How Important are Foreign Ownership Linkages for International Stock Returns?

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Abstract

We derive a foreign ownership return as the weighted average return of foreign stocks that are connected to a stock through common ownership. The foreign ownership return is of similar economic significance as traditional country and industry factors in explaining international stock returns. It is not related to omitted fundamentals or wealth effects, but shifts substantially around ADR and index listings when the investor habitat changes. A decomposition shows that the foreign ownership return is driven by active reallocations of global institutions as opposed to fund flows from end investors. Our finding has important implications for international portfolio diversification.

Keywords: Institutional foreign ownership, asset management, portfolio diversification, international finance, comovement
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The traditional finance view suggests that international stock returns are mainly driven by their underlying fundamentals proxied by industry and country affiliations.[1] However, there is growing evidence that investor demand can affect security prices beyond the effect of fundamentals (Shleifer (1986), Coval and Stafford (2007), and Cohen, Diether, and Malloy (2007)).[2] For example, Greenwood (2005 and 2008), Kumar and Lee (2006), Boyer (2011), and Hau and Lai (2013) demonstrate that a demand-based view can explain substantial price comovement and even dislocations. We contribute to this literature by creating a summary measure of the influence of investor demand on stock returns and documenting its importance for international stock returns and diversification.

Our work is motivated by behavioral theories that explain stock price comovement. In Barberis and Shleifer (2003) and Barberis, Shleifer, and Wurgler (2005) investors with similar demand-based preferences for certain stocks create comovement in returns when they shift their investment views and trade. They define the group of stocks in which a set of common investors trade as an 'investment habitat'. In Daniel, Hirshleifer, and Subrahmanyam (2001), overconfident investors create covariation when they react to events in a common manner.[3] In Hirshleifer (2014), covariation in returns is created by investors thinking heuristically about security categories. Peng and Xiong (2006) show that attention-constrained investors tend to allocate more attention to mar-

[1] Papers analyzing country and industry sources of variation include Roll (1992), Heston and Rouwenhorst (1994), Griffin and Karolyi (1998), Carrieri, Errunza, and Sarkissian (2004), and Bekaert, Hodrick, and Zhang (2009).
[2] Grinblatt and Han (2005), Pirinsky and Wang (2006), Frazzini and Lamont (2008), Sun (2008), Andrade, Chang, and Seasholes (2008), Green and Hwang (2009), Greenwood and Nagel (2009), Hirshleifer and Jiang (2010), Dorn and Hubermann (2010), Kumar, Page, and Spalt (2012), Lou (2012), and Hombert and Thesmar (2014) provide evidence that non-informative demand can cause price comovement and dislocations.
[3] This motivation leads Hirshleifer and Jiang (2010) to construct a misvaluation factor that captures sizeable covariation in returns.

ket-level and sector-level factors than to firm-specific factors. As a result, return correlations between firms can be higher than their fundamental correlations.[4]

The effects of stock ownership can be quantified in a distance-based framework. In the international finance literature, stock returns are often priced by country and industry portfolio returns. Such factor models can be thought of in terms of distance. For the country dimension, a stock has the closest distance to other stocks in the same country. Country portfolio returns are the weighted average return of all stocks that have zero distance from each other by the country dimension, i.e., that have the same country membership. Similarly, industry portfolio returns are the weighted average return of all stocks that have the same industry classification and thus have zero distance along this dimension.

Applying this approach to the more complex ownership structure of a stock yields an ownership return that summarizes its investor habitat. In particular, we derive the ownership return of a given stock *i* as the weighted average return of stocks that are connected to stock *i* through common ownership, with more weights given to: a) stocks that share a large fraction of common owners with stock *i*, b) stocks whose owners hold more of stock *i*, and c) stocks that are heavily invested in by stock *i*'s owners. For better identification due to a more dispersed ownership structure, we use an empirical implementation based only on stocks that are foreign to the stock being examined, which we refer to as the foreign ownership return.[5]

We examine the importance of the foreign ownership return for weekly, monthly, and quarterly returns using detailed holding data from the Lionshares Holdings database for 8,791 firms

[4] Along the same lines, Barberis and Shleifer (2003) note that investors often organize their investment decisions based on style strategies, i.e., they categorize securities into exogenous style classes and shift investment in and out of these classes simultaneously.

[5] We focus on variation due to ownership returns outside of a country because ownership returns within a country are highly correlated with the local market return, making the interpretation more difficult. Nevertheless, we also show economically large effects for domestic ownership returns.

domiciled outside the United States. For stocks with more than five percent foreign ownership, a one percent increase in the foreign ownership return is associated with an economically large 0.311 percent increase in a firm's stock return, even after controlling for the movements of local market and industry portfolios. In time-series analyses, the covariation in returns attributable to the foreign ownership return is of similar importance as industry and country factors. We also calculate a foreign non-ownership return where each stock in a stock's foreign ownership return is replaced with a stock with matching country, industry, and size characteristics, but without common ownership. This foreign non-ownership return is completely unrelated to stock returns, indicating that the foreign ownership return is not capturing unobserved country/industry fundamentals.[6]

Having established the importance of the foreign ownership return for stock returns, we provide additional insights into its drivers. In particular, we investigate two quasi-natural experiments. We first look at the shift in the ownership structure of stocks around their American Depository Receipt (ADR) or Global Depository Receipt (GDR) listing date. Second, we look at the inclusions of stocks into a stock market index. These events represent mostly exogenous shocks to the ownership of stocks and shifts in the investor habitat. We find that stocks that are cross-listed or added to a market index become more highly associated with the foreign ownership return based on their new owners following the listing/index inclusion, particularly for stocks that experience a large increase in foreign ownership. The covariation of stocks changes in a way which is consistent with the foreign ownership return being driven by a shift in investor habitat.

The common changes in ownership can be discretionary choices or induced by correlated investor flows. An example of discretionary choices is the model of Daniel, Hirshleifer, and Subrahmanyam (2001), where overconfident investors cause covariation as they misinterpret sig-

[6] The role of the foreign ownership return is also not explained by stock liquidity levels, the level of foreign ownership, market integration channels, nor even the change of ownership itself.

nals arising from economic factors. We decompose the foreign ownership return into a component that is due to passive allocation from fund flows and another component that is due to discretionary choices of funds that are not related to flows We show that the importance of the foreign ownership return is due to the discretionary stock picking component and not due to fund flows. We also find little evidence that our findings can be explained by wealth effects. In contrast, we find that the foreign ownership return is mostly driven by funds with high active shares, funds with high turnover, and global funds, as opposed to funds with high or low flows, and regional or country funds. The evidence suggests that the importance of the foreign ownership return is primarily driven by global fund investors taking active bets on stocks in different countries.

Finally, we examine the diversification implications of our findings. We assess the incremental diversification benefit of funds when they diversify along the foreign ownership return dimension. In particular, we divide stocks into quintiles based on the correlation between the foreign ownership return of the stock and the return of each fund in the prior year. The diversification limit of the stocks in the lowest correlation quintile is almost half that of stocks in the highest correlation quintile. Moreover, the finding that the foreign ownership return correlation increases after an index inclusion suggests that index holdings reduce diversification through their correlated holdings. Therefore, when seeking international diversification, investors need to consider not just the country and industry composition of the stocks they seek to invest in, but also the manner in which stocks are connected to their fund through holdings by global investors.

Our work is related to a growing literature that points to the relevance of stock ownership for explaining comovement in international equities. In a domestic context, Greenwood and Thesmar (2011) show that U.S. mutual funds with highly correlated fund flows exhibit higher volatility and correlations.[7] Anton and Polk (2014) show that covariation between stock pairs is related to their common foreign ownership which can be used to predict short-term reversals. Internationally, Jotikasthira, Lundblad, and Ramadorai (2012) find that mutual fund flows from domestic markets can drive emerging market returns, and Hau and Lai (2013) provide evidence of fire sales pressuring prices by examining losses of funds holding bank stocks during the financial crisis.[8] Interestingly, the fund flow channel emphasized in many previous studies is not the driver of our findings. More importantly, our paper builds upon this literature by creating a new summary measure of how stocks are connected through common ownership and demonstrating its wide-scale economic importance and applicability.

Section 1 shows how country, industry, and ownership dimensions can be viewed in a parsimonious framework as measuring the distance between stocks. Section 2 describes the empirical implementation of constructing the foreign ownership return and discusses details of our sample and data sources. Section 3 provides cross-sectional and time-series evidence of the economic and statistical importance of the foreign ownership return. Section 4 offers further insights into the drivers of foreign ownership returns by analyzing ADR/GDR listings, stock market index inclusions, different types of owners, discretionary and flow-based trading, and wealth effects. Section 5 discusses diversification implications, and Section 6 concludes.

[7] Frazzini and Lamont (2008) and Lou (2012) find domestic evidence of flows moving prices. Ellul, Jotikasthira, and Lundblad (2011) find fire sales in the bond market. Calomiris, Love, and Peria (2012) argue that negative global equity returns during the financial crisis are related to price pressure as proxied for by previous turnover.

[8] 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 (2010), Hau and Rey (2011), and Faias, Ferreira, Matos, and Santa-Clara (2012)). The importance of capital flows at the market level is examined by Froot, O'Connell, and Seasholes (2001), Bekaert, Harvey, and Lumsdaine (2002), Froot and Ramadorai (2008), and Bekaert and Wang (2010), among others, who conclude that global betas are linked to financial openness.

1 Ownership Channels and Testable Implications

In this section we show how country, industry, and ownership returns can be viewed in a common framework as different dimensions of the distance between stocks.[9]

1.1 Fundamentals and Ownership Linkage through Investor Habitat

Building on evidence for demand-based pricing, Barberis, Shleifer, and Wurgler (2005) (hereto forth, BSW) 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. BSW show in their equation (4) that returns of a stock i are driven by two components:

$$R_{i,t} = CF_{i,t} + \Delta u_{Y,t} \text{ where } i \in Y \tag{1}$$

The first driver of variations in returns is news about cash flows ($CF_{i,t}$), which are often quantified through country and industry memberships in the international finance literature.[10] BSW define the second component, $\Delta u_{Y,t}$, as the part of the return of a stock that is affected by the demand of specific investors in a habitat Y, which can arise because of transaction costs, international trading restrictions, or lack of information. As investors' risk aversion, sentiment, or liquidity needs change, they alter their exposure to the securities in their habitat, thereby inducing a common factor in the returns of these securities. This view of comovement predicts that there will be a common factor in the returns of securities that are held and traded by a specific subset of investors who act according to heuristics (Hirshleifer (2014)) or whose attention is constrained (Peng and Xiong (2006)). As we

[9] We examine covariation of realized returns. In the international asset pricing literature, local and global factors depend on the degree of integration/segmentation (Stulz (1981), Errunza and Losq (1985), and Dumas, Lewis and Osambela (2011)). This literature is surveyed in Bekaert and Harvey (2003) and Karolyi and Stulz (2003).

[10] It is important to note that variation related to cash flow news need not be entirely rational. Indeed, in Daniel, Hirshleifer, and Subrahmanyan (2001) trading mistakes are systematically correlated with economic fundamentals. This would also include fundamental shifts in discount rates that affect countries and industries.

show in the following sections, our foreign ownership return can be interpreted as the weighted average return of all the stocks traded in a particular habitat.

1.2 Derivation of Factor Model with Country, Industry and Ownership Return

A factor model can be interpreted as a metric of linking returns of one stock to other stocks by quantifying the distance to all other stocks along the country, industry and ownership dimensions.[11]

1.2.1 Country and Industry Factor Model

In the case of country and industry factors, a simple way of measuring the distance between stocks is by the binomial metric of either zero or one. Assume that we have a set of stocks $i = 1, 2, \ldots, N$. For the country dimension, we consider whether the company of a stock is incorporated in a country l or not ($l = 1$ to L). In particular, for each stock we consider an L by 1 vector q_i^C whose l^{th} element is the indicator variable $q_{i,l}^C$ that takes the value 1 if a stock is in country l and zero otherwise. The distance between two stocks i and j by country membership can then be captured by the Manhattan distance between two vectors q_i^C and q_j^C:[12]

$$d^C(i,j) = \frac{1}{2}\sum_{l=1}^{L}\left|q_{i,l}^C - q_{j,l}^C\right| \tag{2}$$

Scaling by 2, which is the maximum distance between two stocks, yields $d^C(i,j) = 1$ for stocks in different countries and $d^C(i,j) = 0$ for stocks in the same country.

Similarly, we utilize a vector for each stock that describes whether it is in an industry p or not, i.e., the p^{th} element of the vector q_i^I takes the value 1 if stock i is in industry p and zero other-

[11] We thank an anonymous referee for detailed suggestions on the derivation of the factors. The derivation here closely follows his/her outline.

[12] While there exists many possible distance metrics, the following derivation makes use of the Manhattan distance (a version of the Euclidean distance) because it provides particularly intuitive interpretations. As detailed below, we combine this metric with market capitalization weights in order to obtain economically meaningful measures of stock linkages along the country, industry and ownership dimension.

wise (p = 1 to P). The distance $d^I(i,j)$ between two stocks i and j by industry membership is then defined as the scaled Manhattan distance between two vectors q_i^I and q_j^I:

$$d^I(i,j) = \frac{1}{2}\sum_{p=1}^{P}\left|q_{i,p}^I - q_{j,p}^I\right| \tag{3}$$

The distance between two stocks i and j is 1 for stocks in different industries and zero for stocks in the same industry. A proximity vector $X(i)$ for stock i is then defined as one minus the stacked distances with respect to all stocks:

$$\boldsymbol{X}(i) = \begin{bmatrix} 1 - d(i,1) \\ 1 - d(i,2) \\ \vdots \\ 1 - d(i,N) \end{bmatrix} \tag{4}$$

A stock return vector R for all N stocks is similarly defined as the stacked returns of all stocks:

$$\boldsymbol{R}_t = \begin{bmatrix} R_{1t} \\ R_{2t} \\ \vdots \\ R_{Nt} \end{bmatrix} \tag{5}$$

A common risk factor $F(i)_t$ with respect to a distance metric d is the set of OLS coefficients in a regression of the return vector R on a stock's proximity vector:

$$\boldsymbol{R}_t = F(i)_t\boldsymbol{X}(i) + \epsilon \tag{6}$$

Thus, the return factor $F(i)_t$ minimizes (for every stock i) the quadratic deviation between the stock's proximity vector to all other stocks $X(i)$ and their stock return R_t. In the context of country and industry dimensions, X takes values of one for stocks in the same country (industry), and, thus, $F(i)$ is the equally-weighted return of stocks in the same country (industry). However, value-weighted portfolios are often more common, and regressions have typically been estimated using weighted least squares based on stock market capitalization weights (e.g. Heston and

Rouwenhorst (1994)). Using the country and industry distance metrics d^C and d^I and the respective proximity vectors X^C and X^I, the country and industry factors are simply the value-weighted mean country or industry returns:

$$\begin{aligned} F^C(i)_t &= \left[\boldsymbol{X}^C(i)'\,\Omega^M(i)^{-1}\boldsymbol{X}^C(i)\right]^{-1}\boldsymbol{X}^C(i)'\,\Omega^M(i)^{-1}\boldsymbol{R}_t \\ &= \sum_j m^C_{i,j}\left(1-d^C(i,j)\right)R_{j,t} = R^C_t(i) \end{aligned} \tag{7}$$

$$\begin{aligned} F^I(i)_t &= \left[\boldsymbol{X}^I(i)'\,\Omega^M(i)^{-1}\boldsymbol{X}^I(i)\right]^{-1}\boldsymbol{X}^I(i)'\,\Omega^M(i)^{-1}\boldsymbol{R}_t \\ &= \sum_j m^I_{i,j}\left(1-d^I(i,j)\right)R_{j,t} = R^I_t(i) \end{aligned} \tag{8}$$

where $\Omega^M(i)^{-1} = \begin{bmatrix} M_1 & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & M_N \end{bmatrix}$ is a diagonal matrix with market capitalizations of all firms in the world. The market capitalization weights for country and industry factors are $m^C_{i,j} = \frac{X^C(i)_j M_j}{\sum_j X^C(i)_j M_j}$ and $m^I_{i,j} = \frac{X^I(i)_j M_j}{\sum_j X^I(i)_j M_j}$, respectively.

