How Important is Foreign Ownership for International Stock Co-Movement?

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Abstract

A large previous literature has examined the relative importance of country and industry effects for international stock returns. We find that there is a third important driver, ownership. We develop a simple measure of international ownership linkages and show that ownership linkage is often of equal importance to the traditional country and industry effects. International ownership linkages are not subsumed by the local or world market, country of capital origin, liquidity, investment style, foreign operations, the level of foreign ownership, or fund flows. The effect is present in periods of both positive and negative market environment. The specific ownership composition of a stock is an important facet of international equity returns—a finding which has important practical diversification implications.

Keywords: Institutional ownership, asset management, portfolio diversification, international finance, co-movement
JEL Classification: G3, F4, F3
First version: October 7, 2009
This version: March 15, 2010

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We are grateful for helpful comments and suggestions by Nicholas Barberis, Keith Brown, Stijn Claessens, Itay Goldstein, Ilan Guedj, Bing Han, Andrew Karolyi, Shimon Kogan, Inmoo Lee, Karen Lewis, Matt Pritsker, Clemens Sialm, Laura Starks, Rob Stambaugh, Sheridan Titman and seminar participants at Dimensional Fund Advisors, Federal Reserve Bank of Boston, George Washington University, International Monetary Fund, Lancaster University, Temple University, the University of Texas at Austin, University of Texas at Dallas, and the Wharton School of Business. Jiyoun An and Tae-Hoon Lim provided excellent research assistance. We gratefully acknowledge Xiaoyan Zhang for providing us with some programs used in Bekaert, Hodrick and Zhang (2009).

What makes a security global? A large literature debates the relative importance of country and industry forces or exchange rate movements affecting variation in stock returns and international diversification.[1] This is predominantly a cash flow view of international stock variation. We recast this debate in terms of another important driver of stock returns international ownership. While others have noted the importance of foreign ownership, we propose a specific channel of foreign ownership linkage and show that this channel has similar importance as these traditional forces.

In order to capture stock price connectedness to foreign securities, we construct a measure of the foreign equity returns of one's shareholdings. For example, for Samsung, a Korean firm, we find that it is held by fund X, and then examine the value-weighted return coming from all non-Korean stocks held by fund X. We perform this calculation for all funds holding Samsung and then use the weight of the funds' ownership in Samsung to calculate an average ownership return. Because the ownership return captures the returns of other stocks held by Samsung shareholders outside of Korea, it is a measure of foreign ownership linkage. Using detailed holding data from the Lionshares Holdings database, we are able to capture ownership for over 8,791 firms domiciled/incorporated outside of the United States.

Based on weekly, monthly, and quarterly data, we document that foreign ownership returns are important for driving cross-sectional variation in returns. For stocks with over five percent foreign ownership, a one percent increase in the ownership return is associated with a 0.395 increase in a firm's return, even after controlling for the local market and industry movements. Also, changes in the level of foreign ownership are positively related to stock returns but this effect does not subsume the importance of the ownership return. In time-series analyses, we use the approach of Bekaert, Hodrick,

[1] Papers analyzing the extent of country and industry sources of variation include Roll (1992), Heston and Rouwenhorst (1994), Griffin and Karolyi (1998), Brooks and Del Negro (2004), Carrieri, Errunza, and Sarkissian (2004), and Bekaert, Hodrick, and Zhang (2009). Those analyzing the importance for exchange rates and stock price movements include Dumas and Solnik (1995), Ferson and Harvey (1995), and Ng (2004) for factor models, and Jorion (1990) for exchange rate exposure.

and Zhang (2009) to analyze the ability of the foreign ownership return to explain the covariance structure of international stock returns. We find that the ownership return captures considerable co-variation beyond local market, global market, and industry returns.

Having established the importance of ownership for stock returns, we consider various explanations for why ownership returns matter beyond common sources of country and industrial variation. Our general categories of explanations include: traditional economic channels of market fundamentals, integration, coordinated fund purchase or sale driving returns, price pressure due to fund outflows, a global style proxy, and ownership returns as a habitat proxy. Under the market integration explanation, stocks with low institutional ownership may be segmented from the rest of the world, while stocks with high institutional ownership are more integrated. Inconsistent with partial integration as the only explanation, the imporance of foreign ownership returns is not subsumed by expected returns from global and local asset pricing models. Nor is it captured by a world index that is tilted towards stocks with high foreign ownership, industry returns, exchange rate effects, and proxies for foreign sales. Using an ownership weighted index of the institutions' home market indices, we show that the country where the capital is originating from is unimportant, which is inconsistent with divergent views of fundamentals that originate from the country where the institutional investor is domiciled. Motivated by a category-based view of co-movement Barbeis and Shleifer (2003), we construct a detailed firm-level style index and find it is related to the ownership return but can not subsume its importance though it is impossible to control for unobserved styles.

