from all stocks in the same country as the respective security. We call this return the 'domestic ownership return.' Examining the domestic ownership return provides a holdout sample to examine the robustness of the foreign ownership return. The domestic ownership return has an average correlation of 0.786 with the local market return, which makes controlling for the local market return important. Even with the local market return and foreign market returns in the cross-sectional regression, Table 5 shows that a one percent increase in the domestic ownership return is associated with a 0.76 percent increase in a firm's stock return. This coefficient is about twice as high as the foreign ownership return.

Another potential concern regarding our results is that the industry portfolios based on 49 Fama-French industries do not adequately capture all industrial variation. To control for this possibility, we create a finer industrial index which is based on 2-digit SIC codes.[22] Table 5 shows that the ownership return coefficient remains of similar magnitude and significant with the finer industry control.

We also classify funds as world, region, or country funds based on their holdings and use accordingly the world, region or country index return as a geographic style control.[23] Specification 7 in Table 5 shows that the size of the coefficients on the ownership return and changes in ownership is unaffected, indicating that the ownership return is not emanating from simple country-style investing, while more explicit size, value, and momentum style variation was examined in Table 3 and 4.

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[22]   In our dataset, firms are in 822 4-digit SIC codes, 353 3-digit SIC codes and 72 2-digit SIC codes.

[23]   We calculate for each fund in the quarter the percentage of holdings that are in a country and a region. If the maximum average percentage of the holdings in a country over the previous 12 quarters is more than 80% of the funds' total holdings, the fund is classified as a country fund. Otherwise, if the maximum average percentage in a region is more than 80% it is a region fund. Otherwise it is a global fund. Depending on country, region, or global classification, the respective monthly country, region, or global index return is selected for a fund in the following quarter.

4.3   An ADR/GDR Test and Other Tests

To re-address many of the concerns in the prior two sub-sections as well as to examine if ownership is in fact causing the importance of the ownership return, 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/GDR listing as shown by Foerster and Karolyi (1999). 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 list an ADR/GDR should become more correlated with the new owners' other stock positions after the ADR/GDR listing.[24] A similar intuition is used to examine changes in comovement around index additions and deletions in papers such as Greenwood (2005 and 2008) and Barberis, Shleifer, and Wurgler (2005).

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.

Table 6 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 subsumes the increase in global betas documented by Foerster and Karolyi (1999). Shifts 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.

We consider other possible explanations such as whether the explanatory power of ownership returns can be explained by foreign exchange movements, the extent of foreign sales, or the home country where the capital is from in Panel A of Table S4. We investigate whether our findings hold up when only focusing on the most liquid stocks, most active markets, and other issues of data coverage as detailed in Panel B of Table S4. None of these issues are driving the findings as we describe in more detail in Supplemental Appendix B.

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[24]   Listing dates are identified through the Bank of New York Mellon website and CRSP database.

5.   Investor Habitat or Wealth Effects

Having dismissed many mechanical explanations for the importance of the ownership return, there are two main possible drivers for the ownership return: wealth effects and habitat investing. We use the behavior of institutional ownership to distinguish between them. Wealth effects, often known as portfolio rebalancing, predict that the returns of the actual institutions holding a stock cause price pressure that drives returns. With habitat or locale investing, the ownership return 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. Thus, both habitat and wealth effects provide separate predictions that center on changes in a stock's ownership.

5.1   Habitat

5.1.1   Ownership

A stock's habitat or locale should capture the net change in investments in and out of other stocks that are linked to the stock. Intuitively, referring back to the Samsung example, if habitat is important, we expect to see investors purchasing Samsung at the same time as they purchase other stocks that have the same or similar owners. Note that examining the change of habitat holdings is not the change in the holdings of Samsung's owners themselves, but the changes of the other holdings of all institutions that are linked to Samsung in the manner captured through Samsung's ownership composition. To directly test habitat, we construct a variable that captures the change of holdings to stocks in the same locale of stock *i* as follows:

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

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, $\dfrac{\sum_{n=1}^{N_i} E_{k,n,t}}{M_{k,t}} - \dfrac{\sum_{n=1}^{N_i} E_{k,n,t-1}}{M_{k,t-1}}$. $E_{k,n,t}$ is the dollar equity holding of stock *k* by fund *n* at time *t*. $M_{k,t}$ 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).

Table 7 investigates the importance of habitat in three ways. First, Specification 1 shows that a one percent increase of ownership in a firm's ownership habitat is associated with a 0.241 percent

increase in ownership. This cross-sectional effect is also significant with a *t*-statistic of 3.24. This indicates that stock ownership changes with changes of ownership of other stocks in the firm's habitat.

Second, we decompose the habitat ownership variable into three components. Among the stocks that have common ownership with a particular stock, we separate them into three groups, according to whether the stocks have low, medium, or high levels of common foreign ownership. We then compute an aggregate change of holdings within each group. Specifications 3-7 in Table 7 show that the changes in ownership of the stock vary strongly with the stocks with the highest level of common ownership habitat but not with stocks with medium or especially low levels of common ownership.

Third, we can also perform such a division of the ownership return into components. The habitat hypothesis suggests that stocks co-move with others with high common ownership but not with others with low levels of common ownership. One can think of this analysis as dividing the ownership return into three components in terms of their degree of common ownership. Here, one can see that when all three levels of ownership are added together, the stocks with the highest level of common ownership move together while the others do not. Overall, the three tests in Table 7 are consistent with habitat patterns in ownership and returns.

5.2   Wealth Effects

We now investigate wealth effects through a direct institution-level analysis. Suppose two of Samsung's shareholders, Capital World Investors and New York Retirement Funds (in Appendix A), have very different fund returns. Capital World Investors experiences high returns on its holdings, and New York Retirement has low returns. A wealth effect implies that 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 testing whether quarterly changes in each institution's holdings of each stock depend on the institution's past returns. In particular, we estimate cross-sectional regressions where the dependent variable is the quarterly ownership change for each existing institutional holding of each firm.

Table 8 presents the regression results and shows that the contemporaneous institutional returns are statistically and economically unrelated to the institution's change in holdings. In other words, institutions that experience the largest stock returns are not increasing their institutional holdings in the stocks they already hold.[25]

Since wealth effect theories often take a contagion spin and point to the effects of ownership mattering in periods of extreme stress, we examine weekly Fama-MacBeth cross-sectional regressions and sum the coefficients over rolling 26-week periods. Figure 1 plots the coefficients over

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[25]   We also sort each stock/quarter into four ownership groups according to the owner's common ownership return. In contrast to a wealth effect explanation, in Table S5 we find no net differences in the relative changes of ownership of the groups depending on the institution's past stock return.

the January 2000 to March 2009 period. Industry and ownership coefficients are of similar magnitude and relatively stable. The coefficients are never below zero and range between 0.10 and slightly over 0.60.[26] Hence, our results are consistent with Bekaert, Ehrmann, Fratzscher, and Mehl (2011) as they find little economic evidence of excess comovement during the financial crisis.

The contagion literature postulates that when investors face imminent financial constraints, they would sell off their other holdings. This story implies a higher correlation among stocks owned by these investors. In Panel A of Supplemental Table S6, we examine asymmetries by looking alternatively at the extreme bottom twenty percent and five percent of ownership returns. We find no evidence that the effect of the ownership return is stronger. Furthermore, we find that stocks experiencing large outflows do not experience a stronger ownership return.[27] Overall, our findings indicate that changes in institutional holdings are affected by changes in a stock's habitat and not wealth effects.

6.   Ownership Decomposition and Habitat Channels

6.1   Decomposition

In a world with heterogeneous investors, an investor habitat captures the common investment locale in which a certain group of investors may allocate capital across the stock market. It can be decomposed into several channels. First, an investment locale may cause prices to co-move if a firm's existing holders receive correlated flows, and those investors allocate the flows to securities they already own. Second, habitat could link the returns of stocks in manners that cannot be directly traced to quarterly changes in ownership. This might be because of correlated buying of other investors who are not in our database, or prices moving due to changes in viewpoints of stocks that are commonly held together. This may be due to domestic or foreign returns. Third, the change in holdings of a habitat reflects capital moving in or out of an investment habitat in a correlated fashion. For example, if investors become optimistic on global economic conditions, capital may be allocated towards large international companies with investors who hold bullish views or a mandate to purchase such securities.

6.1.1   Decomposition Details

We decompose the percentage change of holdings into three main components: fund flows, returns to stocks in the same habitat, and change of holdings of foreign stocks in habitat. We subsequently aggregate these components across institutional holders for a stock on a value-weighted basis

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[26]   Figure S2 Panel A shows coefficients from regressions that also include the local market index and Panel B and C of Supplemental Figure S2 look at quarterly regressions. None show elevated levels in times of economic crisis.

[27]   As explained later in equation (9), 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 percentiles in terms of aggregate outflows and create a dummy variable interaction term with the ownership return.

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:

$$Change\ of\ Holdings_{i,n,t}$$

$$= \frac{q_{i,n,t}Z_{n,t}TNA_{n,t}}{M_{i,t}} - \frac{q_{i,n,t-1}Z_{n,t-1}TNA_{n,t-1}}{M_{i,t-1}}$$

$$= \left(\frac{q_{i,n,t-1}Z_{n,t-1}(TNA_{n,t} - TNA_{n,t-1}(1+R_{n,t}))}{M_{i,t-1}} \right) + \left(\frac{q_{i,n,t-1}Z_{n,t-1}TNA_{n,t-1}}{M_{i,t-1}}R_{n,t} \right) + \left(\frac{q_{i,n,t}Z_{n,t}TNA_{n,t}}{M_{i,t}} - \frac{q_{i,n,t-1}Z_{n,t-1}TNA_{n,t}}{M_{i,t-1}} \right)$$

$$= \left(\frac{q_{i,n,t-1}Z_{n,t-1}(TNA_{n,t} - TNA_{n,t-1}(1+R_{n,t}))}{M_{i,t-1}} \right) + \left(\frac{q_{i,n,t-1}Z_{n,t-1}TNA_{n,t-1}}{M_{i,t-1}}R_{n,t} \right) + \sum_{n=1}^{N_i} W_{i,n,t-1} \sum_{k=1}^{K_i} V_{k,n,t-1}C_{k,t}$$

$$+ \left(\frac{q_{i,n,t}Z_{n,t}TNA_{n,t}}{M_{i,t}} - \frac{q_{i,n,t-1}Z_{n,t-1}TNA_{n,t}}{M_{i,t-1}} - \sum_{n=1}^{N_i} W_{i,n,t-1} \sum_{k=1}^{K_i} V_{k,n,t-1}C_{k,t} \right)$$

$$= Fund\ Flow_{i,n,t} + Returns\ in\ Habitat_{i,n,t} + Change\ of\ Holdings\ in\ Habitat_{i,t} + Error_{i,n,t}$$

(7)

where $TNA_{n,t}$ is total net assets of fund *n* in quarter *t*, $Z_{n,t}$ is the equity proportion of the fund's total net asset value in quarter *t*, $q_{i,n,t}$ is the portion of equity holdings of fund *n* that is invested in stock *i* in quarter *t*, and $M_{i,t}$ is the market value of stock *i* in quarter *t*. We then further dissect the idiosyncratic change into the part due to change in holdings of stocks in the same habitat versus the part not due to habitat.