The expressions for $R^C_t(i)$ and $R^I_t(i)$ effectively capture the market capitalization weighted return of stocks conditional on them being in the same country or industry (i.e., their distance being zero). Note that for the country and industry dimensions, the distance metric is either zero or one, and every stock is only part of exactly one country and industry portfolio.[13]

A linear two factor model with just country and industry factors can then be specified as

$$R_{it} = \beta^C F^C(i)_t + \beta^I F^I(i)_t + \epsilon = \beta^C R^C_t(i) + \beta^I R^I_t(i) + \epsilon \tag{9}$$

where β^C and β^I are the loadings on the country and industry factors.

[13] Since every stock is only part of exactly one country (industry) portfolio, we do not need a subindex l (p) for the weight $m^C_{i,j}$ ($m^I_{i,j}$).

1.2.2 Ownership Return

A similar approach as for country and industry factors can be applied to quantify the level of connectedness between stocks based on common institutional ownership. In particular, the ownership structure of stock i with regards to all funds k = 1 to K can be described by a K by 1 vector whose k^{th} element is the indicator variable $q_{i,k}^O$ that takes the value 1 if stock i is held by fund k and zero otherwise. The distance $d^O(i,j)$ between two stocks i and j along the ownership dimension can be measured by the scaled Manhattan distance between vectors q_i^O and q_j^O:

$$d^O(i,j) = \frac{1}{s_{i,j}} \sum_{k=1}^{K} \left| q_{i,k}^O - q_{j,k}^O \right| \tag{10}$$

where $s_{i,j}$ is the number of funds holding either stock i or stock j. Scaling by $s_{i,j}$ yields $d^O(i,j) = 1$ for stocks where all owners are different, and $d^O(i,j) = 0$ for stocks where all owners are the same. For all other cases with partial overlap of the owners, $d^O(i,j)$ takes values between 0 and 1. The distance measure $d^O(i,j)$ can be interpreted as the percentage of owners that are different between stocks i and j. We define the proximity metric to be 1 minus the distance metric: $x^O(i,j) = 1 - d^O(i,j)$. Stacking the proximity metrics for a stock i with regard to all other stocks yields the proximity vector $X^O(i)$.

In addition to the ownership distance metric, the ownership return should quantify the combined effect of all ownership-linked securities in a value-weighted fashion. To do so, we consider two weights: 1) the percentage $w_{i,k}$ of market capitalization of stock i held by institution k and 2) the percentage $v_{k,j}$ of institution k's equity portfolio that is invested in stock j. Both weights are constructed from data available at the previous quarter end. The weights w and v measure the relative strength of the linkages of stocks i and j with a fund k. Portfolio theory suggests that stocks with a larger portfolio weight v are more important for portfolio return and risk. In addition, the fraction w captures the extent to which stock i is owned by fund k, and represents the importance of fund k to stock i. The product of the two weights, $w_{i,k}v_{k,j}$, summarizes how strong the linkage is between the two stocks via institution k. The linkage between two stocks can be represented by the sum of the products across all institutions, $\sum_{k=1}^{K} w_{ik}v_{kj}$.

The ownership weights of stock i with regards to all other stocks can be summarized in the diagonal weighting matrix $\Omega^{O}(i)^{-1} = \begin{bmatrix} h_{i,1} & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & h_{i,N} \end{bmatrix}$ where $h_{i,j} = \sum_{k=1}^{K} w_{ik}v_{kj}$ and $j = 1, 2, \ldots, N$. Using this weighting matrix and the proximity matrix X^O yields the ownership return as:[14]

$$\begin{aligned} F^{O}(i)_t &= \left[\boldsymbol{X}^{O}(i)'\,\Omega^{O}(i)^{-1}\boldsymbol{X}^{O}(i)\right]^{-1}\boldsymbol{X}^{O}(i)'\,\Omega^{O}(i)^{-1}\boldsymbol{R_t} \\ &= \frac{1}{C}\sum_{j=1}^{N}\left(1-d_{O,i,j}\right)\sum_{k=1}^{K} w_{i,k}v_{k,j}R_{j,t} = R_t^{O}(i) \end{aligned} \tag{11}$$

Thus, the ownership return quantifies the linkage between stocks due to institutional ownership via the number (fraction) of common owners, but also the size of the stock holdings and corresponding significance of common ownership. Note that in contrast to country and industry factors, the ownership return is stock-specific and in that sense is not a "factor" in the traditional asset pricing sense. The weights and the distance are measured at the end of the last quarter, while the returns are measured over the course of the current period.[15] The ownership return can be thought of as a weighted average of the habitats in which the investors trade, i.e., a measure of the return of the portfolios of institutional owners.

[14] The number of stocks is N and $C = \boldsymbol{X}^{O}(i)'\,\Omega^{O}(i)^{-1}\boldsymbol{X}^{O}(i) = \sum_{j=1}^{N}\left(1-d_{O,i,j}\right)^2\sum_{k=1}^{K} w_{i,k}v_{k,j}$. Yet in the empirical implementation we use $C' = \sum_{j=1}^{N}\left(1-d_{O,i,j}\right)\sum_{k=1}^{K} w_{i,k}v_{k,j}$ so that the weights of $R_{j,t}$ sum to 1.

[15] Note that for all distance metrics (country, industry, ownership), the distance of a stock with itself is always 0.

For additional intuition of how the ownership return reflects investor habitat, consider the case of one single (common) investor (*K=1*). Suppose the investor holds all stocks (*i=1,…,N*). Here, the ownership distance of all stocks is zero with regards to all other stocks:

$$d^{O}(i,j) = \frac{1}{s_{i,j}} \sum_{k=1}^{K} \left| q_{i,k}^{O} - q_{j,k}^{O} \right| = \frac{1}{1} \sum_{k=1}^{1} \left| q_{i,k}^{O} - q_{j,k}^{O} \right| = 1\ |1-1| = 0 \tag{12}$$

As a result, the proximity between all stocks (i.e., one minus the distance) is one for all stocks. If the investor holds all stocks in proportion to their market capitalization, then $R_t^O(i)$ is simply:

$$R_t^{O}(i) = \frac{1}{C} \sum_{j=1}^{N} (1-0) \sum_{k=1}^{K} w_{i,k} v_{k,j} R_{j,t} \tag{13}$$

i.e., the market capitalization weighted average return of all stocks in the habitat.

If the single investor holds only some of the stocks in the universe, then the distance between all stocks held by the investor will be zero, while their distance with all stocks not held by the investor will be one. Since stocks with a distance of 1 drop out in the ownership return calculation (one minus the distance is zero), the return of the stocks in the habitat of the investor is the weighted average of the returns of the stocks held by the investor. This is what BSW refer to as the return on stocks in the habitat where stocks are either in or out of the habitat (which means in or out of the index in the case of BSW).

We then suppose that there are two investors *(K=2)* that both hold a particular stock *i.* Each investor also holds other stocks, some of which are the same, but others are not. The ownership distance of stock *i* to the other stocks held by both investors is zero:

$$d^O(i,j) = \frac{1}{s_{i,j}}\sum_{k=1}^{K}\left|q_{i,k}^O - q_{j,k}^O\right| = \frac{1}{2}\sum_{k=1}^{2}\left|q_{i,k}^O - q_{j,k}^O\right| = 0.5(|1-1| + |1-1|) = 0 \qquad (14)$$

If one of the two owners holds stock i and j, and the other only holds stock i, then stock i shares partial overlap in ownership (and habitat) with the other stock. In this example, $s_{i,j}$ is 2 since the number of investors holding either stock is 2, and the ownership distance is ½:

$$d^O(i,j) = \frac{1}{s_{i,j}}\sum_{k=1}^{K}\left|q_{i,k}^O - q_{j,k}^O\right| = \frac{1}{2}\sum_{k=1}^{2}\left|q_{i,k}^O - q_{j,k}^O\right| = 0.5(|1-1| + |1-0|) = 0.5 \qquad (15)$$

Now suppose each of the two stocks is held by only one of the two investors. This indicates no overlap in ownership (and habitat) of the two stocks, and this is reflected in the ownership distance between the two stocks, i.e., the ownership distance between the two stocks is one:

$$d^O(i,j) = \frac{1}{s_{i,j}}\sum_{k=1}^{K}\left|q_{i,k}^O - q_{j,k}^O\right| = \frac{1}{2}\sum_{k=1}^{2}\left|q_{i,k}^O - q_{j,k}^O\right| = 0.5(|0-1| + |1-0|) = 1 \qquad (16)$$

The above intuition generalizes across multiple habitats, whether they are partially overlapping or completely disjoint, and demonstrates how the ownership return is a summary measure of the habitats in which stocks trade. We further incorporate the information on the magnitude of ownership by considering the percentage $w_{i,k}$ of market capitalization of stock i that are held by the two institutions, and the percentage $v_{k,j}$ of institution k's equity portfolio that is invested in stock j.

With BSW's habitat measure, stocks are either in or out of the habitat. Our generalization provides a continuous summary measure of investor habitat that gives more weight to stocks that share a large number of common owners with stock i, stocks whose owners hold more of stock i, and stocks that are heavily invested in by stock i's owners.

We can now augment the simple two factor model featuring country and industry factors by adding the ownership return:

$$R_{it} = \beta^C F^C(i)_t + \beta^I F^I(i)_t + \beta^O F^O(i)_t + \epsilon = \beta^C R^C(i)_t + \beta^I R^I(i)_t + \beta^O R^O(i)_t + \epsilon. \quad (17)$$

In the setting of BSW, country and industry portfolios $\beta^C F^C(i) + \beta^I F^I(i)$ proxy for fundamentals (cash flows), while $\beta^O F^O(i)$ proxies for the habitat component of a stock return. We will explicitly address the potential concern that the ownership return may simply capture omitted fundamentals in our empirical work.

2 Empirical Implementation and Data

2.1 Constructing the Foreign Ownership Return

While the derivation of the ownership return in Section 1.2.2 is general, our empirical implementation constructs this variable using only foreign stocks, yielding a foreign ownership return. In particular, we construct the foreign ownership return as:

$$R_t^O(i) = \sum_{j=1}^{N_i} \left(1 - d_{i,j}^O\right) \sum_{k=1}^{K} w_{i,k} v_{k,j} R_{j,t} \quad (18)$$

where $N_i < N$ is the number of foreign stocks relative to the country of incorporation of stock i (regardless of the location of institution k owning the stock). The fact that the foreign stocks come from a diverse set of countries leads to clear identification, whereas the returns of domestic stocks can be highly correlated with the return of the local market. In addition, the coverage of domestic holdings in the Lionshares database is low for funds in many countries.[16] We include all institutional investors, both domestic and foreign, and do not take the perspective of an investor in a par-

[16] Nevertheless, we will also examine a domestic ownership return for robustness. Out of 65 countries for which Lionshares has institutional ownership coverage, only eight countries (Canada, Denmark, Finland, Norway, Sweden, UK, US and Poland) have average local institutional ownership of stocks above 10% across different size quintiles.

ticular country.[17] We also exclude stock i from its foreign ownership (as well as country and industry) return to avoid a mechanical relation. To allow the foreign ownership returns of different stocks to be comparable, we impose the normalization that $\sum_{j=1}^{N_i}\left(1-d_{i,j}^{O}\right)\sum_{k=1}^{K} w_{i,k} v_{k,j}=1$, i.e., the observed ownership weights sum up to one. This makes it easier to interpret our results since foreign ownership returns of different stocks will be comparable.

The foreign ownership return captures the composition of the holdings of the owners of a stock, but not the level of foreign institutional ownership. However, we expect the foreign ownership return to be more important for stocks where the holders represent a large fraction of the shares. Therefore, we focus on examining securities with more than five percent foreign ownership. The foreign ownership return can be constructed for higher frequencies than the quarterly changes in foreign ownership by combining previous quarter's holdings weights with the updated weekly and monthly stock returns.

2.2 Data Sources

Our international institutional holdings are from Factset/Lionshares. We follow many data cleaning procedures described in Ferreira and Matos (2008), augmented with other standard checks for 13F filings as described in Section A of the Internet Appendix. We obtain the historical Lionshares database that is free from survivorship bias. Factset/Lionshares do not provide detailed disclosure of their sources, but they do use data from public 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.

[17] For example, when we construct the foreign ownership return for Samsung, we use holdings from both Korean and non-Korean institutional investors of Samsung that hold stocks from outside of Korea.

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). To maximize data coverage, we use the institutional database as our primary source, but add additional ownership information from the fund database if the parent institution's holdings are not in the institutional ownership database.

For returns and market value data, we use Thomson Financial's Datastream total return indices and market values that we 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 as described with other details in Section A of the Internet Appendix. To ensure that our results are not driven by infrequent trading, we require stocks to trade on at least 30 percent of the days in the previous year.[18]

Table IA.3 shows that overall our sample includes a total of 13,101 firms, 8,791 of which are from outside of the United States. Our main tests focus on stocks with more than five percent foreign ownership. Table IA.3 indicates that this sample is tilted toward large stocks, but still includes many stocks in the bottom three size bins.

3 Cross-sectional and Time-series Importance of Foreign Ownership Returns

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

[18] The percentage of zero returns is the main measure of liquidity used by Bekaert, Harvey, and Lundblad (2007). This measure is similar to Lesmond, Ogden, and Trzcinka (1999)'s transactions costs measure, but is less subject to estimation problems. Higher trading filters of 50 and 75 percent yield similar results.

3.1 Cross-sectional Regressions

Table 1 reports results from cross-sectional Fama-MacBeth (1973) regressions for quarterly frequencies for all non-U.S. stocks with more than five percent foreign ownership. In the univariate specification, we find that a one percent increase in contemporaneous foreign ownership returns is associated with a 0.56 percent 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. After controlling for the local and global cost of capital, a one percent increase in the foreign ownership return is associated with a 0.364 percent return increase. After controlling for industry returns in addition to the local and global cost of capital, a one percent increase in the foreign ownership return is associated with an economically large 0.311 percent return increase.

3.2 Time-series Regressions

We now examine the explanatory power of the foreign ownership return using the time-series approach of Bekaert, Hodrick, and Zhang (2009), which is advantageous in that we can control for multiple forms of risk in the standard time-series regression framework. A traditional, fundamentals-based factor model would feature country and industry portfolios to capture stock fundamentals. We augment this model with the foreign ownership return. In particular, we examine if the foreign ownership return factor from equation (17) is important beyond the simple country and industry model in equation (9), or alternatively whether the non-fundamental components in equation (1) are relevant. In order for the coefficient estimates to vary fully across stocks, we estimate regressions at the weekly frequency with individual stock level data and then aggregate the coefficients. For stocks with more than five percent foreign ownership, Panel A of Table 2 shows the regressions estimates over the most recent three year period from 2006 to the first quarter of 2009 (results in other sub-periods are similar).

We first examine the importance of the foreign ownership return beyond the local market return. The average coefficient on the foreign ownership return (specification (3)) is 0.279. A coefficient of 0.279 indicates that a weekly stock return increases by 28 basis points when the foreign ownership return increases by 100 basis points, even after controlling for variation in the local market. This coefficient is slightly larger in size than that of the world market return (0.175 in specification (2)) or global industry return (0.238 in specification (4)). Comparing the incremental adjusted R^2 in specifications (2)-(4) to specification (1) shows that the incremental explanatory power of the foreign ownership return is higher than that of the world return, but not quite as large as that of the global industry return.

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.[19] We follow their procedures, except that we use individual stocks rather than portfolios.[20] 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 B shows that the MSE with only the local market is 0.036, whereas it improves to 0.025 when the foreign ownership return is added. Interestingly, the improvement due to adding

[19] The approach involves determining which model provides the best fit for the sample covariance structure. If a factor model is true, the common factors should explain the sample covariance matrix and the residual covariance components should be small. A mean squared error criterion, which is the time series mean of a weighted average of squared errors, compares the performance of alternative models.

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

the global industry or world market return to the local market factor is extremely similar. Overall, the MSE tests provide support that the foreign ownership return is a statistically and economically important driver of stock returns beyond traditional country and industry factors.

3.3 Omitted Fundamentals

Institutional shareholders may specialize in country and industry characteristics beyond what linear country and industry classifications can capture. Therefore, we create a foreign non-ownership return that has the exact same country, industry, and size composition as our foreign ownership return, except that we sever the foreign ownership link. The results, reported in Appendix A, show that the coefficient on the foreign non-ownership return is close to zero, indicating that foreign ownership returns are not simply proxying for stocks of similar country and industry characteristics. We consider whether the importance of the foreign ownership return can be explained by industrial country vs. emerging market stocks, large vs. small stocks, or liquid vs. illiquid stocks. Results in Table A2 (in the Appendix) and Table IA.5 (in the Internet Appendix) show that none of these issues are driving the findings. Additionally, we also use a domestic ownership return that is constructed in the same way as the foreign ownership return except that it is based on the domestic stock holdings. We find that both the domestic and foreign ownership return are important (Table A2), highlighting the generalizability of our approach and findings.

4 Drivers of the Foreign Ownership Return

While our results so far have documented an economically and statistically important relation between stock returns and the foreign ownership return, we now seek to investigate why the foreign ownership return is important. To this end, we investigate shifts in the investor base around ADR/GDR listings and stock index inclusions, as well as the role of different types of investors, common flows from investors, active decisions of fund managers, and wealth effects as drivers of the foreign ownership return.

4.1 An ADR/GDR test

BSW and Greenwood (2005) use index additions and deletions to examine whether a shift in investor demand or investor habitat (from habitat Y to Z) leads to changes in stock comovement as predicted by the habitat hypothesis. In an international setting, Foerster and Karolyi (1999) show that the foreign ownership composition of a stock often shifts around the listing of an ADR/GDR. If the explanatory power of the foreign ownership return is driven by investor habitat and not some omitted firm characteristic that foreign ownership proxies for, then stock returns should become more correlated with the new ownership structure after the ADR/GDR listing. In order to implement the suggested approach, we investigate how the changes in the ownership distances and ownership weights after the listing of an ADR or GDR of a stock affect the foreign ownership return and its relation to stock returns.

Assume a non-U.S. stock *i* is listing an ADR in the United States. As a result, its ownership structure will change, and its average ownership distance with stock *j* in the United States decreases from $\bar{d}_{i,j}^{O}$ to $\bar{d}_{i,j}^{OO}$. We denote the values before and after the listing by 'O' and 'OO' in the superscripts. We can measure the difference vector Δ with the following elements:

$$\varDelta_{i,j} \equiv (1-\bar{d}_{i,j}^{OO})\sum_{k=1}^{K}\bar{w}_{i,k}^{OO}\bar{v}_{k,j}^{OO} - (1-\bar{d}_{i,j}^{O})\sum_{k=1}^{K}\bar{w}_{i,k}^{O}\bar{v}_{k,j}^{O} \tag{19}$$

We then use the difference vector Δ to investigate how changes in the average ownership distance and the average ownership weights after the cross listing of a stock affect the foreign ownership return:

$$\varDelta F^{O}(i)_t \equiv \sum_{j=1}^{N_i}\varDelta_{i,j}R_{j,t} \tag{20}$$

The new foreign ownership factor becomes

$$F^{OO}(i)_t = F^O(i)_t + \Delta F^O(i)_t \tag{21}$$

We measure the average ownership distance $\bar{d}_{i,j}^O$ and the average ownership weights ($\bar{w}_{i,k}$, and $\bar{v}_{k,j}$) over the four quarters before and after the ADR/GDR listing date for each firm i with an ADR/GDR.[21] Consequently, we estimate

$$R_{i,t} = \beta^C R^C(i)_t + \beta^I R^I(i)_t + \beta^O F^O(i)_t + \beta^\Delta \Delta F^O(i)_t + \epsilon \tag{22}$$

We use the change in the foreign ownership return $\Delta F^O(i)_t$ to investigate the effect of changes in the ownership structure after the listing on the relation between the foreign ownership return and stock returns.

We show the results in Table 3 Panel A. We perform panel regressions of stock returns on the foreign ownership return, the local market, and the world market, as well as interaction terms with an indicator variable that takes the value of one after the ADR/GDR listing (and zero otherwise). We interact the change in the foreign ownership return $\Delta F^O(i)_t$ with the listing dummy. The results show an economically and statistically significant relation between stock returns and the foreign ownership return (coefficient of 0.194 with a *t*-statistic of 6.21 for all firms). Importantly, the incremental effect of the foreign ownership return after the ADR/GDR listing is also important, with a coefficient of 0.134 (*t*-statistic of 2.75). In line with our hypotheses, the effects are economically larger for firms with increased foreign ownership (0.161) and increased foreign ownership by more than 5% (0.171).

4.2 **Index Inclusions**

Similar to the ADR/GDR listing experiment, the ownership distance may change after the inclusion of a stock into a market index. Hau (2011) and Hau, Massa, and Peress (2010) examine the impact of MSCI global market index constitution changes and show that benchmark effects are

[21]Note that $\bar{d}_{i,j}^O$, $\bar{w}_{i,k}$, and $\bar{v}_{k,j}$ are properly scaled so that $\sum_{j=1}^{N_i}\left(1-\bar{d}_{i,j}^O\right)\sum_{k=1}^{K}\bar{w}_{i,k}\bar{v}_{k,j}$ is one.

extremely important for global portfolio allocation, because institutional investors care about tracking errors of their portfolios vis-à-vis the indices. In the context of our paper, the inclusion of a stock in a market index shortens the ownership distance of a stock relative to stocks in the index.

We obtain global stock level index inclusion data for MSCI indices from Claessens and Yafeh (2012), who hand collect the data for a large set of international stocks, and examine the implications of index inclusion for the relation between foreign ownership returns and stock returns. Similar to equations (19) to (21), we measure the average foreign ownership distance $\bar{d}_{i,j}^{O}$ and the average foreign ownership weights ($\bar{w}_{i,k}$, and $\bar{v}_{k,j}$) over the four quarters before and after the index inclusion date for each firm i, and construct foreign ownership returns before and after index inclusion. As in equation (22), we compute the difference between the foreign ownership returns before and after the index inclusion.

We report the results for index inclusions in Panel B of Table 3.[22] The results show that the coefficient on the change of the foreign ownership return is positive and significant. In other words, after a stock is included into a major stock market index, the foreign ownership return coefficient increases significantly indicating that the new ownership structure strengthens the link to returns of connected stocks. This supports the thesis that the explanatory power of the foreign ownership return is driven by a shift in investor habitat.

4.3 Different Types of Institutional Owners

While the foreign ownership return is constructed as a summary measure of investor habitat, it may be the case that certain habitats or investor groups drive its importance. Our hypothesis is that active, global funds are driving the foreign ownership returns effect through their correlated trad-

[22] The sample is again restricted to firms whose foreign ownership was above 5% after its index inclusion.

ing activities. Therefore, we split the foreign ownership return by different subgroups of owners.[23] In particular, we classify institutions by their level of active shares, turnover, and geographic styles. In addition, we also include classifications by fund type, momentum exposure, and fund flows. In each case, institutions are sorted into several groups, and we compute foreign ownership returns separately for each of these groups. We then compare the Fama-MacBeth regression coefficients across groups.

First, we investigate whether the activeness of the portfolio allocation of funds is related to the strength of the association between the foreign ownership return and stock returns. We construct the active shares measure for each fund in a similar fashion as Cremers and Petajisto (2009) and sort institutions into those that are above the median active share (high active share) and below the median active share (low active share).[24] Specification (1) in Table 4 shows that while both foreign ownership return coefficients are significant, the coefficient of institutions with high active share has higher economic and statistical significance than that of institutions with low active share. The difference between the two is statistically significant (*t*-statistic =5.32).

We also examine fund turnover as an alternative measure of fund activeness and divide funds into those with high (above median) and low (below median) turnover. Specification (2) shows that habitat formed by high turnover funds is economically and statistically more important than that formed by low turnover funds. Thirdly, we classify funds as global, regional, or country funds based on their holdings.[25] In specifications (3) and (4), we find that foreign ownership re-

[23] We thank an anonymous referee for this suggestion.

[24] We use a market capitalization weighted index constructed for each geographical region and the world using the stocks in our data sample. For regional funds (as defined in the following footnote), we rank institutions according to their active shares relative to the regional market capitalization-weighted benchmark. For global funds (also defined in the following footnote), we rank institutions according to their active share relative to the global market capitalization-weighted benchmark.

[25] We calculate for each fund the percentage of its holdings that are in a country and a region in a quarter. If the maximum average percentage of the holdings in a country over the previous 12 quarters is more than 90% of the fund's total holdings, the fund is classified as a country fund. Otherwise, if the maximum average percentage in a region is more

turns of global institutions are more important in affecting a stock's returns than those of country-specific institutions. Compared to regional funds, the foreign ownership return coefficient for global funds is larger (0.010 vs. 0.008) but not statistically different.

In specification (5), we run multivariate regressions where we incorporate all three sets of foreign ownership returns to see which foreign ownership grouping has the strongest relation with returns. Consistent with the first three specifications, we find that the foreign ownership return effects are the strongest for high active share, high turnover and global funds. Foreign ownership return effects for regional funds become small and insignificant. Specification (5) also includes additional control variables based on several other classifications of foreign ownership returns. In particular, we separate funds into hedge funds and mutual funds (independent) vs. banks, insurance companies, and pension funds (grey). We also split institutions into two groups by sorting on their portfolio return loadings on the Fama-French global momentum factor.[26] Moreover, funds with low net flows may engage mostly in regular (discretionary) rebalancing activities, while funds with large inflows or outflows will have to make (forced) net new purchases/sales. To investigate this effect, we split the foreign ownership return for each stock into two components based on funds with net flows in the top or bottom quartiles across institutions (high flows), and funds in the middle two quartiles (low flows).

The foreign ownership returns created from all these subgroups (independent vs. grey, high vs. low momentum, and high vs. low flows) are not significant in the presence of the active, high turnover, and global fund classification. The fact that these are institutions which are active traders and have global presence is consistent with the derivation of the foreign ownership return as a

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.

[26] We regress the past 24 months' institutional returns on the Fama-French global momentum factor to obtain the momentum loadings. High (low) momentum funds are institutions whose factor loading is above (below) the median.

weighted average summary measure of investor demand that measures the extent to which the owners of a stock affect its comovement.

4.4 Funds Flows vs. Discretionary Trading

In order to investigate the role of fund flows for the foreign ownership return, we split the return into different components in order to isolate a flow-related part. The decomposition proceeds in several steps. First, we follow the standard approach in the literature and infer fund flow as the difference between the total net asset value of fund k at the end of quarter t ($TNA_{k,t}$) and the value at the end of the quarter to which the assets of the fund at the beginning of quarter ($TNA_{k,t-1}$) had grown to had they been invested passively at the return of fund k during quarter t ($R_{k,t}$):

$$Flow_{k,t} = \frac{TNA_{k,t} - TNA_{k,t-1}(1 + R_{k,t})}{TNA_{k,t-1}} \tag{23}$$

If funds passively allocate new inflows to existing portfolio holdings in proportion to the existing portfolio weights, an x percent increase in total net assets due to a fund inflow increases the fraction of market capitalization that a fund holds of each stock by x percent. Thus, the change in the share of market capitalization that fund k holds in stock j due to the passive allocation of fund flows $CHFlow_{j,k,t}$ is:[27]

$$CHFlow_{j,k,t} = Holdings_{j,k,t-1} Flow_{k,t} \tag{24}$$

$$Holdings_{j,k,t} = \frac{MVH_{j,k,t}}{MktCap_{j,t}} \tag{25}$$

where $MVH_{j,k,t}$ is the market value of the holdings of stock j by fund k at time t, and $MktCap_{j,t}$ is the market capitalization of stock j at time t.

[27] When there is an inflow of funds and the inflow is distributed passively according to portfolio weights in the previous period, the flow measured as rate of change should be equal to the rate of change of funds available for each invested stock. For example, $FundFlow_{n,t} = 1$ means a 100% increase in total net assets due to new flow. If the price of a stock that the fund holds does not change, the fund should increase the holding of the stock by 100%.

This effect can be aggregated across all the funds that hold a particular stock j, i.e., the change in holdings of stock j due to passive allocation from fund flow is:

$$CHFlow_{j,t} = \sum_{k=1}^{K} Holdings_{j,k,t-1} Flow_{k,t} = \sum_{k=1}^{K} CHFlow_{j,k,t} \tag{26}$$

Using changes in holdings due to fund flows, Greenwood and Thesmar (2011) decompose stock returns into a fund flow related part ($R_{j,t}^{CHF}$) and a residual part ($R_{j,t}^{R}$) by regressing stock returns on the changes in holdings (eq. (5) in their paper). Yet, we are also interested in returns related to changes of holdings that are unrelated to flows. Hence, we extend this approach and decompose returns into three parts, i.e., a fund flow related component ($R_{j,t}^{CHF}$), changes in holdings that are not related to fund flows ($R_{j,t}^{CHNF}$), and a residual part ($R_{j,t}^{R}$):

$$\begin{aligned} R_{j,t} &= \lambda_{j,0} + \lambda_{j,1}\, CHFlow_{j,t} + \lambda_{j,2} CHNonFlow_{j,t} + e_{j,t} \\ &= \lambda_{j,1}\, CHFlow_{j,t} + \lambda_{j,2} CHNonFlow_{j,t} + \left(\lambda_0 + e_{j,t}\right) \\ &= R_{j,t}^{CHF} + R_{j,t}^{CHNF} + R_{j,t}^{R} \end{aligned} \tag{27}$$

where:

$$CHNonFlow_{j,t} = CH_{j,t} - CHFlow_{j,t} \tag{28}$$

$$CH_{j,t} = \sum_{k=1}^{K} \left(Holdings_{j,k,t} - Holdings_{j,k,t-1}\right) \tag{29}$$

The decomposition splits changes of holdings of funds into those that are the result of passive allocations due to fund flows and those that are discretionary choices by the funds.

We can use the decomposition of stock returns in order to decompose the foreign ownership return in equation (18) into three parts by substituting $R_{j,t}$ with its three components: 1) the change of holding due to passive allocation from fund flow, 2) the change of holding not due to passive allocation, and 3) returns not due to changes of holdings:

$$R_t^O(i) = \sum_{j=1}^{N_i} \left(1 - d_{i,j}^O\right) \sum_{k=1}^{K} w_{i,k} v_{k,j}\, R_{j,t} = \sum_{j=1}^{N_i} \left(1 - d_{i,j}^O\right) \sum_{k=1}^{K} w_{i,k} v_{k,j} \left(R_{j,t}^{CHF} + R_{j,t}^{CHNF} + R_{j,t}^{R}\right) \quad (30)$$

We standardize all three components of the foreign ownership return.