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 have been if they had simply grown passively:

$$Fund\ Flow_{n,t} = TNA_{n,t} - TNA_{n,t-1}(1+R_{n,t})$$

(8)

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*.[28] The stock-level change of holdings can be separated into three components as follows:

Change of Holdings_{i,t} = Fund Flow_{i,t} + Returns in Habitat_{i,t} + Change of Holdings in Habitat_{i,t} + Error_{i,t} (9)

The returns in the habitat component can be further split into returns from domestic stocks in the habitat (the country where stock *i* is located but excluding stock *i* itself), and returns from foreign stocks in the habitat.[29]

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[28]   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 Lionshares data where we do not have TNA, we approximate this with the total equity positions. 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}*. We then aggregate the components across funds to create changes in the position in stock *i* due to fund flow and returns in habitat.

6.1.2   Decomposition Results

Table 9 presents cross-sectional regression results for the decomposition of stocks with high foreign ownership (> 5 percent) at the aggregate Lionshares institutional level. It shows the various components of the decompositions first for returns and then their effect on changes in ownership. The first three specifications start off with each component of the decomposition individually and then all the components together in the fourth specification. The change of holdings in the habitat and the returns of stocks in the habitat are both linked to returns. The flow measure is insignificant and close to zero. In Specification 5, we add the change of holdings of domestic stocks in the habitat, as well as returns from domestic stocks in the habitat along with the standard local market, world market, and industry controls. With controls, the change of holdings for stocks in the domestic and foreign habitat is insignificantly related to returns. The return of stocks in the domestic habitat and the returns of stocks in the foreign habitat are both highly significant. A firm's stock price increases when the related stocks held by both domestic and foreign institutions experience increases in value.

In the second half of the table, we cross-sectionally regress the stock's changes in holdings on the elements of the decomposition. The change of holdings in both the domestic and foreign habitat is strongly related to the change in ownership. Interestingly, flow is significant in the earlier specifications but becomes insignificant with more extensive controls for the local and global market and industry in specification 10. The other terms are largely unrelated to changes in holdings.

Overall, in terms of the relation between stock returns and cross-sectional ownership changes, Table 9 indicates that the patterns of stocks moving together in an investment locale are not driven by and largely distinct from those of fund flows.

7.   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 will now show the diversification implications for ownership linkages in combination with the level of foreign ownership. 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 10 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.[30] In Figure 2, we graph the covariances as a fraction of average variance. For stocks with no foreign

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[29]   The return from foreign stocks in habitat 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 returns from foreign stocks in the habitat 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 funds' portfolios, the ownership return weights are normalized to one, while the weight of the returns from foreign stocks in habitat is 0.5 percent.

[30]   Panels A and B of Supplemental Figure S3 break the global diversification limit down into the country and industry component following Heston and Rouwenhorst (1994). Supplemental Tables S7 and S8 and Supplemental Figures S4 and S5 show that global market betas are largely increasing in the level of foreign ownership.

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. These findings show the importance of the level of foreign ownership, a finding recently confirmed by Faias, Ferreira, Matos, and Santa-Clara (2011).

To gauge similar implications for ownership linkages, we take the perspective of a fund manager looking 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. Post-ranking betas are related to pre-ranking betas and of large size. Panel B of Table 10 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.[31] 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 10 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 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.

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[31]　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 10. The analysis is computationally intensive because of the high dimensionality of the combined analysis of all permutations of the time-series data of these 6,698 institutions with the time-series stock return and ownership return data of 9,095 non-U.S. stocks.

8.   Conclusion

The traditional view of international stock market co-movement 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 Froot and Dabora (1999), Chan, Hameed, and Lau (2003), and Foerster and Karolyi (1999) show in different contexts that covariation is related to a firm's location, we extend this intuition by documenting a new measure of ownership linkages and documenting its pervasiveness and importance. Important recent papers by Fama and French (2011) and Karolyi and Wu (2011) disagree on the importance of local and global factors, but our findings indicate that ownership returns are valid contenders for the debate and can explain return variation beyond factors.[32]

We construct a return that is the value-weighted average of all stocks held by common shareholders. We find that this very specific ownership composition measure is similar in economic importance a stock's industry variation, both in the cross-section and in the time-series. We examine a variety of different ownership related explanations and conclude that the ownership return is proxying for a stock's related-firm habitat. More specifically, heterogeneous investors with different market perceptions influence stock prices as their holdings and preferences for stocks in an investment locale oscillate in ways that transcend borders.

Our results have important practical implications to investors which we briefly illustrate. Extending the ownership return to the institutional level, we show that stocks with an ownership return similar to a portfolio manager's existing portfolio provide considerably less diversification potential as compared to stocks with an unrelated ownership return. International managers should pay close attention both to the level of foreign ownership and to whether the stock is held by unrelated or competing shareholders. We believe these findings have broad academic and practical importance for a variety of domestic and international portfolio and risk management applications.

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[32]   Karolyi and Wu's (2011) finding that a stock's global trading location influences its global factor exposure is broadly consistent with our more specific connection of foreign ownership linkages with return. Future research should specifically examine the importance of ownership in this debate.

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Table 1. 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.

Table 1. 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
Canada	35.6	79	85.5	90.0	94.0	390	144	87	70	67	3.5	7.3	14.2	17.3	26.3
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
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
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
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	93	94	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	85.0	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	**51.9**	**82.8**	**91.6**	**92.1**	**95.3**	**2,018**	**2,208**	**2,122**	**1,893**	**1,920**	**1.8**	**3.0**	**4.9**	**7.0**	**10.1**
Developed ex US	**40.9**	**74.7**	**87.1**	**88.3**	**91.8**	**1,277**	**1,337**	**1,249**	**1,012**	**977**	**2.6**	**4.1**	**6.8**	**10.6**	**15.0**

(continued)

Table 1. 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	19.5
Bangladesh	6.3	16.1	13.6	14.3	0.0	2	2	2	1		2.5	0.8	0.6	2.4	
Bermuda	0.0	100	44.4	66.7	100		1	1	2	2		61.6	85.9	45.9	44.6
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
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
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	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	
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
Hungary	24.0	40.0	57.1	74	100	4	3	2	3	4	8.7	15.9	14.5	41.0	34.2
Iceland	0.0	0.0	0.0	60	67.0				3	4				5.8	0.2
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	42	70	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	99.0	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, Republic Of	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
Malta		100	100	100			1	1	2			2.7	3.4	1.9	
Mauritius		80.0	87.5	100			2	4	1			0.3	1.5	6.3	
Mexico	23.8	54.5	69.0	80.4	98.0	1	2	4	8	11	0.5	6.2	8.1	11.9	15.4
Morocco	2.2	4.1	29.5	60	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	86.0	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

(continued)

Table 1. 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
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
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	**26.8**	**45.0**	**53.6**	**59.5**	**86.3**	**572**	**760**	**678**	**545**	**384**	**2.6**	**4.2**	**7.3**	**12.2**	**20.1**
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 2. Cross-Sectional Regressions with Ownership Returns

The table shows the results of Fama-MacBeth regressions of stock returns on an intercept (not reported), the foreign institutional ownership return (Ownership Return), Ownership Return lagged by one period, the average of Ownership Return lagged by 2-4 periods, 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 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 shows results for regressions with weekly, monthly and quarterly returns, respectively. It 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 3 lags. Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

	Weekly			Monthly			Quarterly		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Ownership Return	0.484	0.224	0.215	0.625	0.338	0.309	0.710	0.391	0.358
	(21.4)	(13.6)	(12.6)	(11.5)	(9.52)	(7.51)	(7.11)	(4.76)	(3.71)
Ownership Return (lagged)			0.097			0.060			-0.069
			(5.64)			(1.54)			(-1.01)
Ownership Return (lagged, avg. of 2, 3, 4)			0.080			-0.029			0.376
			(2.54)			(-0.47)			(3.07)
Local Beta*Local Market		0.784	0.782		0.789	0.788		0.768	0.746
		(81.3)	(82.2)		(32.5)	(33.1)		(15.4)	(15.3)
World Beta*World Market		1.354	1.347		72.950	72.986		0.203	0.223
		(2.33)	(2.39)		(1.02)	(1.02)		(0.40)	(0.47)
Industry		0.256	0.255		0.344	0.339		0.405	0.408
		(25.4)	(25.7)		(13.8)	(13.6)		(9.78)	(10.2)
Adjusted R^2	0.008	0.105	0.108	0.012	0.120	0.123	0.015	0.132	0.138
Average Number of Firms	2,117	1,997	1,990	2,118	2,002	1,969	2,088	1,607	1,441

Table 3. 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), as well as local and global zero-investment portfolios based on market-to-book (HML), market capitalization (SMB), and momentum (WML). 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:

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

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

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

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

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

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

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

$$(8)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{WorldMarket,t} + \varphi_j R_{LocalHML,t} + \lambda_j R_{WorldHML,t} + \gamma_j R_{LocalSMB,t} + \mu_j R_{WorldSMB,t} + \rho_j R_{LocalWML,t} + \omega_j R_{WorldWML,t} + \varepsilon_{jt}$$

$$(9)\, R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{WorldMarket,t} + \delta_j R_{Ownership,t} + \varphi_j R_{LocalHML,t} + \lambda_j R_{WorldHML,t} + \gamma_j R_{LocalSMB,t} + \mu_j R_{WorldSMB,t} + \rho_j R_{LocalWML,t} + \omega_j R_{WorldWML,t} + \varepsilon_{jt}$$

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. Accounting data is from WorldScope, 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)
Ownership Return			0.308			0.298	0.150		0.213
Local Market	0.808	0.603	0.599	0.566	0.609	0.594	0.603	0.631	0.628
World Market		0.361			-0.128	0.028	-0.277	0.360	0.113
Industry				0.409	0.444		0.428		
Local HML								-0.088	-0.075
World HML								0.031	0.034
Local SMB								0.036	0.040
World SMB								0.129	0.126
Local WML								-0.001	-0.001
World WML								0.001	0.000
Adjusted R^2	0.164	0.179	0.183	0.210	0.216	0.188	0.221	0.243	0.247
Number of Firms	233	233	233	233	233	233	233	233	233

(continued)

Table 3. Time-Series Regressions of Ownership Returns (continued)

Panel B: First Quarter 2003 – Fourth Quarter 2005

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ownership Return			0.207			0.299	0.264		0.417
Local Market	0.892	0.815	0.779	0.761	0.780	0.775	0.744	0.815	0.766
World Market		0.183			-0.082	-0.113	-0.333	0.258	-0.155
Industry				0.247	0.286		0.279		
Local HML								-0.014	-0.013
World HML								0.109	0.132
Local SMB								0.086	0.119
World SMB								0.174	0.160
Local WML								-0.001	-0.001
World WML								0.000	0.001
Adjusted R^2	0.217	0.227	0.229	0.236	0.241	0.232	0.245	0.250	0.255
Number of Firms	1,408	1,408	1,408	1,408	1,408	1,408	1,408	1,408	1,408

Panel C: First Quarter 2006 – First Quarter 2009

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ownership Return			0.208			0.364	0.315		0.435
Local Market	0.985	0.874	0.818	0.815	0.850	0.818	0.805	0.878	0.823
World Market		0.171			-0.174	-0.186	-0.482	0.229	-0.182
Industry				0.237	0.339		0.339		
Local HML								0.259	0.252
World HML								-0.138	-0.178
Local SMB								0.103	0.155
World SMB								0.214	0.204
Local WML								-0.002	-0.002
World WML								0.001	0.001
Adjusted R^2	0.339	0.349	0.351	0.355	0.362	0.356	0.368	0.381	0.387
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

	Reg #	MSE	Reg #	MSE	Reg #	MSE	Reg #	MSE
Incremental Contribution of the Ownership Return								
Base Model	(1)	0.038	(2)	0.025	(5)	0.021	(8)	0.013
Base Model with Ownership Return	(3)	0.026	(6)	0.023	(7)	0.019	(9)	0.012
Difference		*0.012*		*0.002*		*0.002*		*0.001*
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 4. Non-Ownership Returns and Adjusted Returns

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on the foreign ownership return and various control variables. In particular, returns are regressed on an intercept (not reported), the foreign institutional ownership return (Ownership Return), one of four alternative versions of a Non-Ownership return, Local Market returns, global industry index returns (Industry), betas and expected returns from a CAPM with local and world market index, and Fama and French (2011) factors and betas. The Non-Ownership Return variables are constructed by replacing each of the actual (foreign) holdings of a stock by an institution with stocks in the same country and industry not held by any owner of the stock in question. The four alternative versions of the Non-Ownership return are based on either using the average return of all stocks in the same country and industry (based on 48 Fama French classifications) that are not held by any other institution owning the stock (Non-Ownership Return (Average Stock)), or by using the average return of all stocks in the same country and industry (based on 2-digit SIC code classifications) that are not held by any other institution owning the stock (Non-Ownership Return (Average Stock) (2-digit SIC)), or by using the return of the largest stock in the same country and industry (based on 48 Fama French classifications) that are not held by any other institution owning the stock (Non-Ownership Return (Largest Stock)), or by using the return of the largest stock in the same country and industry (based on 2-digit SIC code classifications) that are not held by any other institution owning the stock (Non-Ownership Return (Largest Stock) (2-digit SIC)). 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: $R_{jt} = \alpha_j + \beta_L R_{L,t} + \beta_W R_{MSCI,t} + \varepsilon_{jt}$.