Table 5 presents results of the decomposition. Column (1) shows the original results. In column (2), stock returns are regressed on the flow component and the residual component of the foreign ownership return. We find that the flow component is not significant, i.e., stock returns are only related to the non-flow part of foreign ownership returns. In column (3), we regress stock returns on the foreign ownership return due to flows, foreign ownership return from discretionary changes of holdings, and the residual foreign ownership return. The flow part remains insignificant, while the discretionary change of holdings and the residual foreign ownership return are both significant determinants of stock returns

4.5 Wealth Effects

A possible alternative explanation to habitat investing is that the foreign ownership return captures wealth effects of funds, where funds adjust the ownership in the stocks they hold when they had high returns (an increase in wealth). A simple implication of portfolio rebalancing that plays a role in many theoretical investment models 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.[28] To illustrate, a fund might hold three stocks in its portfolio: Samsung, Nissan, and Microsoft. Samsung and Nissan experience a sudden rise in stock value. A wealth effect implies that the fund is suddenly wealthier from the rises in stock values and may need to take capital out of Samsung and Nissan (perhaps to avoid being disproportionately weighted in these stocks) and in-

[28] 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). For example, Hau and Rey (2004) propose that when an international investor's domestic holdings increase, the investor has more wealth and is more likely to move capital to the United States.

vest more in Microsoft. Thus, an empirical test of the wealth effect involves testing whether funds that have experienced a rise in the value of their portfolio increase their ownership in the stocks they hold. As a measure of the increase in wealth, we use the return of a fund over the quarter. We do not consider fund flows since they were analyzed in the previous section.

Our level of analysis is the change of ownership in each stock by each fund. We regress the change of ownership of each fund in each stock on contemporaneous and lagged quarterly returns of each fund. If wealth effects are important, then for each stock, the funds with high fund returns (and an increase in wealth) should be increasing their holdings in a stock, while the funds with the lowest returns should decrease their ownership in a stock. The regression results in Table 6 show that funds' changes in holdings are statistically and economically unrelated to contemporaneous fund returns. This result is independent of whether we measure fund performance based on just foreign stocks (specifications (1)) or all stocks (specifications (2) and (3)), and whether the fund return is contemporaneous or lagged. In addition, we examine results based on sorting evidence. For each stock in a quarter, we sort the stocks' institutional owners into five quintiles according to the institutions' average holding returns. In each quintile, we report the average change of holdings of the stocks by the institutions in the current and over the next four quarters. Similar to the regression results, we find that institutions that experience the largest returns on their holdings are not increasing their institutional holdings in the stocks they already hold (as reported in Table IA.9).

An alternative way to investigate the role of wealth effects as driver of the foreign ownership return is to exploit the fact that the wealth of investors may be tied to the return of the country in which the fund is based. Similar to our foreign ownership return, we compute an institutional owners' home market return that is based on the country where the institution is domiciled (which is often different from the country where the capital is deployed). The owners' home market return is calculated as the weighted average of the index returns of the home country (country of incorporation) of the fund, where the weights are based on the relative size of the fund's holdings in the stock. The results (reported in Table IA.8 Panel A) show that the importance of the foreign ownership return is unaffected by the owners' home market return.

A related test is to examine the importance not of the country where the capital is domiciled, but where the capital is deployed. We estimate time-series regressions of the return of each ownership connected stock on its local country market return to obtain the fitted value as well as the residual. We then feed these two return components into the foreign ownership return calculation in equation (18) to obtain two foreign ownership return components:

$$R_t^O(i) = \sum_{j=1}^{N_i} \left(1 - d_{i,j}^O\right) \sum_{k=1}^{K} w_{i,k} v_{k,j} \left(R_{j,t}^{country} + R_{j,t}^{residual}\right) = R_{j,t}^{O,country} + R_{j,t}^{O,residual} \tag{31}$$

The results (reported in Table IA.8 Panel B) show that the residual effect is economically and statistically significant in all specifications. The country market component coefficient is neither statistically significant (in the univariate regression) nor economically significant (and only about one-fourth of the coefficient on the residual effect). The decomposition is interesting in showing that it is the specific composition of stocks that a portfolio manager holds and not predominantly the country composition of the portfolio that drives the explanatory power of the foreign ownership return. Overall, this section provides little empirical support for wealth effects.

5 Diversification Implications

We now briefly explore the consequences for portfolio diversification implied by the systematic relation between stock returns and foreign ownership returns. A simple but useful practical diagnostic is to compare the return covariance of firms within a population relative to the return variance of a representative firm in a given country. Solnik (1974) uses this approach to compare the power of portfolio diversification in the United States and internationally.

We examine the reduction in the standard deviation of the equity portfolio of a fund if it moves from country and industry diversification to diversification along country, industry and the foreign ownership return dimension. We focus this analysis on funds that are well diversified across countries and industries, i.e., those that hold more than 50% of non-domestic stocks and have non-zero investment in all 10 Fama-French industries. For these funds, we assess the incremental diversification benefit when diversifying along the foreign ownership return dimension. In particular, we divide stocks into quintiles based on the correlation between the foreign ownership return of the stock and the return of the each fund in the prior year. We then calculate the diversification benefit that each group of stocks provides each fund in terms of reduction in volatility.

We first assume that a fund is increasing its existing portfolio with the original fund portfolio constituting half of its holdings and new stocks constituting the other half. The new stocks are drawn from either the high or low quintiles based on the correlation of their foreign ownership return with fund returns. Figure 1 shows the reduction in volatility (i.e., portfolio return variance divided by average stock return variance) as more stocks are added to the portfolio. Stocks that have the lowest (highest) foreign ownership return correlation with the fund return provide the largest (smallest) reduction in volatility as the number of stocks increases. As shown in Table 7, the diversification limit of the stocks in the lowest correlation quintile is 18% compared to 28% for the stocks in the highest correlation quintile. Alternatively, we build equally-weighted portfolios from scratch using stocks with different quintiles of foreign ownership return correlations. Table 7 shows that portfolios drawn from stocks with the lowest foreign ownership correlations again achieve a much lower diversification limit (11%) compared to portfolios drawn from stocks with the highest foreign ownership correlations (19%).

A related question is whether fund size matters for the ease of diversification based on foreign ownership returns. Building on the above analysis, we examine the unrealized diversification potential of funds as a function of fund size. To this end, we consider funds that invest 50% of their portfolio in stocks with alternatively high and low foreign ownership return correlation (top and bottom quintile). For each fund, the difference in diversification benefits between the top and bottom quintiles of stocks represents the unrealized diversification benefit for that fund. We plot this unrealized diversification benefit as a function of fund size (log assets in USD). The unrealized diversification benefits are higher for small funds compared to large funds, as shown in Figure 2. We also conduct an analysis (in Internet Appendix Section C) that measures the importance of the foreign ownership return in capturing systematic portfolio risk and reach similar conclusions.

6 Conclusion

The international finance literature has predominantly considered comovement in terms of two components of economic fundamentals, industry and country factors. Motivated by Froot and Dabora (1999), Chan, Hameed, and Lau (2003), and Foerster and Karolyi (1999), who show in different contexts that covariation is related to a firm's investor clientele associated with its listing location, we develop a new, parsimonious measure of linkages between stocks based on their ownership structure and document its pervasiveness and importance. Fama and French (2012) find that local factors are relatively more important than global ones, but Karolyi and Wu (2012) show that the degree to which a stock is global depends on the cross-listed trading venue. In a broadly consistent manner, we find that a more explicit measure of the linkages of a stock to foreign stocks due to common institutional ownership can explain substantial return variation beyond local and global factors.

The foreign ownership return is of similar economic importance as country and industry fundamentals, and it is not proxying for omitted fundamentals, investment style, or wealth effects. Consistent with investor habitat, the foreign ownership return is more important after a stock lists an ADR/GDR or is added to a market index, and it is stronger for active global funds with high turnover. A decomposition shows that the foreign ownership return is not due to common fund flows but rather discretionary stock trades by fund management. The importance of the foreign ownership return is driven by active trading decisions of fund managers as they buy and sell securities in a similar fashion as other fund managers around the globe.

Our results have important practical implications for investors. We show that stocks with a foreign ownership return similar to a portfolio manager's existing portfolio provide considerably less diversification benefits compared to stocks with an unrelated foreign ownership return. In fact, the indices and mutual funds that are popular vehicles to obtain international diversification become, over time, the least efficient tools given that they hold highly overlapping portfolios. Thus, international fund managers should pay close attention both to the level of foreign ownership and to whether a stock is held by unrelated or competing shareholders. We believe these findings are of broad academic and practical relevance for a variety of domestic and international portfolio and risk management applications. More research is needed to further understand the important role of financial institutions in international financial markets.

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Figure 1: Portfolio Diversification

The figure shows the effect of portfolio diversification for funds investing in stocks with different levels of foreign ownership correlation. In particular, for each fund and year, stocks that are not held by the fund are sorted into quintiles based on the correlation between their foreign ownership returns and fund returns in the prior year. Quintile 1 is the group of stocks with the lowest correlation, while quintile 5 is the group of stocks with the highest correlation. Funds are required to have at least 50% of their holdings in non-local stocks and to have holdings in all 10 Fama-French industries in order to ensure they are considerably diversified along the country and industry dimensions. We restrict the grouped stocks to be non-U.S. with at least 30% non-zero trading days in the previous year, and to have more than 5% foreign ownership before sorting. We look at the diversification benefits of investing 50% in an equal-weighted portfolio of the stocks in a quintile and the rest in the fund in the following year. When we calculate the equal-weighted portfolio return for a quintile, we first take averages within a country and then take the average across countries, in order to avoid a dominating effect of countries with many stocks. The figure shows the diversification limits (variance of portfolio return divided by the average of the variance of individual stock returns and the variance of the fund return) when investing 50% in the fund and 50% in the stocks in each quintile.

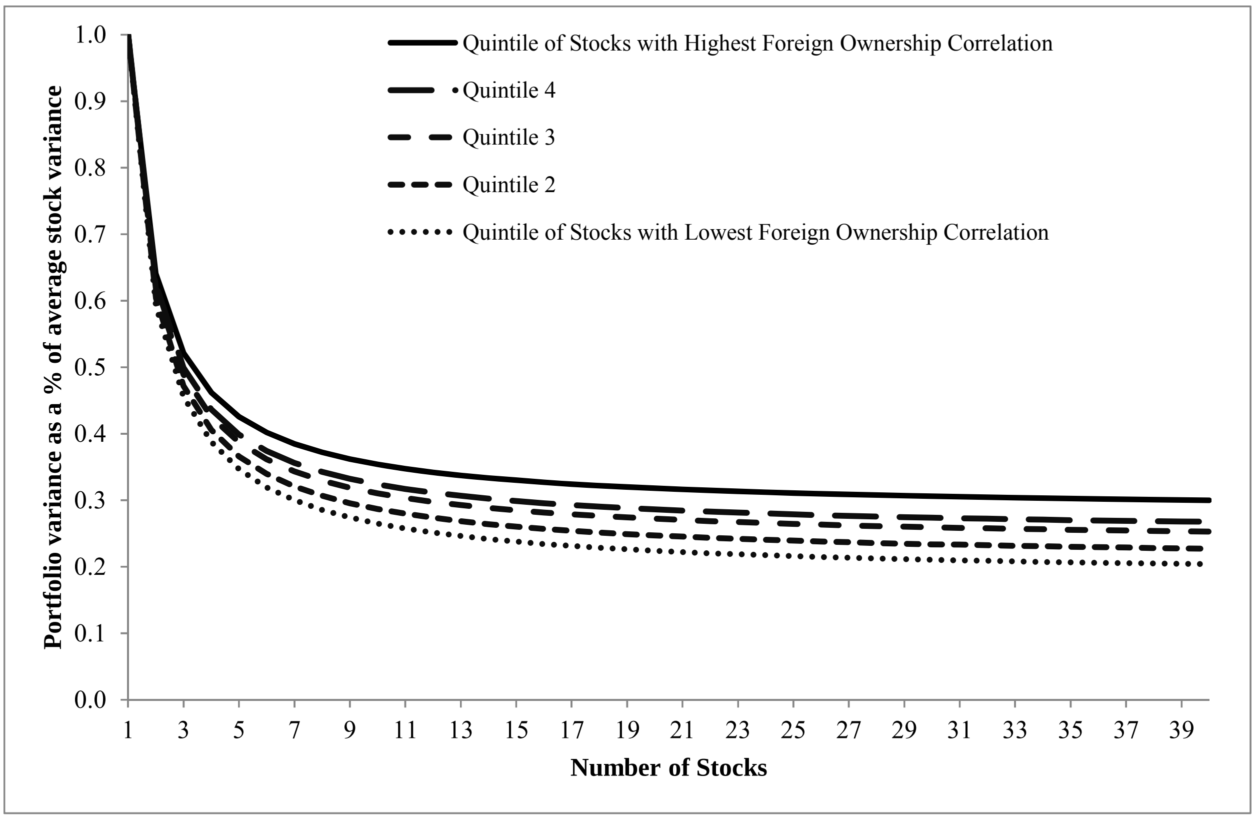

Figure 2: Fund Size and Diversification Benefits

The figure plots the unrealized diversification benefit against fund size (log assets in U.S. dollars). For each fund and calendar year, quintile groups of stocks are formed according to the correlation between their foreign ownership return and the fund return in the previous year. The unrealized diversification benefit is defined as the difference between the diversification limit from investing in stocks that have the highest quintile vs. the lowest quintile of ownership correlations. The diversification limit is the ratio of portfolio return variance to average stock return variance where half of the portfolio is invested in a fund's original assets and the other half in an equal-weighted portfolio of stocks in the quintile. Funds are required to have at least 50% of their holdings in non-local stocks and have holdings in all 10 Fama-French industries in order to ensure they are considerably diversified along the country and industry dimensions. The sample stocks consists of non-U.S. stocks with at least 30 weekly observations in a calendar year, 30% non-zero trading days in the previous year as well as at least 5% foreign institutional ownership in the beginning of a calendar year. The sample period is 01/01/2000-03/31/2009. Ownership data is from Lionshares, and return data for individual stocks, market indices, and industry indices is from Datastream.