Specification (8) includes Industry, local market, HML, SMB, and Momentum factors, as well as Local and Global Market Betas, Local and Global HML Betas, Local and Global SMB Betas, Local and Global Momentum Betas. We obtain Local market, Local HML, Local SMB and Local momentum factors from Fama and French (2011). We estimate Local and Global Market Betas, Local and Global HML Betas, Local and Global SMB Betas, Local and Global Momentum Betas from rolling regressions on the corresponding 8 Fama and French factors using past two-year returns. The estimated Fama and French betas are windsorized to 10 (-10) if they are above 10 (below -10). Specifications (1)-(8) use the raw stock return as dependent variable. Specification (9) subtracts the expected return from a CAPM with local and global market from the raw return and use this adjusted return as dependent variable. 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. Specification (10) subtracts the expected returns from an International Fama and French (2011) model from the raw return and use this adjusted return as dependent variable. The eight Fama and French Betas are multiplied with the contemporaneous factors to construct the Fama-French expected returns. They are insignificant and not reported. 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 3 lags. Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

					Returns				Adj. Ret. (Intl.CAPM)	Adj. Ret. (Intl. FF)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ownership Return		0.728	0.726	0.732	0.733	0.405	0.349	0.345	0.433	0.124
		(7.20)	(7.33)	(7.63)	(7.85)	(5.78)	(4.48)	(4.16)	(3.89)	(1.63)
Non-Ownership Ret (Avg Stock)	0.113	-0.100								
	(1.47)	(-1.08)								
Non-Ownership Ret (Avg Stock) (SIC2)			-0.090							
			(-1.17)							
Non-Ownership Ret (Largest Stock)				-0.081						
				(-1.09)						
Non-Ownership Ret (Largest Stock) (SIC2)					-0.083					
					(-1.15)					
Industry						0.537	0.418	0.480	0.457	0.354
						(15.03)	(10.68)	(12.88)	(10.16)	(4.84)
Local Market						0.827	0.831			
						(18.99)	(22.66)			
Local Beta							-0.004			
							(-0.37)			
Global Beta							-0.005			
							(-0.59)			
Local Market, Local HML, Local SMB, Local and Global Market Betas, Local and Global HML Betas, Local and Global SMB Betas, Local and Global Momentum Betas all included								Yes		
Adjusted R^2	0.004	0.019	0.019	0.018	0.017	0.113	0.141	0.122	0.030	0.010
Average Number of Firms	2,086	2,086	2,086	2,086	2,086	2,086	1,607	1,569	1,607	1,569

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Table 5. Ownership Change, Domestic Ownership, and Alternative Industry Controls

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on the foreign ownership return and various control variables. In particular, stock returns are regressed on an intercept (not reported), the foreign institutional ownership return (Ownership Return), an institutional ownership return using only the local holdings of an institution (Domestic ownership Return), the change in foreign ownership (Ownership Change), the beta on the local market, expected returns from a CAPM with local and world market index, global industry index returns excluding the industry in the local market using alternatively the 48 Fama-French Industry classification (Industry (Fama French)) or 2-digit SIC code industry classifications (Industry (2-digit SIC)) and fund geographic style returns. 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. Fund geographic style returns are the world, region or country index return depending on the classification of the fund as country, region or global fund. If the maximum average percentage of the holdings in a country over the previous 12 quarters is more than 80% of the funds' total holdings, the fund is classified as a country fund. Otherwise, if the maximum average percentage in a region is more than 80% it is a region fund. Otherwise it is a global fund. 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 shows results controlling for the change in ownership as well as using alternative industry controls. 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 3 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)
Foreign Ownership Returns	0.391	0.395	0.350	0.265	0.239	0.389	0.324
	(4.76)	(4.76)	(4.15)	(3.84)	(3.25)	(4.86)	(3.62)
Domestic ownership Return			0.764	0.664	0.643		
			(12.9)	(11.0)	(10.9)		
Ownership Change		0.455					
		(6.66)					
Local Market			0.219	0.300			
			(4.84)	(6.80)			
Local Beta*Local Market	0.768	0.764			0.390	0.763	0.753
	(15.4)	(15.3)			(5.27)	(15.3)	(16.41)
World Beta*World Market	0.203	0.209			0.074	0.206	0.190
	(0.40)	(0.42)			(0.16)	(0.39)	(0.37)
Industry (Fama French)	0.405	0.399		0.490	0.396		0.397
	(9.78)	(10.0)		(15.3)	(11.3)		(10.9)
Industry (2-digit SIC)						0.343	
						(8.02)	
Fund Geographic Style							-0.039
							(-0.33)
Adjusted R^2	0.132	0.137	0.101	0.128	0.154	0.130	0.137
Average Number of Firms	1,607	1,607	2,085	2,085	1,606	1,607	1,535

Table 6. ADR and GDR 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/GDR-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/GDR-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/GDR-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/GDR-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 7. Investor Habitat

The table shows the results of Fama-MacBeth regressions of changes in quarterly holdings (specifications (1)-(7)) or quarterly stock returns (specifications (8)-(9)) on various measures of investor habitat and control variables. In particular, the independent variables are the value-weighted change in the other holdings of a stock's owner from last quarter to the current quarter, using alternatively all stocks (Habitat) or just stocks that are in the bottom, middle and top tercile when ranking holdings by the number of common holders (labeled Change in Foreign Holdings of Foreign Stocks (Low Common Holders), (Medium Common Holders), and (High Common Holders), respectively). Regressions with returns use the value-weighted returns of foreign stocks with alternatively low, medium or high common ownership as regressors, considering stocks with no common ownership separately from those with low common ownership. Further controls are 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. Specifications (1)-(2) are based on new and existing holders of a stock, specifications (3)-(4) are based on existing holders of a stock, and specifications (5)-(6) are based on all holders of a stock. 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 3 lags. Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

(continued)

Table 7. Investor Habitat (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Change in Holdings					Returns	
Change of holdings in Habitat	0.241	0.291							
	(3.24)	(2.72)							
Change in Holdings of Foreign Stocks (High Common Holders)			0.236			0.233	0.273		
			(4.49)			(4.47)	(4.05)		
Change in Holdings of Foreign Stocks (Medium Common Holders)				0.086		0.118	0.144		
				(1.00)		(1.35)	(1.51)		
Change in Holdings of Foreign Stocks (Low Common Holders)					-0.109	-0.084	-0.215		
					(-1.43)	(-1.23)	(-2.74)		
Returns of Foreign Stocks (High Common Holders)								0.741	0.338
								(6.75)	(6.48)
Returns of Foreign Stocks (Medium Common Holders)								-0.410	-0.036
								(-1.86)	(-0.17)
Returns of Foreign Stocks (Low Common Holders)								-0.230	-0.319
								(-2.87)	(-3.23)
Returns of Foreign Stocks (No Common Holders)								-1.701	-0.550
								(-8.73)	(-2.71)
Local Beta*Local Market		0.005					0.005		0.728
		(1.75)					(1.81)		(15.21)
World Beta*World Market		-0.004					-0.011		0.165
		(-0.40)					(-0.91)		(0.34)
Industry		0.006					0.006		0.410
		(1.27)					(1.28)		(9.67)
Adjusted R^2	0.003	0.009	0.003	0.002	0.001	0.005	0.010	0.040	0.143
Number of Firms	1,991	1,582	1,991	1,991	1,991	1,991	1,582	2,053	1,598

Table 8. Wealth Effect at the Stock-Fund Level

The table shows the results of Fama-McBeth 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 fund's return (Owner Fund Return), the fund's return in the previous quarter (i.e. lagged), the fund's return on foreign holdings (Owner Fund Foreign Return), the fund's return on foreign holdings in the previous quarter (i.e. lagged), the percentage change in holdings (i.e. the dependent variable) lagged by one quarter, 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. Specifications (1)-(3) are based on new and existing holders of a stock, while specifications (4)-(6) are based on existing holders only. 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. Returns data for individual stocks, market indices and industry indices are from DataStream.

	New and Existing Holders			Existing Holders		
	(1)	(2)	(3)	(4)	(5)	(6)
Owner Fund Foreign Return	0.050			0.062		
	(0.64)			(0.72)		
Owner Fund Foreign Return (lagged)	0.136			0.141		
	(1.50)			(1.39)		
Owner Fund Return		-0.005	-0.027		0.000	-0.024
		(-0.06)	(-0.28)		(0.00)	(-0.24)
Owner Fund Return (lagged)		0.080	0.054		0.081	0.065
		(0.80)	(0.51)		(0.73)	(0.58)
Percentage Change in Holdings (lagged)			0.035			0.036
			(6.89)			(6.99)
Stock Holdings (lagged) - Average Stock Holdings (lagged)						0.024
						(2.50)
Adjusted R^2	0.000	0.001	0.006	0.000	0.001	0.006
Average Number of Firm-Fund per Quarter	2,150	2,184	2,150	2,150	2,184	2,184

Table 9. Decomposition of Funds' Change in Holdings

The table shows the results of Fama-MacBeth regressions of quarterly stock returns (specifications (1)-(5)) or changes in holdings (specifications (6)-(10)) on an intercept (not reported), fund flows, the returns of foreign stocks in habitat, the change in holdings for foreign stocks in habitat, the returns of domestic stocks in habitat, the change of holdings for domestic stocks in habitat, 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). Fund flows, returns and changes of holdings for stocks in the domestic and foreign habitat 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 3 lags. 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. Ownership data is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream.

	Returns					Change of Holdings				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Flows	0.000			-0.001	-0.001	0.002			0.001	0.001
	(-0.18)			(-0.62)	(-0.28)	(2.46)			(2.34)	(1.01)
Returns of Foreign Stocks in Habitat		0.016		0.018	0.009		0.001		0.001	0.000
		(4.96)		(6.10)	(4.13)		(1.29)		(0.89)	(-0.10)
Change of Holdings for Foreign Stocks in Habitat			0.029	0.025	0.004			0.004	0.003	0.002
			(2.67)	(2.39)	(0.45)			(5.51)	(4.75)	(2.73)
Returns of Domestic Stocks in Habitat					0.016					0.001
					(5.76)					(1.52)
Change of Holdings for Domestic Stocks in Habitat					-0.003					0.002
					(-1.01)					(4.77)
Local Beta*Local Market					0.721					0.004
					(14.36)					(1.20)
World Beta*World Market					0.144					0.015
					(0.30)					(0.94)
Industry					0.373					0.004
					(9.94)					(0.86)
Adjusted R^2	0.002	0.007	0.006	0.016	0.141	0.014	0.011	0.003	0.027	0.048
Average Number of Firms per Quarter	2,262	2,262	2,009	2,009	1,536	1,991	1,991	1,916	1,916	1,512

Table 10. 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					High – Low	
FO Level	<0.5 (Low)	0.5-0.75	0.75-1	>1 (High)	Average	Own Beta Bin	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 - 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 (Ownership Return), global industry index returns excluding the industry in the local market (Industry) 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).
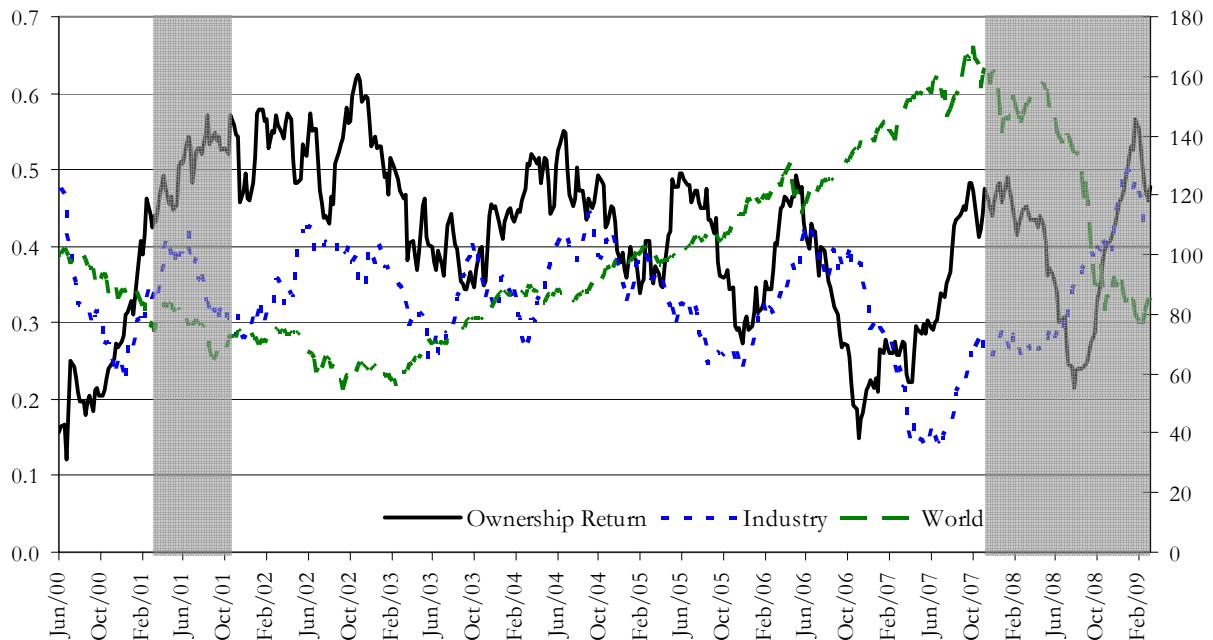
Figure 2. Ownership Level and Portfolio Diversification

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. Ownership data is from Lionshares, while data on returns for individual stocks is from DataStream.
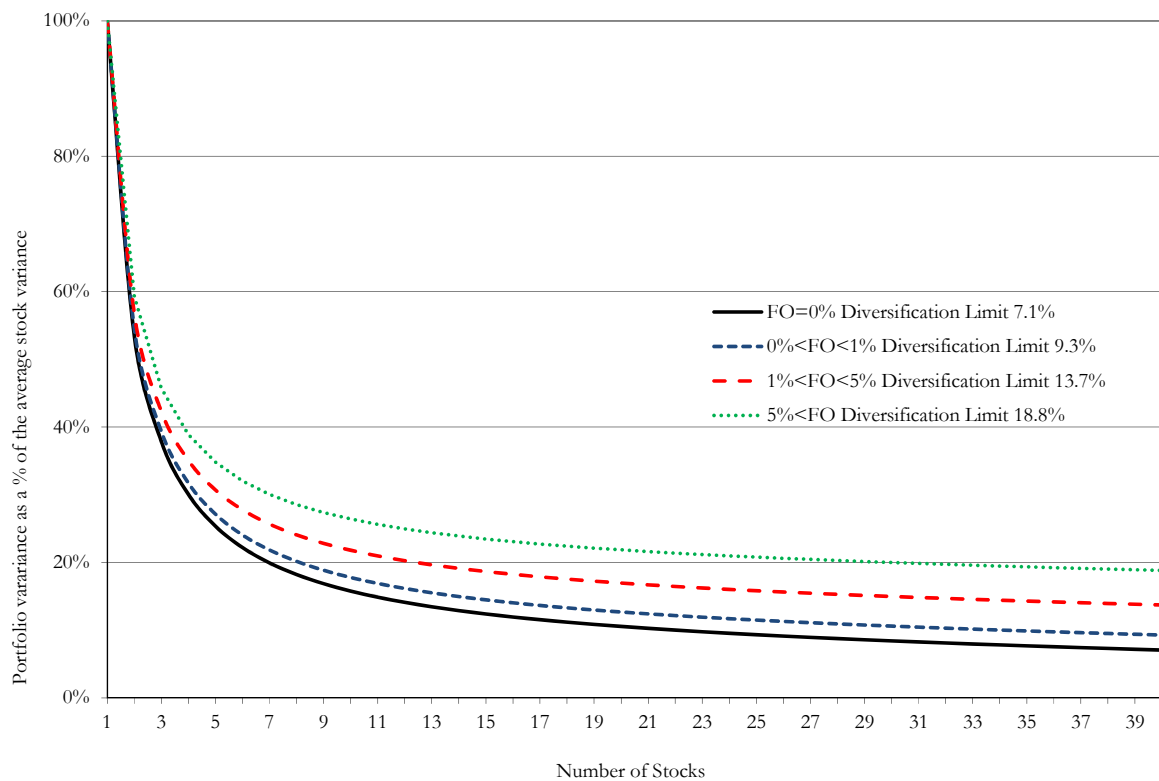
Appendix

Table A1. 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 A1. 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 A2. 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. The last column (Total) shows the total number of fund-years. Ownership data is from Lionshares.

	2001		2005		2008		Total Fund Years (01-09)	
	13F	MF	13F	MF	13F	MF	13F	MF
Australia	1	10	1	55	4	83	17	380
Austria		29		43		55		379
Belgium		22		31	1	31	3	244
Canada	20	146	44	164	69	173	428	1,365
Denmark		18	1	33	2	35	10	232
Finland		18		32		31		248
France	4	53	13	159	14	135	88	1,152
Germany	2	107	4	144	5	205	36	1,349
Ireland	3	9	2	13	5	17	36	118
Italy		35		58	1	59	3	454
Japan	8	37	12	70	12	76	109	607
Luxembourg		34	1	64	3	58	9	452
Netherlands	3	11	9	28	11	27	77	225
New Zealand				4		3		18
Norway	1	18	1	25	1	24	9	192
Portugal		3		24		28		215
Spain	1	100	1	123	2	127	14	964
Sweden	1	20	1	58	1	74	11	429
Switzerland	4	56	13	163	14	205	92	1,218
United Kingdom	36	168	71	268	108	299	693	2,293
United States	1,924	845	2,424	845	2,892	899	25,060	8,796
Developed	**2,008**	**1,739**	**2,598**	**2,404**	**3,145**	**2,644**	**26,695**	**21,330**
Developed ex US	**84**	**894**	**174**	**1,559**	**253**	**1,745**	**1,635**	**12,534**

(continued)

Table A2. Summary Statistics on Data Sources (continued)

	2001		2005		2008		Total Fund Years (01-09)	
	13F	MF	13F	MF	13F	MF	13F	MF
Andorra				3		3		17
Argentina		1		3		3		17
Bahamas	1	2	2	3	4	1	24	25
Bahrain						1		2
Barbados			1	1	1		6	2
Bermuda	4	1	4	6	5	6	43	43
Brazil		4		4	3	8	7	44
British Virgin Islands				1	1		2	4
Cayman Islands				1		1		10
Chile				1		1		11
China		1		1		54		64
Cook Islands								
Croatia						5		12
Cyprus					1	1	4	3
Czech Republic		1		7		8		41
Estonia		1		3		7		31
Gibraltar				1				5
Greece				4		16		109
Hong Kong	2	35	5	41	5	51	39	387
Hungary				8		5		36
Iceland				2		2	1	13
India		3		28		38		221
Latvia						3		6
Liechtenstein		1		13		19		102
Lithuania						3		6
Malaysia				14		21		97
Malta								
Mauritius				1				3
Monaco			1		1		5	
Namibia				1		2		8
Netherlands Antilles								2
Pakistan						16		30
Philippines				1				6
Poland				16		29		139
Romania				6		19		49
Saudi Arabia						5		8
Singapore		38	2	43	3	44	15	393
Slovakia				6		6		34
Slovenia				13		13		66
South Africa		3		30		69	1	353
South Korea		2		4	1	4	2	29
Taiwan		1	1	1	2	3	8	15
Thailand		1		8		19		92
Turkey				3		4		19
Virgin Islands	1		2		2		17	
Emerging	**8**	**95**	**18**	**278**	**29**	**490**	**174**	**2,554**
All countries	**2,016**	**1,834**	**2,616**	**2,682**	**3,174**	**3,134**	**26,869**	**23,884**

Table A3. 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
Canada	6.0	13.3	18.9	25.3	27.8	28	108	291	884	8,982
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
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
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
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	**14.4**	**23.9**	**37.4**	**51.0**	**49.1**	**30**	**100**	**270**	**835**	**11,584**
Developed ex US	**5.7**	**7.6**	**8.7**	**9.0**	**7.5**	**30**	**101**	**271**	**839**	**10,439**

(continued)

Table A3. 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	
Bermuda		0.0	0.0	0.0	0.0		236	579	1,074	2,329
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
Cyprus	0.3	0.4	0.2	0.0	0.0	24	193	357	1,110	3,613
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	
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
Hungary	3.1	2.6	1.2	1.2	0.4	52	96	258	661	5,061
Iceland				0.0	0.0				250	1,609
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, Republic Of	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
Malta		0.0	0.0	0.0			149	247	869	
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
Singapore	0.7	1.7	4.1	3.8	6.7	36	88	262	885	7,206
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, Province Of China	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 Emirates			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	**1.6**	**2.8**	**2.8**	**2.7**	**3.1**	**42**	**107**	**289**	**909**	**6,103**
All countries	**12.1**	**18.8**	**29.0**	**40.5**	**41.9**	**33**	**103**	**276**	**852**	**10,698**

Appendix A. Example of Ownership Linkage

As an example of the foreign ownership return, consider 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.