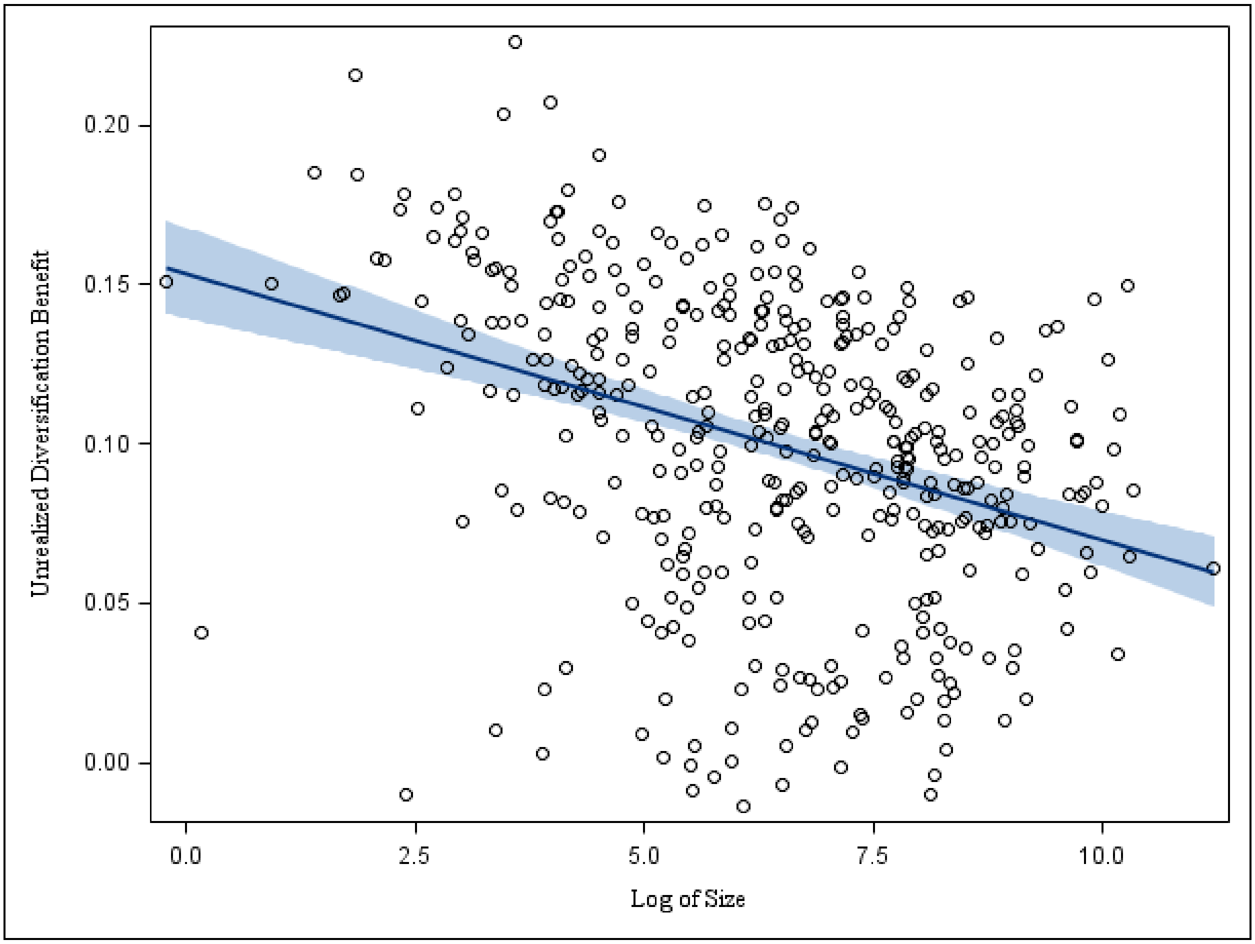

Table 1: Cross-Sectional Regressions with Foreign Ownership Return

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), the foreign ownership return, 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 weekly returns over the prior two years, where the returns of each stock are regressed on the returns on the value-weighted local market index, 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 return (Local Beta × Local Market), and the World Beta is multiplied with the contemporaneous MSCI world market return (World Beta × World Market) to construct 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. It reports the average coefficients, associated *t*-statistics, as well as the 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)
Foreign Ownership Return	0.560	0.364	0.468	0.311
	(9.15)	(9.25)	(9.74)	(8.87)
Local Beta × Local Market		0.790		0.773
		(18.96)		(17.69)
World Beta × World Market		-0.199		0.239
		(-0.25)		(0.59)
Industry			0.443	0.334
			(11.57)	(8.47)
Adjusted R^2	0.019	0.123	0.048	0.137
Number of Observations	87,045	65,519	86,914	65,515
Number of Firms	2,353	1,985	2,349	1,985

Table 2: Time-Series Regressions with Foreign Ownership Return

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 ownership return (Foreign Ownership Return), the world market index excluding the local market (World Market), and global industry index returns excluding the industry in the local market (Industry). The sample period is 01/01/2000-03/31/2009. The sample 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) $R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \delta_j R_{Foreign\ Ownership,t} + \varepsilon_{jt}$

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

Panel A reports the mean coefficients and adjusted R^2 across firms, as well as the number of firms for the sub-period 2006Q1-2009Q1. Results for all sub-periods and for more specifications are reported in Table IA.4. Panel B shows the average Mean Squared Error (MSE) of correlations following Bekaert, Hodrick, and Zhang (2009) for each of the models (1)-(4) 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. Return data for individual stocks, market indices, and industry indices is from Datastream.

Panel A: Results for 2006Q1-2009Q1

	(1)	(2)	(3)	(4)
Foreign Ownership Return			0.279	
Local Market	0.987	0.874	0.752	0.816
World Market		0.175		
Industry				0.238
Adjusted R2	0.340	0.350	0.356	0.357
Number of Firms	3,125	3,125	3,125	3,125

Panel B: MSE, 2000Q1-2009Q1

	Reg #	MSE
Incremental Contribution of Foreign Ownership Return		
Base Model	(1)	0.036
Base Model with Foreign Ownership Return	(3)	0.025
Difference		0.011
p-value		<.0001
Incremental Contribution of Industry Return		
Base Model	(1)	0.036
Base Model with Industry Return	(4)	0.026
Difference		0.010
p-value		<.0001
Incremental Contribution of World Market		
Base Model	(1)	0.036
Base Model with World Market	(2)	0.025
Difference		0.011
p-value		<.0001

Table 3: ADR/GDR Listings and Index Inclusions

The table shows results from regressions that investigate the effect of cross-listing (Panel A) and index inclusion (Panel B) events on the relation between stock returns and foreign ownership returns. In particular, Panel A reports results of pooled regressions of weekly stock returns of companies that listed an ADR/GDR on an intercept (not reported), the foreign ownership return (Foreign Ownership Return), the return on the local market index excluding own stock (Local Market), and the return on the World market index. The change in the Foreign Ownership Return is calculated based on the average foreign ownership distance and the average foreign ownership weights over the four quarters before and after the listing date for each firm with an ADR/GDR. Panel B shows results of pooled regressions of weekly stock returns of stocks that were included in a major country index (see Claessens and Yafeh (2008)). The change in the Foreign Ownership Return is calculated based on the average foreign ownership distance and the average foreign ownership weights over the four quarters before and after the index inclusion date for each firm that is being included in an index. 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 more than 5%. 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. Effective dates of index inclusions are from Claessens and Yafeh (2008).

(continued)

Table 3: ADR/GDR Listings and Index Inclusions (continued)

	All Firms		Firms with Increased Foreign Ownership		Firms with Increased Foreign Ownership by more than 5%	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: ADR/GDR Listings						
Foreign Ownership Return		0.194		0.321		0.318
		(6.21)		(7.57)		(6.69)
ΔForeign Ownership Return × ADR dummy		0.134		0.161		0.171
		(2.75)		(2.28)		(2.20)
Local Market	1.022	0.986	1.058	1.008	1.060	0.991
	(55.02)	(43.08)	(44.60)	(37.18)	(43.32)	(31.94)
Local Market × ADR dummy	-0.014	0.001	-0.046	0.030	-0.061	0.025
	(-0.56)	(0.04)	(-1.45)	(0.81)	(-1.88)	(0.59)
World Market	0.068	-0.115	0.057	-0.216	0.041	-0.177
	(2.25)	(-2.41)	(1.49)	(-3.55)	(1.01)	(-2.57)
World Market × ADR dummy	0.076	0.083	0.161	0.088	0.168	0.065
	(1.83)	(1.65)	(3.12)	(1.47)	(3.09)	(0.93)
Adjusted R^2	0.232	0.250	0.243	0.287	0.267	0.280
Number of Observations	38,349	24,307	24,430	15,362	19,749	11,830
Number of Firms	354	354	230	230	189	189
Panel B: Index Inclusions						
Foreign Ownership Return	1.087	0.416	1.115	0.400	1.150	0.392
	(69.37)	(19.72)	(55.82)	(14.73)	(50.08)	(12.34)
ΔForeign Ownership Return × Inclusion dummy	0.952	0.367	0.905	0.249	0.909	0.230
	(17.87)	(6.97)	(12.70)	(3.54)	(11.61)	(2.97)
Local Market		0.839		0.870		0.926
		(35.51)		(29.90)		(26.27)
Local Market × Inclusion Dummy		0.017		0.021		0.022
		(0.64)		(0.63)		(0.56)
Adjusted R^2	0.186	0.259	0.180	0.253	0.184	0.257
Number of Observations	21,106	21,103	14,212	14,210	11,124	11,122
Number of Firms	254	254	177	177	142	142

Table 4: Foreign Ownership Returns from Different Groups of Investors

The table shows results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), alternative versions of the foreign ownership return (Foreign Ownership Return), expected returns from a CAPM with local and world market index, and global industry index returns excluding the industry in the local market (Industry). There are 6,300 institutions with holdings information, of which 3,796 are mutual funds and investment advisors and 1,185 are hedge fund companies. Across specifications, foreign ownership returns are constructed for different groups of institutions. In particular, institutions are split into two groups by different characteristics or particular types of institutions are selected: specification (1) splits institutions into those with high active share vs. those with low active share; specification (2) splits institutions into those with high turnover vs. those with low turnover; specifications (3) and (4) split institutions into country funds, regional funds and global funds (If the maximum average percentage of the holdings in a country over the previous 4 quarters is more than 90% of a fund's 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. Specification (5) further includes foreign ownership return splits for mutual and hedge funds vs. pension funds, banks, and insurance companies; splits for institutions with high momentum exposure vs. those with low momentum exposure; as well as splits for institutions with high net fund flows vs. those with low net fund flows. 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 and associated *t*-statistics, as well as the average adjusted R^2, the number of observations, and the average number of firms. The different foreign ownership return variables as well as all other independent variables are standardized to have zero mean and unit variance within each quarter. Standard errors are corrected with the Newey-West (1987) procedure with 3 lags. Differences and associated *t*-statistics between the coefficients on the two foreign ownership return variables in each specification are reported in the bottom of the table. Ownership data is from Lionshares, and return data for individual stocks, market indices, and industry indices is from Datastream.

(continued)

Table 4: Foreign Ownership Returns from Different Groups of Investors (continued)

	(1)	(2)	(3)	(4)	(5)
Foreign Ownership Return					
Funds with High Active Share	0.013				0.009
	(9.16)				(2.97)
Funds with Low Active Share	0.005				0.002
	(3.85)				(0.83)
Funds with High Turnover		0.012			0.006
		(7.63)			(2.49)
Funds with Low Turnover		0.005			0.001
		(3.08)			(0.30)
Global Funds			0.010	0.011	0.006
			(6.12)	(7.55)	(2.75)
Regional Funds			0.008		0.001
			(5.07)		(0.42)
Country Funds				0.004	0.001
				(3.07)	(0.49)
Mutual and Hedge Funds					-0.002
					(-0.80)
Pension Funds, Banks, Insurance Companies					-0.003
					(-1.15)
High Momentum Funds					0.002
					(1.10)
Low Momentum Funds					0.001
					(0.89)
High Flow Funds					-0.001
					(-0.63)
Low Flow Funds					-0.003
					(-1.32)
Local Beta × Local Market	0.063	0.063	0.063	0.063	0.061
	(10.45)	(10.28)	(10.28)	(10.17)	(9.89)
World Beta × World Market	0.024	0.024	0.024	0.024	0.024
	(4.36)	(4.23)	(4.42)	(4.20)	(4.05)
Industry	0.021	0.021	0.021	0.021	0.021
	(5.80)	(5.84)	(6.13)	(6.32)	(6.25)
Adjusted R^2	0.144	0.145	0.144	0.149	0.164
Number of Observations	63,121	61,525	61,803	55,539	52,717
Number of Firms	1,913	1,864	1,873	1,683	1,597
Difference between groups	0.008	0.007	0.002	0.008	
	(5.32)	(3.47)	(0.98)	(4.57)	

Table 5: Decomposition of Foreign Ownership Return

The table shows results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), the foreign ownership return or its components, expected returns from a CAPM with local and world market index, and global industry index returns excluding the industry in the local market (Industry). The returns of stock j, $R_{j,t}$, are assumed to be related to the change of holdings due to the passive allocation of fund flow $CHFlow_{j,t}$ and the change of holdings not due to the passive allocation $CHNonFlow_{j,t}$:

$$R_{j,t} = \lambda_{j,0} + \lambda_{j,1}\, CHFlow_{j,t} + \lambda_2 CHNonFlow_{j,t} + e_{j,t} = R_{j,t}^{CHF} + R_{j,t}^{CHNF} + R_{j,t}^{R}$$

Feeding these return components into the foreign ownership return similarly decomposes it into three parts: one due to changes of holding from passive allocation of fund flows, one due to changes of holding that are not from passive allocation, and the residual:

$$R_t^O(i) = \sum_{j=1}^{N_i} \left(1 - d_{i,j}^O\right) \sum_{k=1}^{K} w_{i,k} v_{k,j}\, R_{j,t} = \sum_{j=1}^{N_i} \left(1 - d_{i,j}^O\right) \sum_{k=1}^{K} w_{i,k} v_{k,j}\, \left(R_{j,t}^{CHF} + R_{j,t}^{CHNF} + R_{j,t}^{R}\right)$$

The different foreign ownership return variables as well as other independent variables are standardized to have zero mean and unit variance within each quarter. 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 and associated *t*-statistics, as well as the average adjusted R^2, the number of observations, and the average number of firms. 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 5: Decomposition of Foreign Ownership Return (continued)

	(1)	(2)	(3)
Foreign Ownership Return	0.013		
	(6.47)		
Foreign Ownership Return (Change of Holdings due to Flow)		-0.002	0.000
		(-0.76)	(-0.05)
Foreign Ownership Return (Change of Holdings due to Non-Flow)			0.003
			(2.36)
Foreign Ownership Return (Residual)		0.009	0.009
		(4.15)	(3.76)
Local Beta × Local Market	0.064	0.064	0.064
	(10.44)	(10.50)	(10.39)
World Beta × World Market	0.024	0.024	0.024
	(4.47)	(4.42)	(4.41)
Industry	0.021	0.021	0.021
	(5.93)	(5.82)	(5.76)
Adjusted R^2	0.137	0.137	0.138
Number of Observations	65,515	65,508	65,508
Number of Firms	1,985	1,985	1,985

Table 6: Wealth Effects

The table shows results of Fama-MacBeth regressions of quarterly changes in holdings on an intercept (not reported), variables capturing wealth effects, and control variables. In particular, the table shows the results from regressions of changes in holdings at the stock-fund level on the portfolio return of institutional owners, and the lagged dependent variable. The dependent variable is the change of holdings from the previous quarter to the current quarter of a stock by a fund. The regressors are the fund return (Owner Fund Return), the fund return in the previous quarter (Owner Fund Return (lagged)), the fund return on foreign holdings (Foreign Owner Fund Return), the fund return on foreign holdings in the previous quarter (Foreign Owner Fund Return (lagged)), and the percentage change in holdings lagged by one quarter (i.e. the lagged dependent variable). All variables are standardized. Results are based on new and existing holders of a stock. 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 the average adjusted R^2. Ownership data is from Lionshares. Returns data for individual stocks, market indices, and industry indices is from Datastream.

	(1)	(2)	(3)
Foreign Owner Fund Return	0.050		
	(0.64)		
Foreign Owner Fund Return (lagged)	0.136		
	(1.50)		
Owner Fund Return		-0.005	-0.027
		(-0.06)	(-0.28)
Owner Fund Return (lagged)		0.080	0.054
		(0.80)	(0.51)
Percentage Change in Holdings (lagged)			0.035
			(6.89)
Adjusted R^2	0.000	0.001	0.006
Number of Firms	2,150	2,184	2,150

Table 7: Portfolio Diversification and Foreign Ownership Linkage

The table examines how foreign ownership linkage is related to portfolio diversification. The table shows the portfolio diversification effects for different funds when they add stocks with different foreign ownership return correlations into the portfolios. In particular, for each fund and year, stocks that are not held by a fund are sorted into quintiles based on the correlation between their foreign ownership return and fund returns in the prior year. Quintile 1 is the group of stocks with the lowest correlation, while quintile 5 is the group of stocks with the highest correlation. We restrict the stocks to be non-U.S. and to have more than 5% foreign ownership before the sorting. We look at the diversification benefits of stocks from a quintile in the following year. When we calculate the equal weighted portfolio return for a quintile, we first take averages within a country and then take average across countries, in order to avoid a dominating effect of countries with many stocks. The numbers presented here are diversification limits (variance of portfolio return divided by average variance of individual stock returns). Column 1 shows results for diversification effects when investing 50% in the fund and 50% in the stocks in each quintile. Column 2 shows results for diversification effects for investments in just the stocks in the quintile. 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.