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.
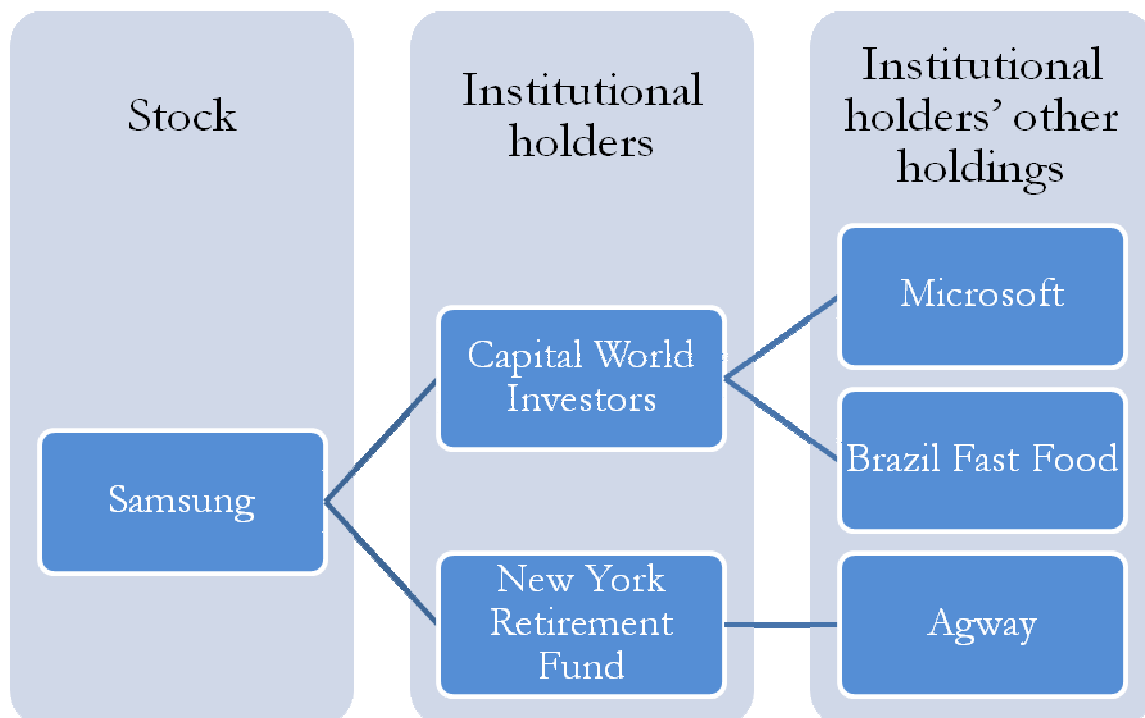
Supplemental Appendix

Supplemental Appendix A: Data Sample Cleaning

For the main part of the analysis, we use two datasets: a) Lionshares holdings data and b) returns and market values data from CRSP and DataStream. Holdings data is from Lionshares and structured using three identifiers describing who owns what and when. There are two unadjusted datasets within Lionshares, 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.[33] 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). ADR and GDRs and their parent firms are identified using classifiers obtained from both DataStream and Lionshares.

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 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.[34] When there is overlap of the holding information, we prefer 13F data to FUND data.

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[33] 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, Philippines and Indonesian) companies are between $100 and $200 million. There is no coverage threshold for U.K., U.S., and Japan companies.

[34] 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

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 carry the holdings information forward to the next available report date for up to three quarters.[35]

We use two data screens for returns on stocks. First, to screen for common equities, we use the filters from Griffin, Kelly, and Nardari (2010) which eliminate preferred stocks, warrants, unit trusts, investment trusts, duplicates, and other non-common equities. Second, we use filters following Griffin, Kelly, and Nardari (2010) 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 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. 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.

Third, 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.

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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. Ferreira 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.

[35]   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.

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. The classification of emerging countries/markets is based on the Morgan Stanley Capital Index (MSCI) classification in 2006. For the global return we use the MSCI world index. In order to exclude own stock returns in the construction of local country returns, we build the value-weighted local returns using the DataStream sample.

In terms of coverage Panel A of Table 1 shows that developed countries outside of the United States have on average foreign ownership coverage on Lionshares for 40.9 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 74.7, 87.1, 88.3, and 91.8 percent. Across countries, in the largest size quintile the Lionshares foreign ownership coverage is above 80 percent in all countries except Spain and Switzerland. In the emerging markets in Panel B, the percentage of firms with some foreign ownership coverage ranges from 26.8, 45.0, 53.6, 59.5, and 86.0 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, Cyprus, Iceland, Indonesia, Morocco, and South Africa.

Supplemental Appendix B: Alternative Explanations of the Ownership Linkage

The ownership return may simply be capturing the relation between changes in ownership and returns as found in the U.S. by Wermers (1999) and Nofsinger and Sias (1999). Table 5 also shows that contemporaneous changes in foreign ownership are strongly related to a stock's quarterly return consistent with the U.S. evidence. Interestingly, the coefficient on the foreign ownership return is not affected by the inclusion of quarterly ownership changes – the quarterly ownership return is doing much more than capturing changes in institutional ownership.

Liquidity

We also investigate whether our results can be explained by illiquidity when focusing only on the most liquid stocks. In Panel B of Table S4, we compare our main findings (with the 30 percent trading filter) to a more stringent 50 and 75 percent filter. For stocks that trade 50 percent of the time the results are similar, and they strengthen slightly with the filter that they trade 75 percent or more of the time. We also consider other possible explanations such as whether the explanatory power of ownership returns can be explained by foreign exchange movements, the extent of foreign sales, or the home country where the capital is from. In Table S4, we find no support for these explanations.

To address the issue that data coverage may increase over time for some countries but not others, we limit our data sample to a subset of countries where data coverage is better. In particular, we limit our data sample to those from countries where there are more than 500 firm-quarters so that we are not focusing on countries with only a small number of firms. This limits our sample to the top 36 countries with the highest foreign ownership level. In another test, we further limit our analysis to the

top 20 countries with the highest country-aggregate foreign ownership level. The result, as shown in Table S4 Panel B, shows that foreign ownership returns remain significant.

Institutional Ownership

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 with the level of foreign ownership. 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 (Table S1). 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.

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. 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.

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 S9 shows that stocks with high ownership returns exhibit an excess return 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.

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 (5), (6) and (12) in Panel A of Table S4 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 are largely unaffected, indicating that the importance of the ownership return is not from simple style investing.

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

Country of Origin

We first ask which 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 S4 for all stocks with more than five percent foreign ownership. 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 (12)). More importantly specification (2) shows that the coefficients on the ownership return and changes in ownership are unaffected by the owners' home market return.

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 S4, 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 a proxy 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.

Emerging and Developed Markets, Size and Liquidity

Table S10 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.

Table S1. 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 (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). The table shows results for stocks with alternative levels of foreign institutional ownership of 0%-1%, 1%-5%, and >5% (in Panel A) and foreign institutional ownership above 10% and 20% (in Panel B) using quarterly 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 3 lags. 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

	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

Panel B: Foreign Institutional Ownership above 10% and 20%	>=10%		>=20%	
	(1)	(2)	(1)	(2)
Ownership Return	0.758	0.529	0.706	0.526
	(8.94)	(6.46)	(7.2)	(4.40)
Local Beta*Local Market		0.681		0.644
		(12.8)		(8.83)
World Beta*World Market		0.16		0.124
		(0.28)		(0.20)
Industry		0.435		0.449
		(9.97)		(8.54)
Adjusted R^2	0.016	0.131	0.013	0.132
Average Number of Firms	1,221	928	550	381

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Table S2. 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 S3. Ownership Return and Non-Ownership Return with Simulation

The table shows results from the following simulation exercises. In simulation exercise 1 (Panel A), for each stock held by a foreign investor, we randomly draw another stock from the same country, industry, and size bin that is not held by any of the stock's shareholders. We then create a non-ownership return. This non-ownership return is added to an artificial data set that also includes the original ownership returns and other control variables. We create 200 such datasets based on alternative random draws of non-ownership returns. We then estimate the following univariate regression: $R\_i = a + b*R\_nonown\_i + c*R\_own\_i + e\_i$. We generate regression coefficients for each of the datasets to obtain an empirical distribution of regression statistics. Size groups are defined using cut off points among U.S. stocks. Non-ownership linked firms must have market cap greater than 100 million. In simulation exercise 2 (Panel B), we conduct a bootstrap. For each stock, we have the Ownership Return (R_own_i) and the Non-Ownership Return (R_nonown_i) based on the value-weighted mean returns of the largest non-owned stock in the same industry and country as the linked stocks. For each quarter, we run a cross-sectional regression of the stock return (R_i) on the Ownership Return and the Non-Ownership Return: (1) $R\_i = a + b*R\_nonown\_i + c*R\_own\_i + e\_i$. We keep the parameter estimates for a, b and c, as well as the residuals. We take the time-series average of a, b and c to get the Fama-MacBeth estimates and associated standard errors (corrected with Newey West (1987)). Under the null hypothesis, the ownership linkage is not a driver of stock returns. Therefore, we set the coefficient c estimated in (1) to zero, i.e. c=0. Subsequently, we perform the following steps 1,000 times: For each firm in each quarter, we take a random draw (with replacement) from the residuals for that quarter. We impose the null hypothesis and create returns for each firm and quarter by multiplying the estimated coefficients (b and c, with c set to zero) with the Non-Ownership Return and the Ownership Return and adding the intercept, a, as well as the residual (from the prior step). Using these constructed return series instead of the actual returns, we estimate regression (1) for each quarter. We take the time-series average of a, b and c to get the Fama-MacBeth estimates and associated standard errors (corrected with Newey West (1987)). From each of the 1,000 iterations, we obtain a time-series average of a, b and c, as well as associated *t*-statistics/standard errors, which yield an empirical distribution. We calculate *p*-values as the proportion of *t*-statistics that are greater than the *t*-statistic from the original Fama-MacBeth regression.

Panel A: Simulation exercise 1

	Mean Coef.	Min Coef.	Min Coef.	Iterations
Non-Ownership Return	0.003	0.0018	0.061	200

Panel B: Simulation exercise 2

	Coef.	*p*-value	Iterations
Ownership Return	0.850	0.00	1,000
Non-Ownership Return	-0.086	0.40	1,000

Table S4. Alternative Explanations

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on various ownership variables and control variables. It 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. In Panel A, 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. Panel B shows subsample results around liquidity and coverage. In Panel B, the sample consists of non-U.S. stocks with more than 30%, more than 50% or more than 75% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. Columns 1 to 6 show the results for weekly regressions, while columns 7 to 15 show the results for quarterly regressions. Columns 13 and 14 of Panel B shows results for non-U.S. stocks with at least 30% non-zero trading days in the previous year, at least 5% lagged foreign institutional ownership and from countries where there are more than 500 firm-quarters or the top 20 countries with the highest country-aggregate foreign ownership level. Column 15 shows results for a sample where we only include institutions that report their holdings on a quarterly basis. 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 three lags.

(continued)

Table S4. Alternative Explanations (continued)

Panel A: Additional Control Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
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)
Style Return					2.474	0.826						0.997
					(6.14)	(3.12)						(2.96)
Foreign Sales*Ownership Return							0.571	0.177				0.179
							(4.34)	(1.84)				(2.08)
Ownership Return		0.372		0.409		0.373		0.382			0.395	0.323
		(4.54)		(4.73)		(5.04)		(4.17)			(4.76)	(3.18)
Ownership Change		0.460		0.459		0.458		0.624			0.455	0.636
		(6.76)		(6.80)		(7.01)		(6.35)			(6.66)	(6.82)
Local Beta*Local Market		0.763		0.751		0.759		0.748	0.802	0.785	0.764	0.717
		(15.72)		(15.42)		(16.05)		(13.04)	(15.93)	(14.96)	(15.30)	(11.97)
World Beta*World Market		0.190		0.206		0.205		0.142	0.160	0.179	0.209	0.117
		(0.38)		(0.42)		(0.40)		(0.31)	(0.23)	(0.35)	(0.42)	(0.25)
Industry		0.397		0.407		0.389		0.380		0.411	0.399	0.385
		(10.28)		(10.39)		(9.97)		(10.74)		(9.55)	(10.00)	(11.34)
Adjusted R^2	0.004	0.138	0.010	0.139	0.011	0.139	0.013	0.146	0.109	0.126	0.137	0.152
Average Number of Firms per Quarter	2,072	1,607	2,056	1,595	2,066	1,606	1,420	1,136	1,611	1,611	1,607	1,131

(continued)

Table S4. Alternative Explanations (continued)

Panel B: Liquidity and Coverage

	Weekly Regression Percent of Trading Days						Quarterly Regression Percent of Trading Days						No Obs > 500	Top 20 cty	Qtr obs only
	>30%	>30%	> 50%	>50%	>75%	>75%	>30%	>30%	> 50%	>50%	>75%	>75%			
Ownership Ret	0.224	0.215	0.241	0.231	0.259	0.248	0.391	0.358	0.395	0.352	0.464	0.366	0.227	0.290	0.407
	(13.56)	(12.63)	(13.38)	(12.25)	(14.00)	(12.41)	(4.76)	(3.71)	(4.76)	(3.51)	(5.83)	(3.70)	(3.56)	(2.99)	(5.14)
Ownership Ret (lag)		0.097		0.096		0.097		-0.069		-0.065		-0.029			
		(5.64)		(5.28)		(4.92)		(-1.01)		(-1.00)		(-0.59)			
Ownership Ret (lag avg of 2, 3, 4)		0.080		0.084		0.078		0.376		0.418		0.412			
		(2.54)		(2.45)		(2.09)		(3.07)		(3.51)		(3.01)			
Loc Beta*Loc Mkt	0.784	0.782	0.788	0.786	0.801	0.798	0.768	0.746	0.768	0.748	0.770	0.749	0.790	0.636	0.770
	(81.32)	(82.22)	(83.57)	(84.10)	(86.51)	(87.45)	(15.43)	(15.27)	(15.56)	(15.38)	(15.59)	(15.67)	(9.87)	(8.72)	(15.51)
Wld Beta*Wld Mkt	1.354	1.347	1.363	1.337	1.374	1.341	0.203	0.223	0.204	0.223	0.133	0.161	-0.149	-0.374	0.185
	(2.33)	(2.39)	(2.18)	(2.23)	(2.15)	(2.20)	(0.40)	(0.47)	(0.42)	(0.48)	(0.27)	(0.34)	(-0.33)	(-0.74)	(0.37)
Industry	0.256	0.255	0.257	0.255	0.264	0.264	0.405	0.408	0.399	0.406	0.390	0.399	0.278	0.332	0.402
	(25.39)	(25.68)	(25.81)	(25.81)	(27.65)	(27.59)	(9.78)	(10.21)	(9.72)	(10.40)	(8.84)	(9.71)	(8.07)	(5.46)	(9.64)
Adjusted R^2	0.105	0.108	0.110	0.113	0.122	0.124	0.132	0.138	0.134	0.141	0.145	0.150	0.120	0.095	0.133
Avg No of Firms	2,159	2,150	2,090	2,083	1,882	1,877	1,607	1,441	1,580	1,420	1,470	1,331	1,279	343	1,588

Table S5. Sorting Results for Wealth Effect

The table shows sorting results for the wealth effect. For each stock, we sort each stock's institutional owners into five quintiles according to the institutions' average holding returns. In each quintile, we report the average change of holdings of the stock by the institutions in the current and over the next four quarters. Panel A shows results for the average change of holdings by the institutions. Panel B shows results for the relative average change of holdings by the institutions as a percentage of the average level of holdings of stocks held by institutions within the quintile. 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. Ownership data is from Lionshares, and return data for individual stocks is from DataStream.

Panel A: Change of Holdings

	Average Return (x100)	Change of holdings				
		at t (x10000)	at t+1 (x10000)	at t+2 (x10000)	at t+3 (x10000)	at t+4 (x10000)
1 (Low)	-3.952	23.917	-24.571	-20.942	-16.484	-13.086
		(4.060)	(-3.847)	(-3.881)	(-3.104)	(-2.846)
2	-1.465	19.699	-23.286	-18.488	-16.020	-12.875
		(3.344)	(-3.645)	(-3.427)	(-3.017)	(-2.800)
3	-0.276	16.538	-22.809	-18.770	-17.653	-14.061
		(2.808)	(-3.571)	(-3.479)	(-3.324)	(-3.058)
4	1.083	18.649	-24.400	-18.566	-17.433	-14.545
		(3.166)	(-3.820)	(-3.441)	(-3.283)	(-3.163)
5 (High)	4.033	26.981	-24.099	-16.675	-13.349	-15.299
		(4.581)	(-3.773)	(-3.091)	(-2.514)	(-3.327)
High-Low		3.064	0.472	4.267	3.135	-2.213
		(0.520)	(0.074)	(0.791)	(0.590)	(-0.481)

Panel B: Change of Holdings Relative to Average Level of Holdings within Quintile

	Average Return (x100)	Relative Change of Holdings				
		at t	at t+1	at t+2	at t+3	at t+4
1 (Low)	-3.952	0.924	-0.199	-0.110	-0.151	-0.103
		(3.185)	(-5.963)	(-2.621)	(-4.169)	(-2.234)
2	-1.465	0.106	-0.192	-0.178	-0.163	-0.162
		(0.365)	(-5.749)	(-4.242)	(-4.504)	(-3.498)
3	-0.276	0.123	-0.202	-0.182	-0.174	-0.154
		(0.423)	(-6.053)	(-4.328)	(-4.811)	(-3.324)
4	1.083	0.091	-0.189	-0.179	-0.172	-0.140
		(0.312)	(-5.661)	(-4.259)	(-4.745)	(-3.030)
5 (High)	4.033	0.477	-0.160	-0.145	-0.146	-0.128
		(1.643)	(-4.787)	(-3.456)	(-4.027)	(-2.769)
High-Low		-0.447	0.039	-0.035	0.005	-0.025
		(-1.542)	(1.176)	(-0.835)	(0.142)	(-0.535)

Table S6. 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 3 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^2s, 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 S6. 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 S6. 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 S7. 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^2s 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 S7. 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 S8. 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^2s 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 S8. 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 S9. 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 3 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.

| Ownership Return		Returns (USD)			Change in Foreign Ownership		
		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 S10. Illiquid and Emerging Market Stocks

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 (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). The table 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). 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 3 lags. 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.

		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

**Figure S1. Ownership Returns Coefficient Over the Quarter**

This figure document the ownership returns coefficient over the quarter. A cross-sectional regression is run where weekly stock returns is regressed upon foreign ownership returns. The regression is rerun every week at the beginning of each week and then subsequent weeks over the quarter. After getting an estimated coefficient for each week, we average such coefficient across the weeks that have the same number of weeks away from previous quarter end. The y-axis shows the ownership returns coefficients over the 14 weeks within each quarter. The x-axis shows the number of weeks from the previous and it is cross-sectional regression for each week. 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.
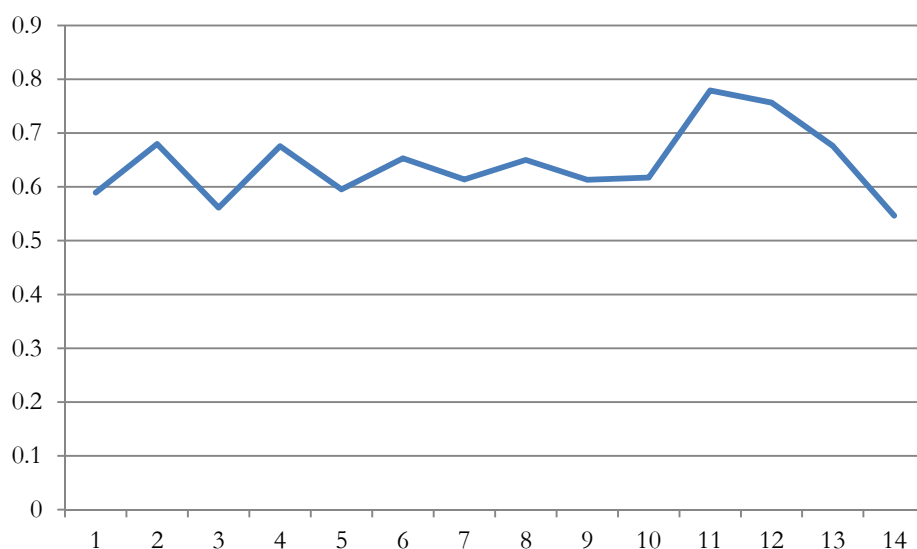
Figure S2. Foreign Ownership Regression Coefficients Over Time

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 (Panel A) or quarter (Panels B and C), 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 (7 quarters). The figure shows the moving average. Shaded areas are NBER recession periods. In Panel A, stock returns are regressed on an intercept (not reported), the foreign institutional ownership return (Ownership Return), global industry index returns excluding the industry in the local market (Industry), local market index returns (Local Market) and world market index returns (World). In Panel B, stock returns are regressed on an intercept (not reported), the foreign institutional ownership return (RtO_F), and global industry index returns excluding the industry in the local market (Industry ex loc). In Panel C, stock returns are regressed on an intercept (not reported), the foreign institutional ownership return (RtO_F), global industry index returns excluding the industry in the local market (Industry ex loc) and local market index returns (Local). 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).