Limit Value of Portfolio Return Variance as a % of the Average Stock Return Variance		
Correlation Quintile	**Add Stocks to Fund**	**Build New Stock Portfolio**
Low	0.1832	0.1098
2	0.2074	0.1262
3	0.2337	0.1490
4	0.2487	0.1617
High	0.2820	0.1893

Appendix A: Robustness Tests

Table A1 shows results from regressing quarterly returns on the foreign ownership return for different regression samples based on domicile market development, market capitalization, and liquidity levels. In particular, we run regressions separately for the sample of stocks in developed markets and emerging markets. We also run regression based on the stocks' market capitalization buckets (small, medium, and large) in the previous quarter. Stocks that are below the 40^{th} percentile are classified as Small, the next 30 percent are classified as Medium, and the rest as Large. Finally, we divide stocks into liquid vs. illiquid according to the percentage of non-zero return days in the previous year. We use the median value of the percentage of zero returns to divide stocks into the two groups. In all specifications, we find that stock returns are significantly related to the foreign ownership return.

Tables A2 and A3 show results of tests with the foreign non-ownership return. The results reported in Table A2 (specification (1)) show that the coefficient on the foreign non-ownership return is close to zero. We repeat this process with two-digit SIC industries that are potentially more precise. We also perform an analysis where we always pick the largest foreign non-ownership stock within the country-industry bucket to ensure the foreign non-ownership return is of similar or larger size composition. Alternatively, we combine the industry and large stocks analysis. All of the coefficients on these alternative foreign non-ownership returns in specifications (1)-(5) are close to zero and statistically insignificant, indicating that foreign ownership returns are not simply proxying for stocks of similar country and industry characteristics. We also create 200 simulated datasets of foreign non-ownership returns. The simulation regression coefficients have a mean of 0.0034 and range from 0.0018 to 0.061 (Panel A of Table A3), which is never anywhere close to that of the actual foreign ownership return of 0.56 (in Table 1).

Figure A1: Foreign Ownership Regression Coefficients over Time

The figure shows the average coefficients of Fama-MacBeth cross-sectional regressions. In particular, each week a cross sectional regression is run over all firms in the sample. Stock returns are regressed on an intercept (not reported), the foreign ownership return (Foreign Ownership Return), and global industry index returns excluding the industry in the local market (Industry). We then take the rolling average of these regression coefficients over the prior 26 weeks. The figure shows the moving average of the coefficients of the variables Foreign Ownership Return and Industry along with the world market index (World). Shaded areas are NBER recession periods. 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. Data on recession periods is from the NBER (http://www.nber.org/cycles/main.html).

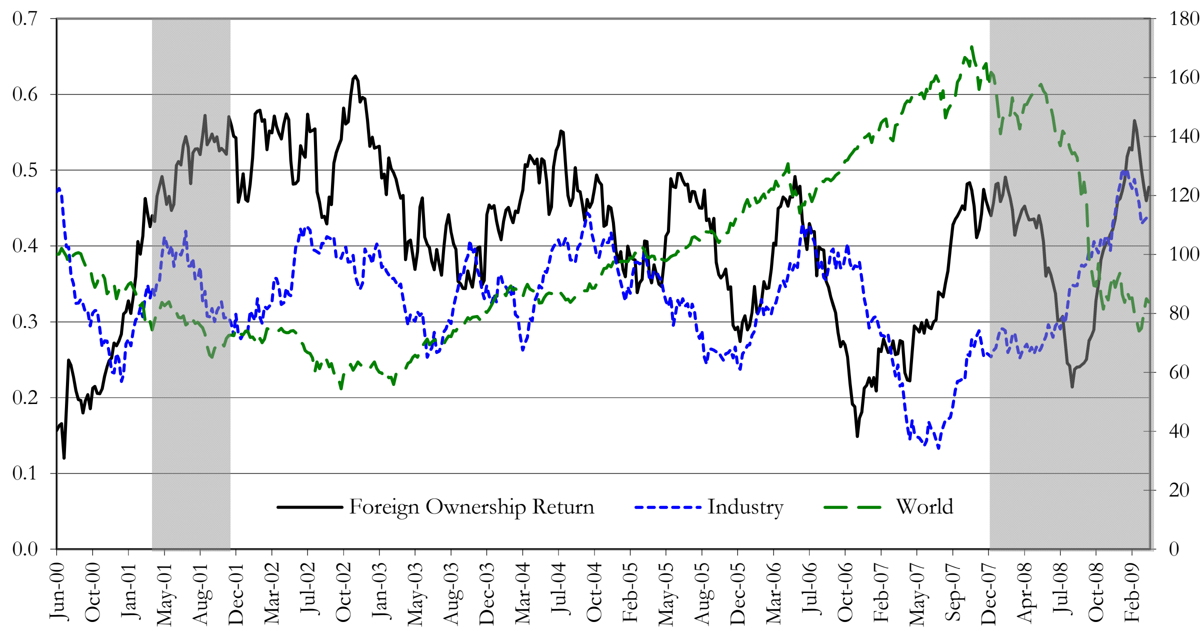

Table A1: Cross-Sectional Regressions with Foreign Ownership Returns

The table shows the results of Fama-MacBeth regressions of stock returns on an intercept (not reported), the foreign ownership return (Foreign Ownership Return), the 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 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 many 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 the 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	
	Emerging	Developed	Small	Medium	Large	Illiquid	Liquid
Foreign Ownership Return	0.128	0.354	0.210	0.259	0.524	0.225	0.440
	(2.59)	(4.78)	(5.80)	(2.84)	(4.80)	(8.03)	(9.11)
Local Beta × Local Market	0.806	0.662	0.778	0.754	0.811	0.758	0.786
	(23.52)	(7.27)	(11.91)	(18.88)	(31.79)	(16.71)	(15.60)
World Beta × World Market	-0.755	0.313	1.025	-1.216	-0.776	1.478	-0.750
	(-0.74)	(0.79)	(2.45)	(-0.80)	(-0.71)	(2.81)	(-0.77)
Industry	0.358	0.352	0.293	0.284	0.400	0.324	0.349
	(5.54)	(8.69)	(5.56)	(5.77)	(10.72)	(6.80)	(8.75)
Adjusted R^2	0.190	0.106	0.102	0.164	0.240	0.117	0.163
Number of Firms	605	1,380	795	596	595	986	999
Number of Observations	19,962	45,553	26,219	19,656	19,640	32,550	32,965

Table A2: Foreign Non-Ownership Return and Domestic Ownership Return

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on the foreign ownership return and various control variables. Returns are regressed on an intercept (not reported), the foreign ownership return, one of four alternative versions of a Foreign Non-Ownership return, the domestic ownership return, expected returns from a CAPM with local and world market index, and global industry index returns excluding the industry in the local market (Industry). For each stock, the Foreign Non-Ownership Return variable is constructed in a similar way as the foreign ownership return except we use uniform ownership distance and we replace returns of the actual, ownership connected stocks with that of comparable stocks not held by any owner of the stock in question. 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 that are less likely to be held by investors tend to be 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. The four alternative versions of the Foreign 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 (Foreign 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 (Foreign 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 (Foreign 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 (Foreign Non-Ownership Return (Largest Stock) (2-digit SIC)). The Domestic Ownership Return is constructed using only domestic stocks and uniform ownership distance. Local Beta and World Beta are first estimated from rolling regressions using weekly returns in the prior two years, where the return of each stock is regressed on the return on the value-weighted local market index, and on the returns of the MSCI world market index: $R_{jt} = \alpha_j + \beta_L R_{L,t} + \beta_W R_{MSCI,t} + \varepsilon_{j,t}$. 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 the 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 A2: Foreign Non-Ownership Return and Domestic Ownership Return (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Ownership Return					0.309	0.205
					(9.88)	(5.55)
Foreign Non-Ownership Return (Avg Stock)	0.019				-0.064	
	(0.51)				(-1.65)	
Foreign Non-Ownership Return (Avg Stock) (SIC2)		0.016				
		(0.41)				
Foreign Non-Ownership Return (Largest Stock)			-0.023			
			(-0.72)			
Foreign Non-Ownership Return (Largest Stock) (SIC2)				-0.010		
				(-0.22)		
Domestic Ownership Return						0.598
						(11.98)
Local Beta × Local Market	0.789	0.786	0.788	0.786	0.773	0.429
	(16.71)	(16.53)	(16.42)	(16.56)	(17.35)	(6.98)
World Beta × World Market	0.225	0.195	0.198	0.145	0.240	-0.127
	(0.55)	(0.45)	(0.45)	(0.31)	(0.62)	(-0.21)
Industry	0.350	0.350	0.350	0.349	0.334	0.328
	(8.15)	(8.12)	(8.07)	(8.16)	(8.48)	(9.39)
Adjusted R^2	0.133	0.132	0.132	0.132	0.138	0.157
Number of Observations	65,514	65,508	65,514	65,508	65,514	65,444
Number of Firms	1,985	1,985	1,985	1,985	1,985	1,983

Table A3: Foreign Ownership Return and Foreign 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 foreign non-ownership return. This foreign non-ownership return is added to an artificial data set that also includes the original foreign ownership return and other control variables. We create 200 such datasets based on alternative random draws of foreign non-ownership returns. We then estimate the following univariate regression: $R_i = a + b\, R_{foreign\ non-ownership,i} + \varepsilon_i$. 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. Firms without ownership linkage must have market capitalization greater than USD 100 million. In simulation exercise 2 (Panel B), we conduct a bootstrap. For each stock, we have the Foreign Ownership Return ($R_{foreign\ ownership,i}$) and the Foreign Non-Ownership Return ($R_{foreign\ non-ownership,i}$) constructed from the value-weighted mean returns of the largest non-owned stock in the same industry and country as the linked stocks. Each quarter we run a cross-sectional regression of the stock return (R_i) on the Foreign Ownership Return and the Foreign Non-Ownership Return: (1) $R_i = a + b\, R_{foreign\ non-ownership,i} + c\, R_{foreign\ ownership,i} + \varepsilon_i$. 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) with 3 lags). Under the null hypothesis, the foreign ownership return 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 Foreign Non-Ownership Return and the Foreign 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) with 3 lags). 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.	Max Coef.	Iterations
Foreign Non-Ownership Return	0.034	0.0018	0.061	200

Panel B: Simulation Exercise 2

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

Internet Appendix

A. Data Sources and Sample Construction

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.[1] 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 on the closest future date (provided that the stock price has not changed substantially). ADRs and GDRs and their parent firms are identified using classifiers obtained from both Datastream and Lionshares. 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 of the parent firm.

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

[1] 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.

convert the local currency stock returns into U.S. dollar terms. U.S. stocks are identified by CRSP's PERMNO, while International stocks 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 two datasets above, 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 institutional-level by aggregating the fund-level data at the institution level. We then merge these two datasets.[2] When there is overlap of the holding information, we prefer 13F data to FUND data.

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

[2] If we only have institutional holding data on a stock in a quarter but no holding data by any of its funds on that stock, we use the institution data. Similarly, if we only have fund holding data on a stock in a quarter but not the fund's institution holding data, we take the fund data. When we have both institution and fund holding data on the stock in a quarter, we use the institution level observation. 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.

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.[3]

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 quarter -1 to +1 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 weeks -12 to +12 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 $lag(R_t)> 3.00$ and $(1+R_t)*(1+ lag(R_t))<1.5$, 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.

[3] 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.

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.

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 IA.3 shows that developed countries outside of the United States have, on average, foreign ownership coverage in 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 developed 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 86.3 percent as one moves from the smallest to the largest quintile. In the largest quintile, coverage is above 80 percent in all developing countries except China, Croatia, Cyprus, Iceland, Indonesia, Morocco, and South Africa.

B. Wealth Effects and Contagion

Wealth effect theories are often related to contagion and point to the effects of foreign ownership mattering more in periods of extreme stress, which suggests potential asymmetries surrounding negative returns and particularly in periods of crisis. To investigate this prediction, we estimate weekly Fama-MacBeth cross-sectional regressions and average the coefficients over rolling 26-week periods. Figure A.1 plots the coefficients over the January 2000 to March 2009 period. Industry and foreign ownership return coefficients are of similar magnitude and are relatively stable. The coefficients are never below zero and range between 0.10 and slightly over 0.60. Hence, our results are consistent with Bekaert, Ehrmann, Fratzscher, and Mehl (2014) as they find little economic evidence of excess comovement during the financial crisis.

C. Importance of Foreign Ownership Return for Systematic Portfolio Risk by Fund Size

We conduct an analysis that measures the importance of the foreign ownership return in capturing systematic portfolio risk. For a fund k with a vector of stock weights v, the fund return R_t^k can be written as:

$$R_t^k = R_t' v$$

where R_t is a $N \times 1$ vector of returns of all stocks at time t. Each individual stock return $R_{i,t}$ expressed via our factor model is:

$$R_{i,t} = \alpha_i + \beta_i^C F_{i,t}^C + \beta_i^I F_{i,t}^I + \beta_i^O F_{i,t}^O + e_{i,t} \equiv F_{i,t} + e_{i,t}$$

In vector form,

$$R_t = F_t + e_t$$

Therefore, the variance V of the return of fund k due to the three factors can be written as:

$$V \equiv E[F_t' v - E[F_t' v]]'[F_t' v - E[F_t' v]] = E[v'[F_t - E[F_t]]' v] = v' \Omega v$$

Alternatively, if foreign ownership returns played no role and stock returns were only driven by country and industry returns, the factor loading on foreign ownership returns $F_{i,t}^O$ can be imposed to be zero. In that case, the variance of the return of fund k due to only country and industry returns, denoted by V^*, is expected to be very similar to the variance V.

The ratio of the variances V^*/V can be interpreted as a measure of the importance of the foreign ownership return in capturing systematic portfolio risk. The lower the ratio, the more important is the foreign ownership return for portfolio risk. In contrast, a ratio of 1 would indicate that the foreign ownership return does not capture any additional portfolio risk. We plot this ratio against fund size in Figure IA.3. The variance ratio ranges from 0.8 for funds in the small size quintile to 0.95 for funds in the largest size quintile. This suggests that the foreign ownership return accounts for 20% of the systematic variance for smaller funds compared to only 5% for larger funds.

Figure IA.1: Foreign Ownership Level and Portfolio Diversification

The figure shows the effect of global 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 foreign institutional ownership groups, the number of firms is restricted to the smallest number of firms across foreign institutional ownership groups that have the same number of stocks in each foreign institutional ownership group. For each year the average variance and covariance is calculated for global 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.