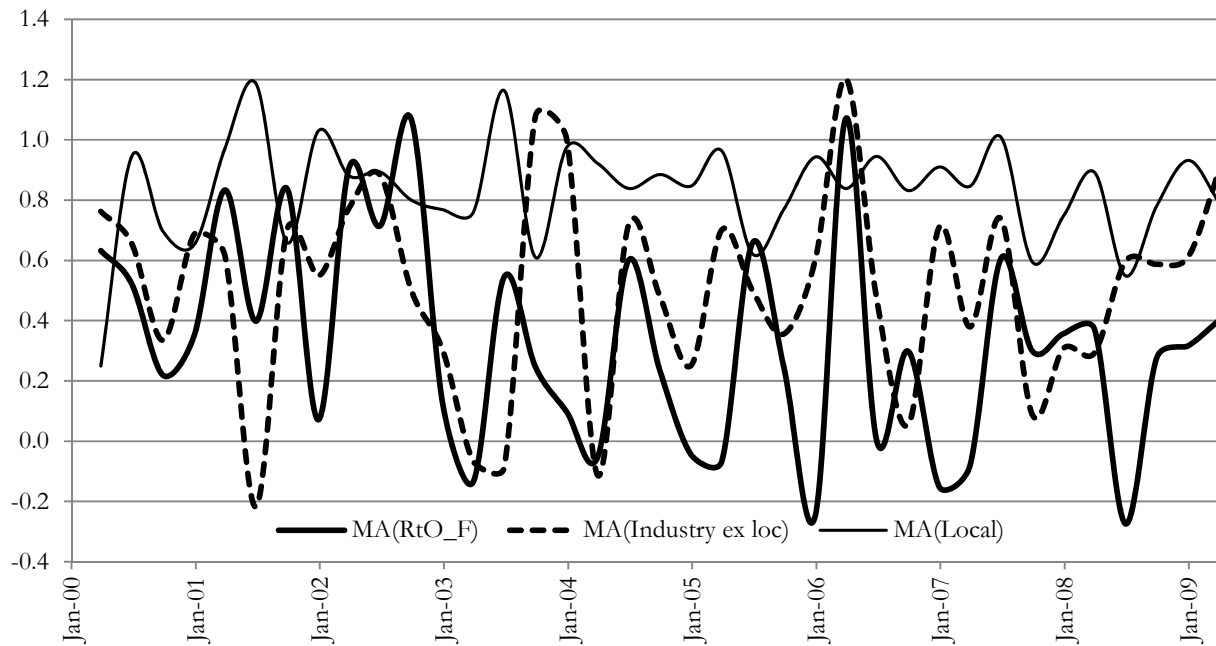**Panel A: Model with Weekly Data and Local Market**
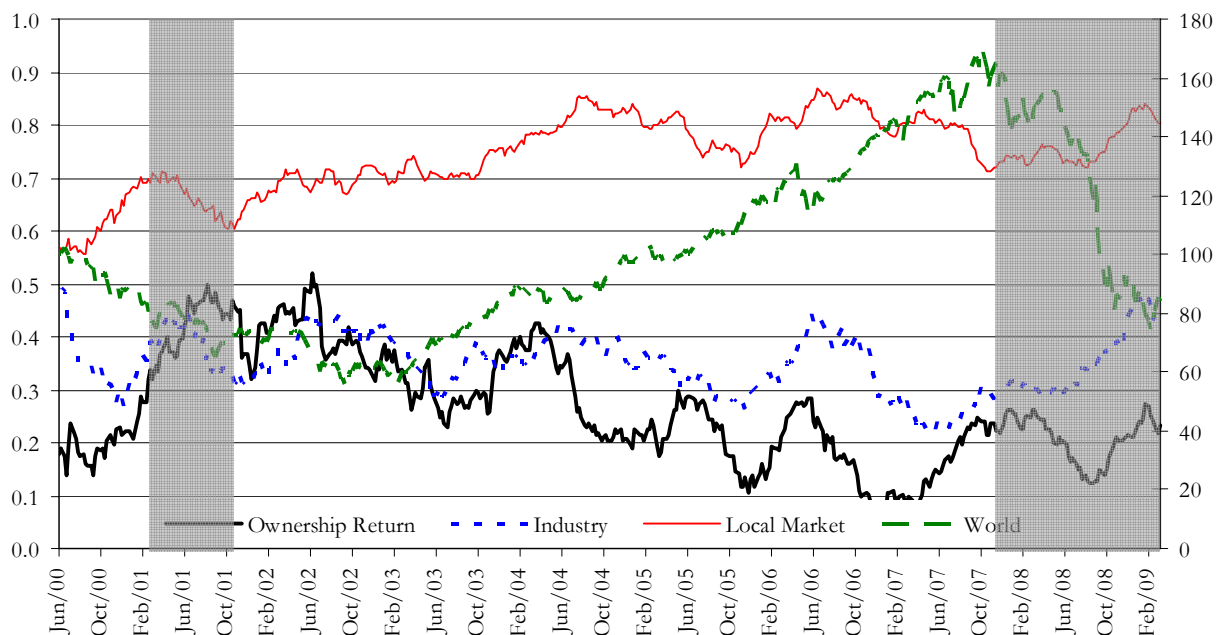
(continued)

Figure S2. Foreign Ownership Regression Coefficients Over Time (continued)
Panel B: Model with Quarterly Data without Local Market Index
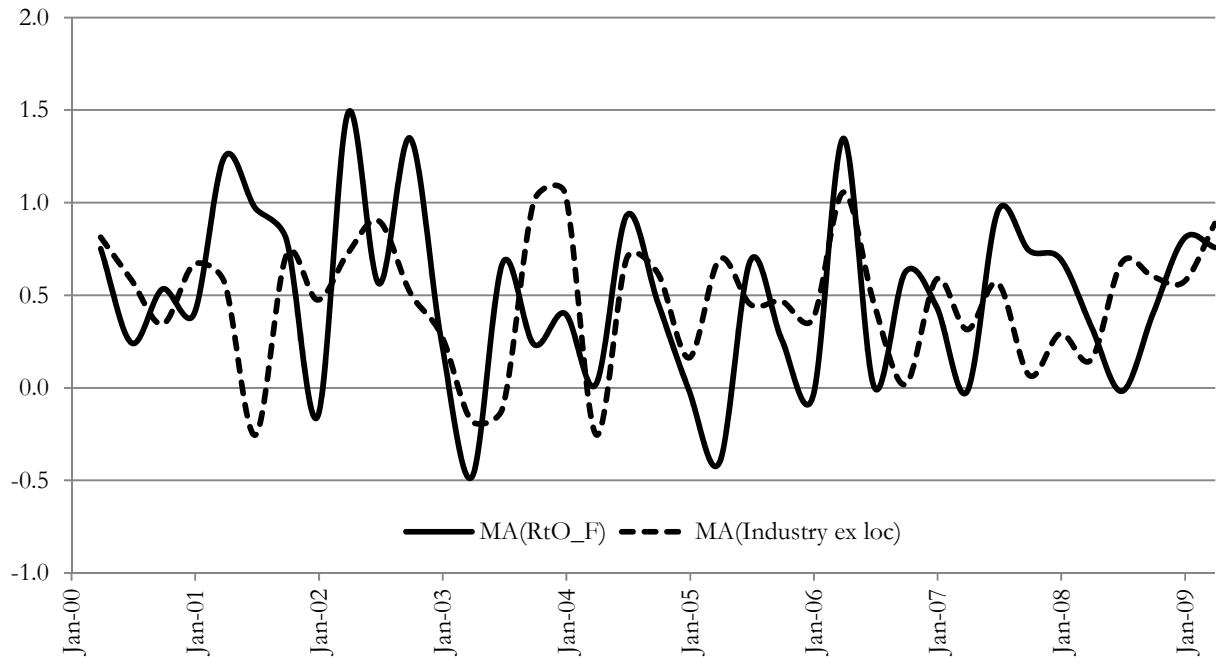
**Panel C: Model with Quarterly Data and Local Market Index**

Figure S3. Ownership Level and Portfolio Diversification

The figure shows the effect of 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 pure country or pure industry diversification, as in Griffin and Karolyi (1998), and subsequently the average across years is calculated. Panel A shows country portfolio diversification, and Panel B shows industry portfolio diversification. Ownership data is from Lionshares, while data on returns for individual stocks is from DataStream.

Panel A: Country Portfolio Diversification
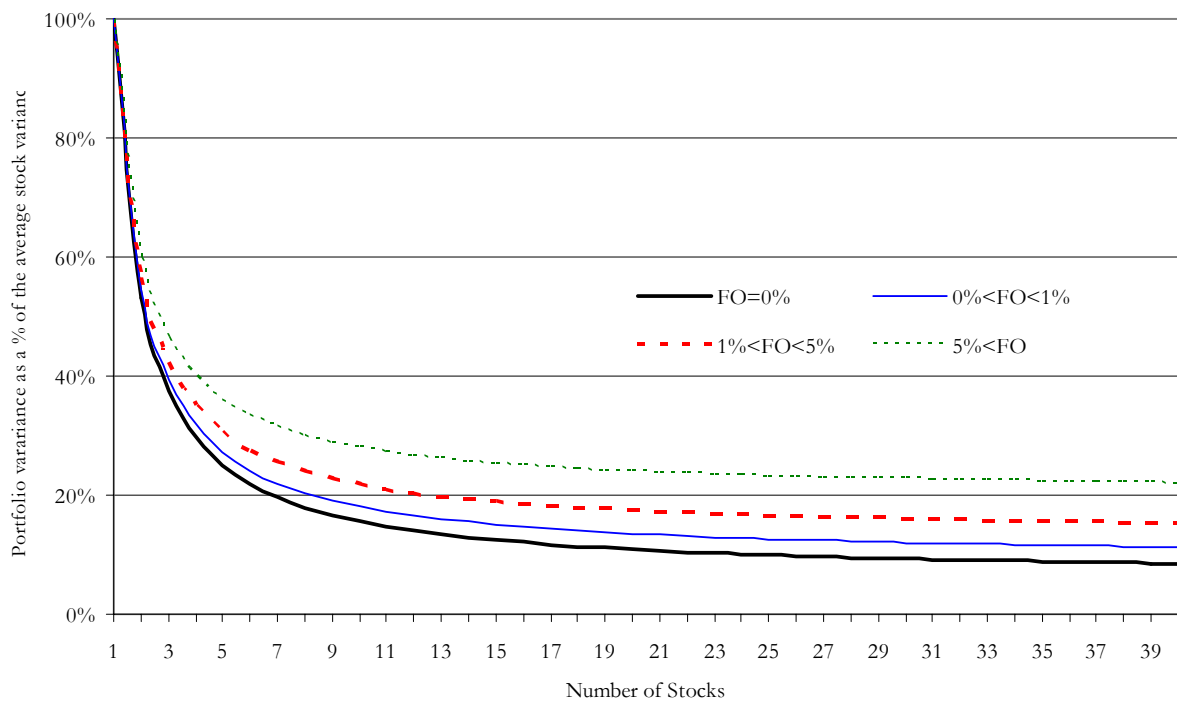
(continued)