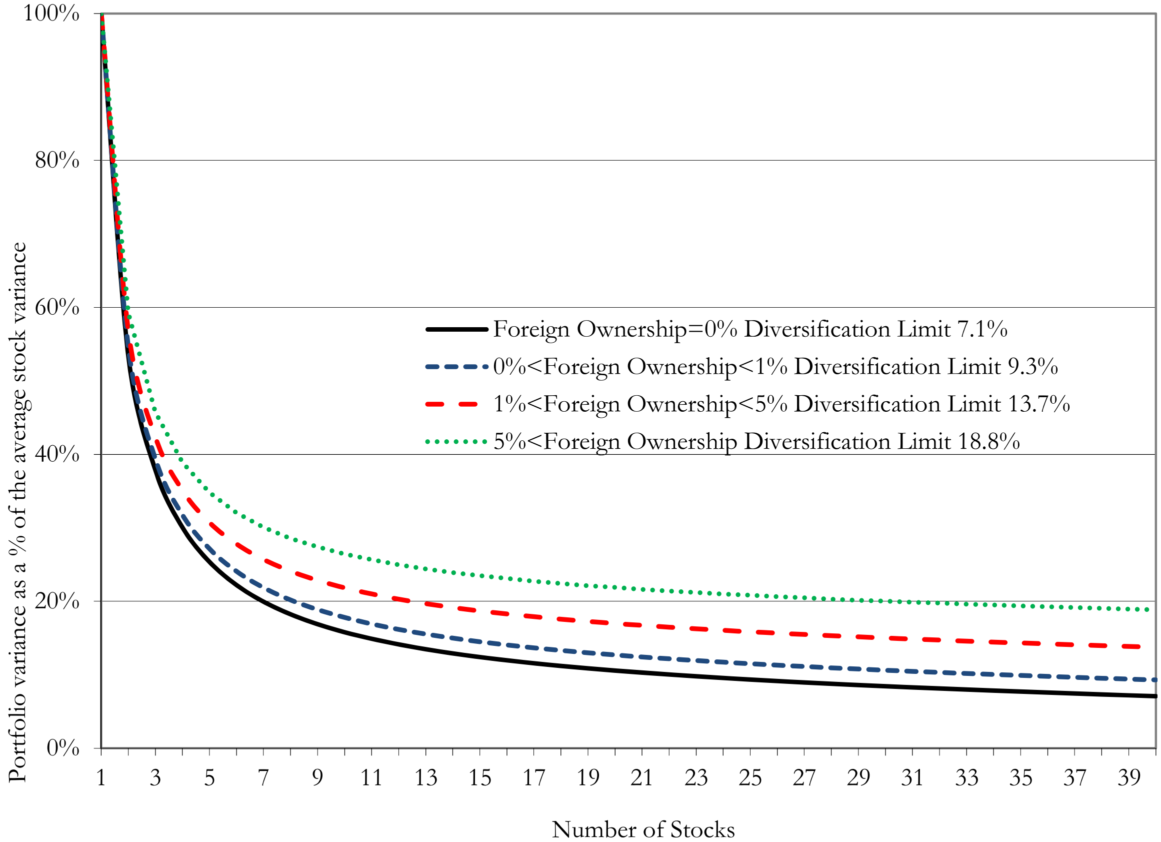

Figure IA.2: Portfolio Diversification for New Portfolios of Stocks with Different Foreign Ownership Correlation

The figure shows the effect of portfolio diversification for funds investing in stocks with different levels of foreign ownership correlation. In particular, for each fund and year, stocks that are not held by a fund are sorted into quintiles based on the correlation between their foreign ownership return and fund returns in the prior year. Quintile 1 is the group of stocks with the lowest correlation, while quintile 5 has the highest correlation. We restrict the grouped stocks to be non-U.S. and to have more than 5% foreign ownership before the sorting. We look at the diversification benefits within the quintile in the following year. When we calculate the equal weighted portfolio return for a quintile, we first take averages within a country and then take average across countries, in order to avoid a dominating effect of countries with many stocks. The numbers presented here are diversification limits (variance of portfolio return divided by average variance of individual stock return). The figure shows results for diversification effects for investments in just the stocks in the quintiles.

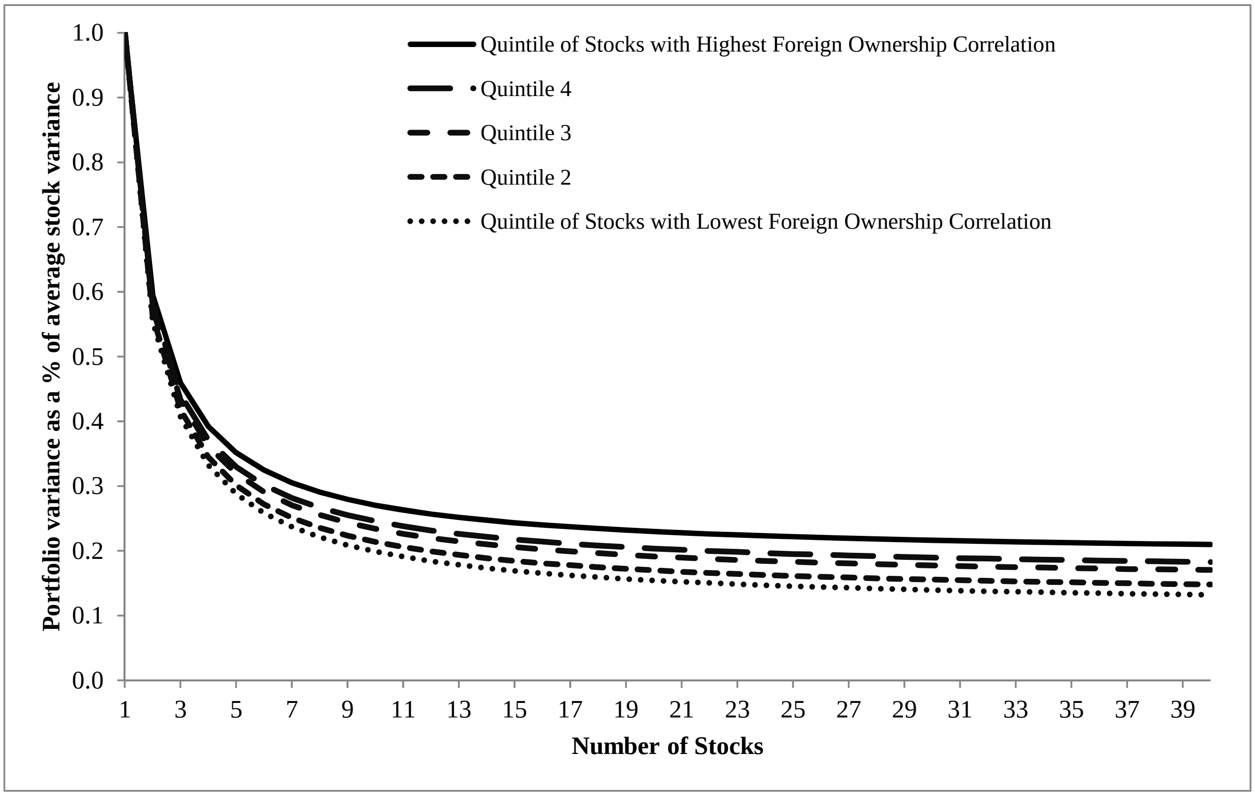

Figure IA.3: Importance of Foreign Ownership Return for Stock Systematic Risk

The figure shows the importance of the foreign ownership return for stock systematic risk by fund size. In particular, for each calendar year and stock, we regress weekly stock returns on returns of the local market index, the industry portfolio, and the foreign ownership return. Using the portfolio weights of a fund at the beginning of the calendar year, we take the weighted average of systematic return components of the stocks that a fund holds. In particular, for each year and fund, we compute the variance of funds' systematic return factors with and without foreign ownership return factor from weekly observations within a calendar year. The figure plots the ratio of the variance of systematic components without foreign ownership return to the variance of systematic components with all three factors against the log of fund size. Funds are required to invest in at least 50 stocks, invest more than 50% of their portfolio in foreign stocks, and invest in all 10 Fama-French industries. The sample period is 01/01/2000-03/31/2009. The sample of stocks consists of non-U.S. stocks with at least 30 observations in a calendar year, 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, market indices, and industry indices is from Datastream.

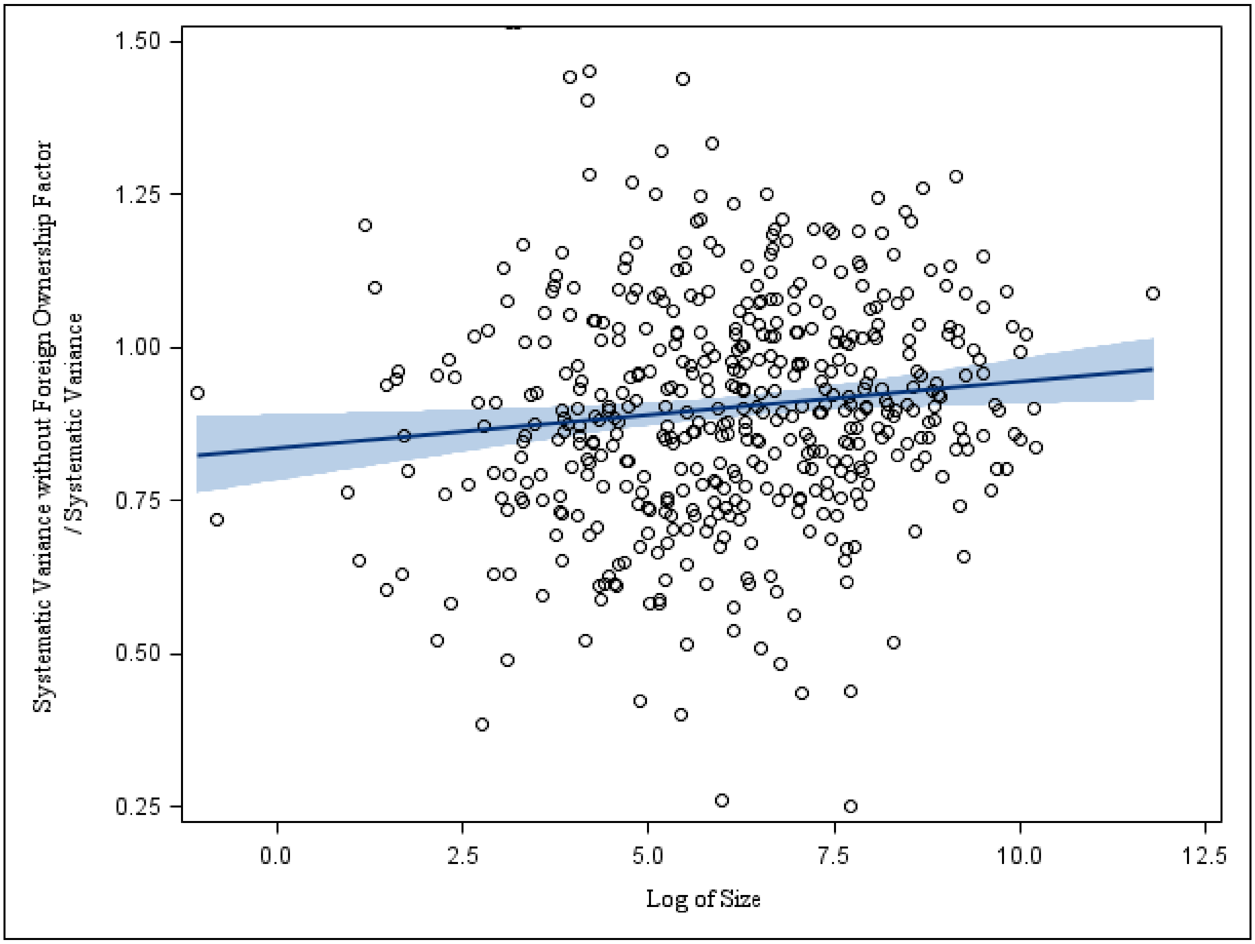

Table IA.1: Summary Statistics on Update Frequency of Ownership Data

The table shows the percentage of institutions by country and data source in Lionshares, i.e. institutional level data (13F in the United States and its equivalent in other countries), the mutual funds database (MF), and the merged dataset (13F+MF). Results are split by updating frequency, i.e. annual, biannual, triennial, 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			Triennial			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 IA.1: Summary Statistics on Update Frequency of Ownership Data (continued)

	Annual			Biannual			Triennial			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 IA.2: 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 United States 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 IA.2: Number of Institutions and Mutual Funds by Year and Country (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 IA.3: Summary Statistics

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

(continued)

Table IA.3: 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 IA.3: 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 IA.3: 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 IA.4: Time-Series Regressions with Foreign Ownership Return (all sub-periods)

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 ownership return, the world market index excluding the local market (World Market), and global industry index returns excluding the industry in the local market (Industry). The sample period is 01/01/2000-03/31/2009. The sample 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) $R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{WorldMarket,t} + \delta_j R_{ForeignOwnership,t} + \varepsilon_{jt}$
(7) $R_{jt} = \alpha_j + \beta_j R_{LocalMarket,t} + \chi_j R_{WorldMarket,t} + \delta_j R_{ForeignOwnership,t} + \phi_j R_{Industry,t} + \varepsilon_{jt}$

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 2001Q1-2002Q1, 2003Q1-2005Q4, and 2006Q1-2009Q1, respectively.

Panel A: 2001Q1-2002Q4

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Foreign Ownership Return			0.352			0.456	0.314
Local Market	0.842	0.629	0.589	0.588	0.634	0.597	0.610
World Market		0.363			-0.131	-0.136	-0.439
Industry				0.394	0.426		0.402
Adjusted R^2	0.190	0.206	0.210	0.233	0.239	0.215	0.245
Number of Firms	224	224	224	224	224	224	224

Panel B: 2003Q1-2005Q4

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Foreign Ownership Return			0.290			0.470	0.425
Local Market	0.893	0.814	0.717	0.761	0.779	0.721	0.697
World Market		0.185			-0.079	-0.245	-0.447
Industry				0.249	0.286		0.266
Adjusted R^2	0.218	0.227	0.232	0.236	0.241	0.236	0.248
Number of Firms	1,408	1,408	1,408	1,408	1,408	1,408	1,408

Panel C: 2006Q1-2009Q1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Foreign Ownership Return			0.279			0.533	0.473
Local Market	0.987	0.874	0.752	0.816	0.850	0.765	0.758
World Market		0.175			-0.170	-0.341	-0.593
Industry				0.238	0.338		0.310
Adjusted R^2	0.340	0.350	0.356	0.357	0.363	0.362	0.373
Number of Firms	3,125	3,125	3,125	3,125	3,125	3,125	3,125

Table IA.5: Liquidity and Coverage

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), the foreign ownership return, expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and global industry index returns excluding the industry in the local market (Industry). The sample consists of non-U.S. stocks with at least 30%, at least 50% or at least 70% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership in the first three columns. The last two columns show 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 and/or the top 20 countries with the highest country-aggregate foreign ownership level. The foreign ownership return is constructed assuming the same ownership distance for all connected stocks. The sample period is 01/01/2000-03/31/2009. The table reports the average coefficients, associated *t*-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with four lags.

	Percentage of Non-zero Trading			Number of Observations in Country > 500	Number of Observations in Country > 500 & Above Median Country Foreign Ownership
	>=30%	>=50%	>= 70%		
Foreign Ownership Return	0.111	0.395	0.391	0.227	0.29
	(2.34)	(4.76)	(4.76)	(3.56)	(2.99)
Local Beta × Local Market	0.827	0.768	0.768	0.79	0.636
	(10.80)	(15.60)	(15.40)	(9.87)	(8.72)
World Beta × World Market	-0.027	0.204	0.203	-0.149	-0.374
	(-0.05)	(0.42)	(0.40)	(-0.33)	(-0.74)
Industry	0.211	0.399	0.405	0.278	0.332
	(5.24)	(9.72)	(9.78)	(8.07)	(5.46)
Adjusted R^2	0.106	0.134	0.132	0.12	0.095
Average Number of Firms	864	1,580	1,607	1,279	343

Table IA.6: Alternative Levels of Foreign Institutional Ownership

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), the foreign ownership return, expected returns from a CAPM with local and world market index and global industry index returns excluding the industry in the local market (Industry). Regressions are run alternatively for levels of foreign ownership between 0% and 1%, between 1% and 5%, and above 5%. Local Beta and World Beta are first estimated from rolling regressions using past two-year weekly returns, where the returns of each stock is regressed on the returns on the value-weighted local market index, 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 return (Local Beta × Local Market), and the World Beta is multiplied with the contemporaneous MSCI world market return (World Beta × World Market) to construct 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. It reports the average coefficients, associated t-statistics, as well as the 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.

	0 < Foreign Ownership < 1%				1% < Foreign Ownership < 5%				5% < Foreign Ownership			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Foreign Ownership Return	0.134	0.010	0.109	-0.006	0.326	0.185	0.278	0.167	0.559	0.364	0.468	0.311
	(4.92)	(0.27)	(4.70)	(-0.20)	(7.47)	(6.60)	(7.59)	(5.78)	(9.13)	(9.23)	(9.72)	(8.85)
Local Beta × Local Market		0.845		0.838		0.857		0.853		0.790		0.773
		(16.36)		(16.20)		(15.07)		(14.73)		(18.96)		(17.69)
World Beta × World Market		0.270		0.400		-0.208		0.208		-0.199		0.239
		(0.85)		(1.55)		(-0.32)		(0.73)		(-0.25)		(0.59)
Industry			0.275	0.217			0.331	0.250			0.443	0.334
			(7.66)	(6.07)			(8.02)	(7.67)			(11.57)	(8.47)
Adjusted R^2	0.004	0.097	0.014	0.101	0.010	0.129	0.027	0.135	0.019	0.123	0.048	0.136
Number of Observations	146,834	72,762	146,273	72,762	88,905	60,238	88,724	60,238	87,054	65,521	86,923	65,517
Number of Firms	3,968	2,205	3,953	2,205	2,403	1,825	2,398	1,825	2,353	1,985	2,349	1,985

Table IA.7: Foreign Ownership Return from Flows and Turnover

The table shows results of Fama-MacBeth regressions of quarterly stock returns on an intercept (not reported), alternative versions of the foreign ownership return, expected returns from a CAPM with local and world market index, and global industry index returns excluding the industry in the local market (Industry). Across specifications, foreign ownership returns are constructed for different groups of institutions. In particular, institutions are split into two groups by different characteristics or particular types of institutions are selected: specification (2) splits institutions into those with high absolute dollar flows vs. those with low absolute dollar flows; specification (3) splits institutions into those with high turnover vs. those with low turnover; specifications (4) splits institutions into those with high lagged turnover vs. those with low lagged turnover. 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 and associated *t*-statistics, as well as the average adjusted R^2, the number of observations, and the average number of firms. Standard errors are corrected with the Newey-West (1987) procedure with 3 lags. Differences and associated *t*-statistics between the coefficients on the two ownership variables in each specification are reported in the bottom of the table. 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)
Foreign Ownership Return						
All Funds	0.325					
	(8.73)					
Funds with High Absolute Dollar Flows		0.390			0.260	0.201
		(8.66)			(3.16)	(1.84)
Funds with Low Absolute Dollar Flow		0.099			0.092	0.072
		(3.42)			(2.83)	(2.58)
Funds with High Turnover			0.313		0.170	
			(11.43)		(3.02)	
Funds with Low Turnover			0.161		0.018	
			(2.92)		(0.32)	
Funds with High Lagged Turnover				0.311		0.202
				(7.07)		(2.31)
Funds with Low Lagged Turnover				0.168		0.079
				(3.44)		(1.50)
Local Beta × Local Market	0.773	0.757	0.770	0.772	0.754	0.755
	(18.22)	(19.05)	(19.09)	(18.64)	(18.99)	(18.98)
World Beta × World Market	0.216	0.204	-0.003	0.017	0.186	0.195
	(0.49)	(0.45)	(-0.00)	(0.03)	(0.39)	(0.42)
Industry	0.332	0.354	0.334	0.327	0.353	0.351
	(7.85)	(8.85)	(8.16)	(7.88)	(8.97)	(8.76)
Adjusted R^2	0.137	0.152	0.146	0.145	0.156	0.155
Number of Observations	64,999	54,599	61,559	61,525	53,735	53,728
Number of Firms	1,970	1,655	1,865	1,864	1,628	1,628
Difference between Groups		0.291	0.152	0.143		
		(5.02)	(2.78)	(2.07)		

Table IA.8: Wealth Effects

Panel A shows results of Fama-McBeth regression results of stock returns on an intercept (not reported), the weighted average of the home market return of foreign institution (Owners' Home Market Return), the foreign ownership return (Foreign Ownership Return), the expected return from a CAPM with local and world market index, and the global industry index return excluding the industry in the local market (Industry). Panel B shows results of Fama-McBeth regressions of stock returns on an intercept (not reported), the foreign ownership return due to stocks' home markets and the foreign ownership return not due to stocks' home markets, the expected return from a CAPM with local and world market index, and the global industry index return excluding the industry in the local market (Industry). We decompose the foreign ownership return by decomposing the returns of ownership connected stocks. Returns of each ownership connected stock are regressed on the market returns of the stock's country of origin using 108 weekly time-series observations to obtain the market beta coefficient. We require at least 70 weekly observations in the time-series regression.

$$R_{j,t} = \beta_j R_{j,t}^{C} + \epsilon_{j,t} = R_{j,t}^{country} + \epsilon_{j,t} = R_{j,t}^{country} + R_{j,t}^{residual}$$

Fitted values are calculated by multiplying the estimated market betas with quarterly market returns. They are fed together with the return residuals with into the foreign ownership return formula to get a decomposition of foreign ownership return:

$$\begin{aligned} R_t^O(i) &= \sum_{j=1}^{N_i} \left(1 - d_{i,j}^O\right) \sum_{k=1}^{K} w_{i,k} v_{k,j} \, R_{j,t} \\ &= \sum_{j=1}^{N_i} \left(1 - d_{i,j}^O\right) \sum_{k=1}^{K} w_{i,k} v_{k,j} \left(R_{j,t}^{country} + R_{j,t}^{residual}\right) = R_{j,t}^{O,country} + R_{j,t}^{O,residual} \end{aligned}$$

First component is foreign ownership return due to stocks' home markets. Second component is the foreign ownership return not due to stocks' home markets. 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 coefficients, associated *t*-statistics, as well as the average adjusted R^2. Ownership data is from Lionshares. Returns data for individual stocks, market indices, and industry indices are from Datastream.

(continued)

Table IA.8: Wealth Effects (continued)

Panel A: Regressions with Owners' Home Market Return

	(1)	(2)	(3)	(4)	(5)
Owners' Home Market Return	0.166	0.191	-0.041	0.151	0.002
	(2.01)	(3.05)	(-0.64)	(2.99)	(0.04)
Foreign Ownership Return	0.547		0.370		0.308
	(9.86)		(8.13)		(7.59)
Local Beta × Local Market		0.763	0.793	0.789	0.776
		(16.85)	(19.95)	(18.03)	(18.80)
World Beta × World Market			-0.194	0.192	0.248
			(-0.24)	(0.40)	(0.58)
Industry				0.348	0.330
				(7.61)	(7.78)
Adjusted R^2	0.023	0.092	0.125	0.132	0.137
Number of Observations	86,522	65,287	65,287	65,283	65,283
Number of Firms	2,338	1,978	1,978	1,978	1,978

Panel B: Country-level Decomposition of Foreign Ownership Return

	(1)	(2)	(3)
Foreign Ownership Return (due to Home Market)	0.097		0.123
	(1.30)		(2.12)
Foreign Ownership Return (not due to Home Market)		0.456	0.462
		(5.56)	(5.51)
Local Beta × Local Market	0.789	0.782	0.781
	(18.22)	(18.08)	(18.85)
World Beta × World Market	0.197	0.192	0.205
	(0.43)	(0.42)	(0.48)
Industry	0.351	0.333	0.333
	(7.58)	(7.76)	(7.71)
Adjusted R^2	0.132	0.138	0.139
Number of Observations	65,515	65,515	65,515
Number of Firms	1,985	1,985	1,985

Table IA.9: Sorting Results for Wealth Effect

The table shows sorting results for the wealth effect. For each stock, we sort its 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, market indices and industry indices is from DataStream.

Panel A: Change of Holdings

	Average Return (x100)	Change in Fraction Held 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 in Fraction Held 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 IA.10: Dynamic Return Patterns

The table shows the results of Fama-MacBeth regressions of weekly, monthly, quarterly stock returns on foreign ownership returns. Panel A shows results from regressions of weekly, monthly, and quarterly returns on an intercept (not reported), lagged foreign ownership return, expected returns of CAPM for local and world market, and global industry index returns (Industry). The sample is split into three groups of firms by size. We use the 30th and 70th percentile cut off points in our sample of firms to define the size groups. Panel B shows results from regressions of one to four period ahead returns in weekly, monthly, and quarterly frequency on an intercept (not reported), the foreign ownership return, stock returns, past six-period stock returns, expected returns of CAPM for local and world market, and global industry index returns (Industry). The sample consists of non-U.S. stocks with at least 30% non-zero trading days in the previous year as well as at least 5% lagged foreign institutional ownership. The tables report the average coefficients and associated *t*-statistics, as well as the average adjusted R^2, the number of observations, and the average number of firms.

Panel A: Regressions with Lagged Foreign Ownership Returns

	Weekly				Monthly				Quarterly			
	All	Small	Medium	Large	All	Small	Medium	Large	All	Small	Medium	Large
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Foreign Ownership Return	0.222	0.149	0.203	0.322	0.288	0.228	0.262	0.380	0.356	0.218	0.257	0.622
	(14.77)	(6.46)	(10.79)	(12.15)	(9.87)	(4.84)	(6.04)	(5.64)	(7.36)	(2.90)	(2.52)	(4.55)
Foreign Ownership Return (lagged)	0.055	0.055	0.037	0.071	0.040	0.044	0.031	0.101	-0.006	-0.052	0.196	0.118
	(3.88)	(2.46)	(2.02)	(2.89)	(1.41)	(1.23)	(0.67)	(1.88)	(-0.09)	(-0.73)	(1.97)	(1.16)
Foreign Ownership Return (lagged, avg. of 2, 3, 4)	0.024	0.027	0.019	0.049	0.001	-0.028	0.028	0.060	0.073	0.004	0.070	0.227
	(2.77)	(2.16)	(1.59)	(3.63)	(0.06)	(-1.53)	(1.22)	(1.88)	(2.10)	(0.11)	(2.25)	(2.28)
Local Beta × Local Market	0.791	0.686	0.803	0.842	0.786	0.749	0.798	0.807	0.730	0.652	0.748	0.786
	(80.09)	(40.82)	(75.12)	(84.93)	(31.32)	(16.75)	(34.02)	(33.27)	(15.20)	(7.60)	(16.72)	(25.05)
World Beta × World Market	3.725	3.531	4.276	3.924	0.575	0.761	0.662	0.218	0.176	1.877	-1.273	-0.813
	(1.24)	(1.26)	(1.27)	(1.22)	(2.73)	(2.40)	(3.10)	(0.79)	(0.33)	(1.63)	(-0.74)	(-0.72)
Industry	0.257	0.172	0.214	0.351	0.333	0.296	0.247	0.424	0.361	0.329	0.316	0.413
	(26.01)	(7.56)	(19.00)	(32.67)	(13.91)	(5.77)	(8.17)	(20.73)	(7.88)	(3.39)	(6.11)	(9.34)
Adjusted R^2	0.122	0.068	0.138	0.212	0.134	0.085	0.147	0.220	0.139	0.099	0.141	0.237
Number of Observations	835,183	198,137	346,087	290,959	179,695	43,000	73,560	63,135	50,219	11,883	20,121	18,215
Number of Firms	1,942	461	805	677	1,815	434	743	638	1,522	360	610	552

(continued)

Table IA.10: Dynamic Return Patterns (continued)

Panel B: Horizon of Predictive Effects

	Weekly				Monthly				Quarterly			
	$R_{(t+1)}$	$R_{(t+2)}$	$R_{(t+3)}$	$R_{(t+4)}$	$R_{(t+1)}$	$R_{(t+2)}$	$R_{(t+3)}$	$R_{(t+4)}$	$R_{(t+1)}$	$R_{(t+2)}$	$R_{(t+3)}$	$R_{(t+4)}$
Foreign Ownership $\text{Return}_{(t)}$	0.042	0.023	0.026	0.022	0.076	0.009	0.006	0.002	0.013	0.083	-0.042	0.088
	(2.13)	(1.21)	(1.56)	(1.14)	(2.06)	(0.24)	(0.19)	(0.06)	(0.17)	(1.32)	(-0.77)	(0.99)
$\text{Return}_{(t)}$	-0.056	-0.006	-0.001	-0.004	-0.009	0.019	0.018	0.004	0.035	0.023	0.029	0.027
	(-14.97)	(-1.67)	(-0.42)	(-1.12)	(-1.19)	(2.60)	(1.93)	(0.64)	(2.00)	(1.60)	(2.28)	(1.66)
$\text{Return}_{(t-1,t-6)}$	-0.001	0.002	0.002	0.003	0.011	0.010	0.007	0.010				
	(-0.67)	(0.94)	(1.27)	(1.44)	(2.37)	(2.16)	(1.48)	(2.06)				
Local Beta × Local $\text{Market}_{(t)}$	0.022	0.012	0.025	0.013	0.017	-0.037	-0.012	-0.051	-0.082	0.065	0.086	-0.038
	(1.54)	(0.85)	(1.58)	(0.76)	(0.54)	(-1.28)	(-0.40)	(-2.08)	(-1.40)	(1.21)	(1.28)	(-1.14)
World Beta × World $\text{Market}_{(t)}$	2.211	2.324	4.740	-0.811	-0.471	0.330	0.938	-0.332	1.301	-0.987	0.045	-0.672
	(1.01)	(0.87)	(1.14)	(-1.40)	(-1.48)	(0.91)	(2.30)	(-0.71)	(0.81)	(-1.65)	(0.27)	(-1.64)
$\text{Industry}_{(t)}$	0.097	0.028	0.035	0.029	0.109	0.004	0.047	0.068	0.060	0.029	0.014	0.089
	(6.58)	(1.89)	(2.27)	(1.87)	(3.55)	(0.11)	(2.04)	(1.99)	(1.47)	(0.53)	(0.32)	(2.27)
Adjusted R^2	0.047	0.043	0.041	0.041	0.055	0.053	0.048	0.045	0.053	0.049	0.044	0.034
Number of Observations	826,467	823,502	820,537	817,572	169,171	166,354	163,537	160,301	62,549	59,083	55,543	51,934
Number of Firms	1,922	1,920	1,917	1,915	1,726	1,715	1,704	1,687	1,955	1,906	1,851	1,791

Table IA.11: Practical Implications of Foreign Ownership Linkage for Portfolio Diversification

The table shows results pertaining to the implications of the level of foreign institutional ownership as well as the extent of foreign ownership linkage for portfolio diversification. In particular, 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 ensure an 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 a bin for each year and report the average across years. Panel B shows the effect of alternative levels of foreign institutional ownership by sorting firms by foreign ownership return betas. For a randomly selected fund, foreign ownership return betas are estimated over rolling two year windows over the years 2003-2009 for firms with at least 5% lagged foreign institutional ownership that are not held by the 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: $R_{ForeignOwnership,i,t} = \alpha + \beta_{ForeignOwnership\ Beta,i} R_{Fund,t} + \varepsilon_{i,t}$. Subsequently, we sort the observations for each year into four groups based on the estimated foreign 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: $R_{i,t} = \alpha + \beta_{Fund\ Beta,i} R_{Fund,t} + \varepsilon_{i,t}$. To compute averages which compare observations at the fund level, we first average by fund, country, year, and foreign ownership beta bucket. Subsequently, we average across funds by country, year, and foreign ownership beta bucket. We then average across countries by year and foreign ownership beta bucket. Finally, we average across years by foreign ownership beta bucket. The final averages are reported in Panel B. The *t*-statistics are computed from this last cross-country average. Panel B shows the average foreign ownership beta and fund beta of stocks in each of the four foreign ownership beta bins, as well as those of a high-low portfolio based on foreign ownership betas, along with corresponding *t*-statistics. 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. Panel B is based on random draws of 1,000 of our 6,698 funds. Firms are also required to have at least 30 non-missing observations in a rolling two-year window.

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	0.21

Panel B	Foreign Ownership Beta bin					
	<0.5 (Low)	0.5-0.75	0.75-1	>1 (High)	High-Low	t-stat
Average Foreign Ownership Beta	0.376	0.645	0.864	1.096	0.719	
Average Fund Beta	0.478	0.626	0.765	0.880	0.402	7.0