Figure S3. Ownership Level and Portfolio Diversification (continued)
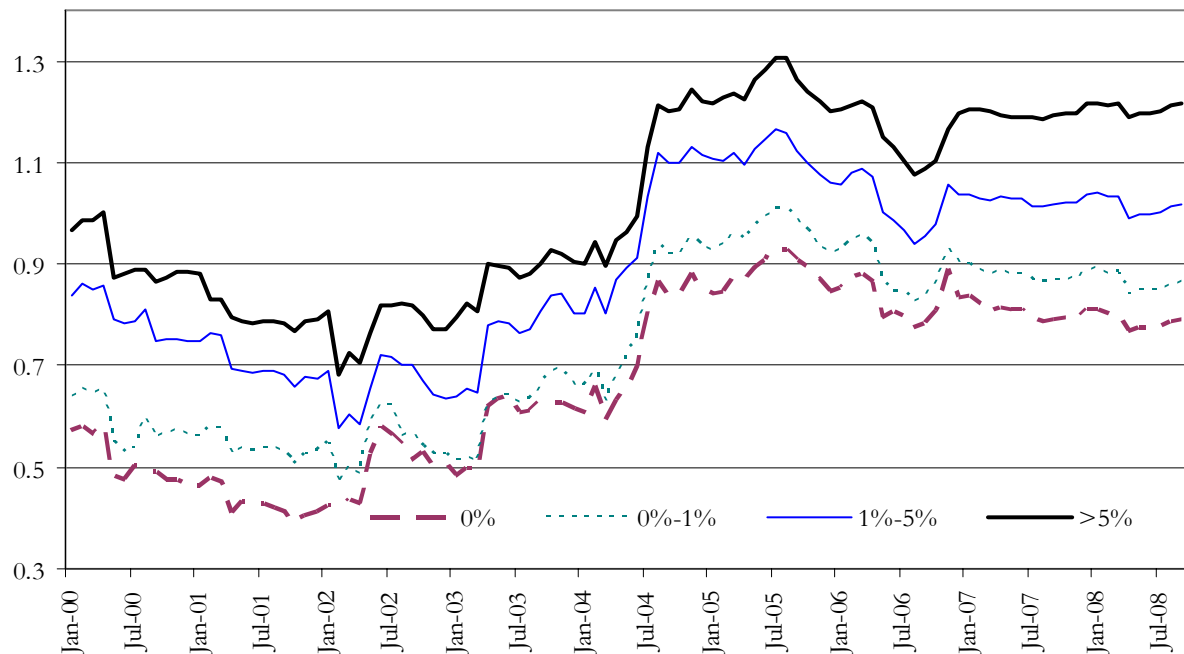
Panel B: Industry Portfolio Diversification
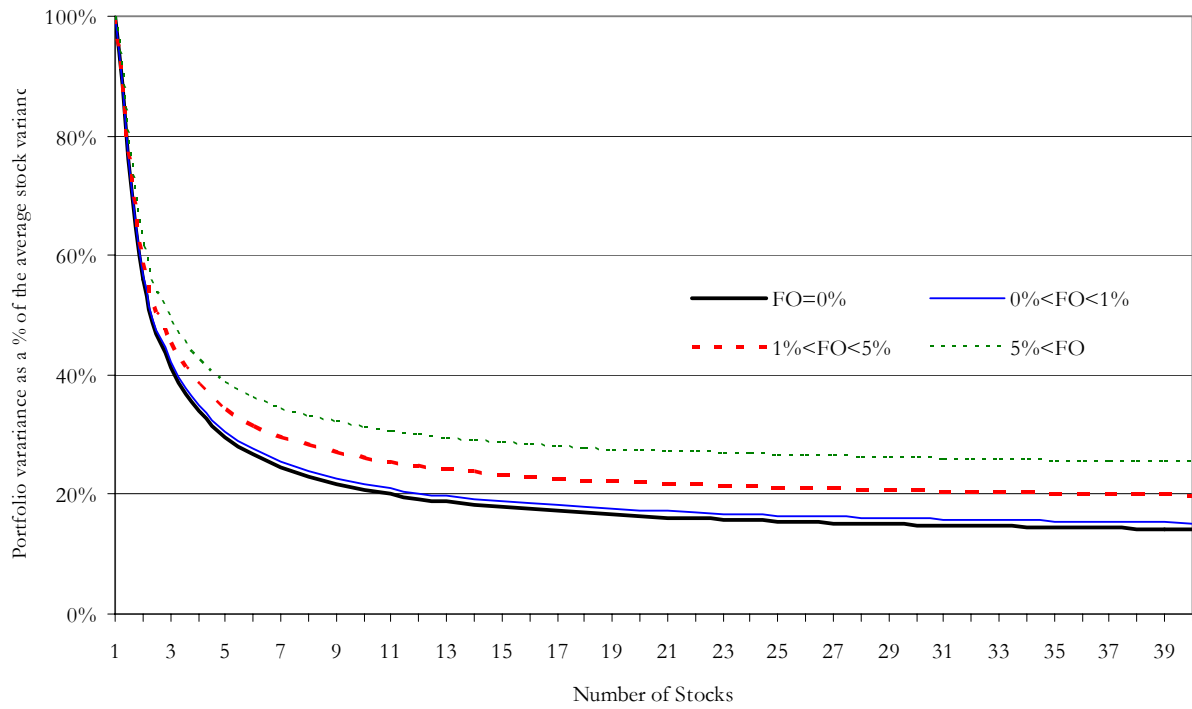
Figure S4. Equally-Weighted Market Sensitivity and Explanatory Power of Ownership Portfolios

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.
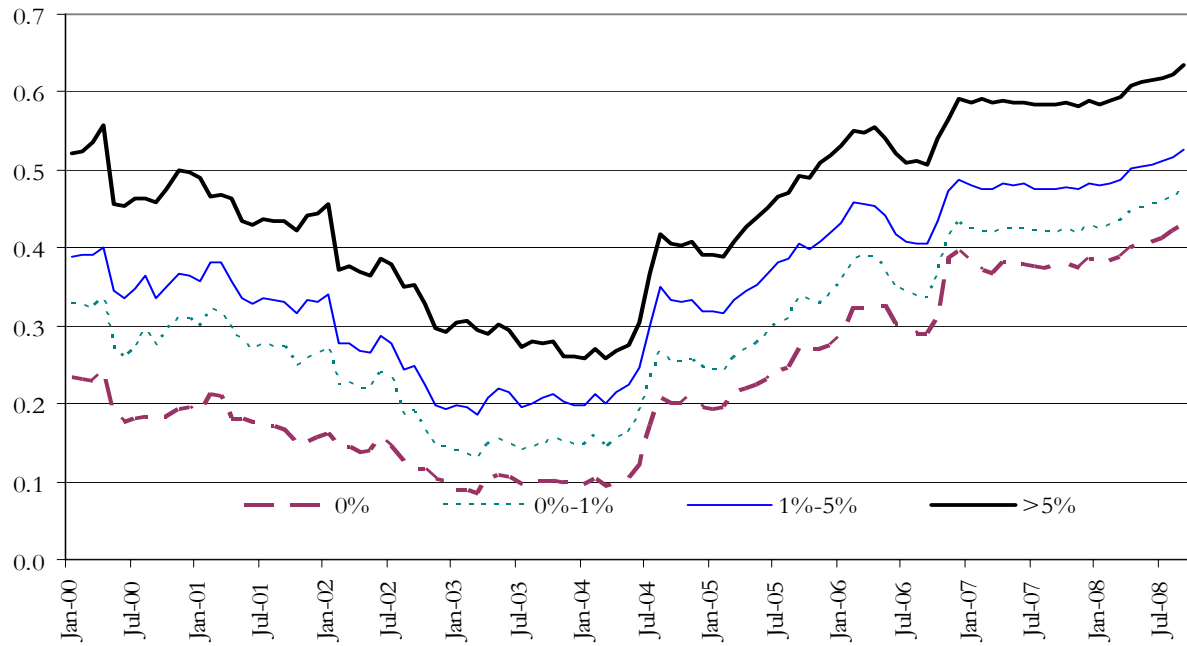
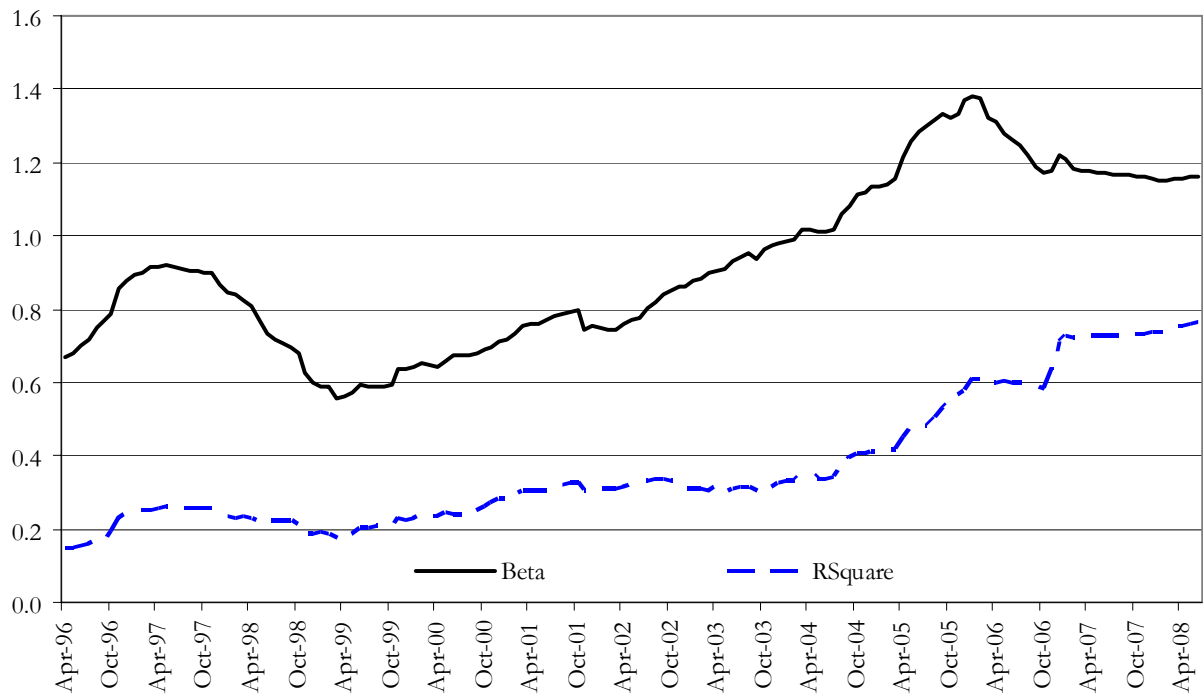**Panel A: Equally-Weighted World Market Betas**

(continued)

Figure S4. Equally-Weighted Market Sensitivity and Explanatory Power of Ownership Portfolios (continued)

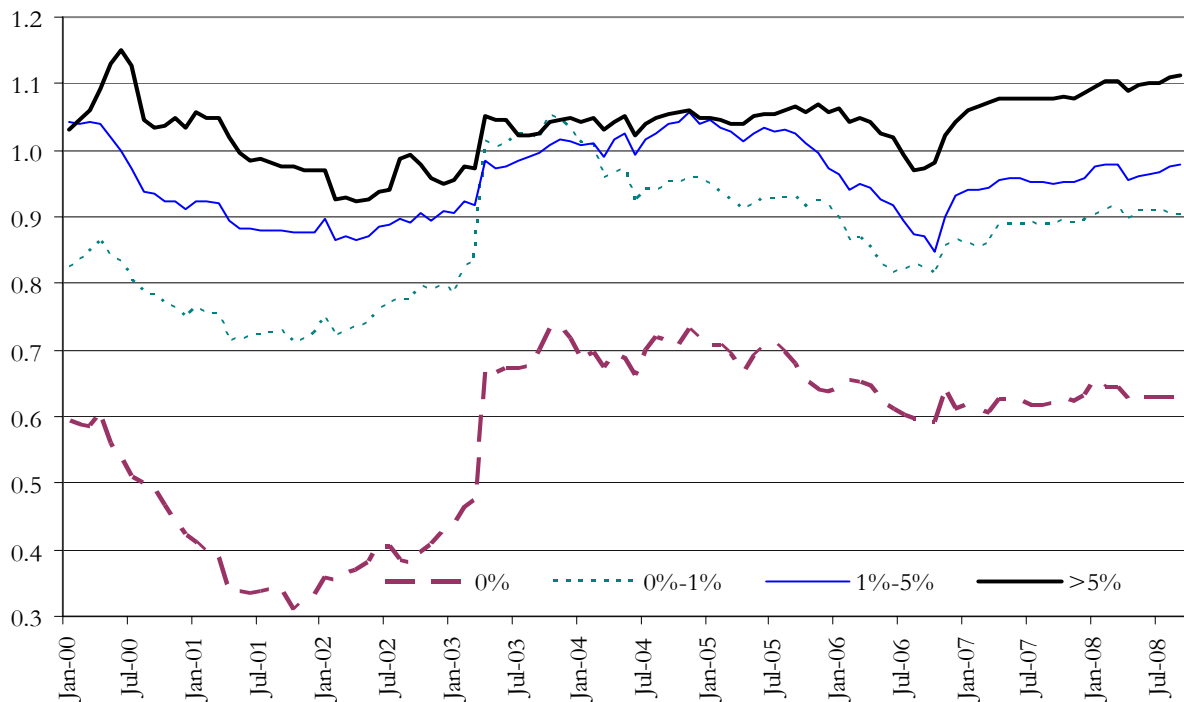**Panel B: Equally-Weighted R^2**

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

Figure S5. 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 S5. Value-Weighted Market Sensitivity and Explanatory Power of Ownership Portfolios (continued)

Panel B: Value-weighted R2