Coordinated fund purchase or sale may come from investors' wealth effects [Goldstein and Pauzner (2004) and Kyle and Xiong (2001)], or portfolio rebalancing decisions [Bohn and Tesar (1996)]. Such purchases and sale can drive up correlations of stocks with common owners. Forced price pressure explanation due to inflows or outflows has also been proposed [Coval and Stafford (2007)]. In conflict with forced price pressure as the main explanation for our results, we find that the

ownership return effect is actually more prevalent in large (but less liquid) securities and in developed not emerging markets. To further examine the effect of, wealth effects, portfolio rebalancing, flows into funds as explanations, we decompose the change in stock return ownership into four components. Flows into and out of the fund, capital appreciation in other stocks (extremely similar to our ownership return), re-allocating the equity weights, and stock picking. We perform an aggregate institutional analysis and a separate analysis of non-U.S. securities held by owners in the CRSP mutual fund database to more accurately measure mutual fund flows and shifting equity weights. H We find no evidence of equity re-allocation and weak evidence for fund flows. The value fluctuation of a stock holder's holdings in other securities bears the largest relation to returns. .Overall, our results are generally consistent with two explanations: 1) A wealth effects of funds with positive returns elsewhere putting pressure on the stock price, 2) a global habitat where the specific holders trade similar securities and cause valuations to move in tandem. It is difficult to more clearly distinguish more clearly between them, since the ownership return captures wealth effects and common habitat by construction

We briefly examine the practical diversification implications, and find that the level of foreign ownership and ownership linkage betas both have important implications for the diversification potential of a stock. If a fund manager adds a security with a high ownership linkage (beta) to their fund, the average covariance of that security is 2.33 times higher than if the manager would have picked a firm with a low ownership beta. Since investors hoping to obtain diversification abroad will not be able to escape the effects of other foreign investors, these results are of widespread importance to all international investors.

We are not the first to note the potential importance of ownership for international investors. A number of papers have noted that when a stock switches its country of origin, its co-variation patterns change [e.g. Froot and Dabora (1999), Chan, Hameed, and Lau (2003), Foerster and Karolyi (1999)]. Other papers have noted the importance of market liberalization [Bekaert and Harvey (1995,

1997) and 2000), Kim and Singal (2000)], financial openness [Edison and Warnock (2003)], and capital flows for international market variation [e.g. Froot, O'Connell, and Seasholes (2001), Griffin, Nardari, and Stulz (2004), and Bekaert, Harvey, and Lumsdaine (2002)].[2] Bekaert and Wang (2009)'s survey article concludes that financial openness is linked to global betas and that there is weak evidence of equity price convergence. Forbes and Chinn (2004) examine channels of cross-market linkages and find that financial markets are connected through global trade but not through foreign investment. Our paper extends this literature by a) providing new diagnostics for the measurement of institutional ownership, and b) documenting this on a large and systematic scale. Our paper finds that global linkages are economically and statistically important.

I. Ownership Channels and Testable Implications

A. Ownership Proxies for Traditional Channels of Market Integration, Common Industry

The traditional international finance literature emphasizes the importance of market integration and segmentation. Stock returns would be priced by local asset pricing models in the case of segmentation, and global models in the case of integration [Stulz (1981) and Errunza and Losq (1985)]. Stocks with low institutional ownership may be segmented from the rest of the world, whereas stocks with high institution ownership may be more integrated. Furthermore, international institutions may work to facilitate and accelerate the incorporation of international economic fundamentals into domestic stock prices.

With this view it is the level of foreign ownership that matters, while the specific composition of ownership is unimportant. Stocks with high degrees of foreign ownership are open to capital flows and more sensitive to global factors. Hence, everything should be captured by global economic factors

[2] Papers examining the behavior of international mutual fund trading at the stock level include Kaminsky, Lyons, and Schmukler (2004), Covrig, Fontaine, Jimenez-Garces, and Seasholes (2009), and Ferriera and Matos (2008).

or the level of foreign holdings. These theories make no special prediction as to why the returns on the investment portfolio of the security holders are important.

Another focus of the traditional international finance literature is the importance of industrial composition in driving stock return variation [Roll (1992), Heston and Rouwenhorst (1994), and Griffin and Karolyi (1998)]. If institutions invest in stocks in similar industries, stocks may have similar shareholders simply because those shareholders prefer stocks in the same industries. To control for these views we incorporate expected returns of local or global asset pricing models, industry indices, size and book-to-market factors, and mutual fund style classifications as control variables in our regressions.

B. Fund's Wealth Effect and Portfolio Rebalancing

Goldstein and Pauzner (2004) propose international stock co-movement as a result of wealth effects of investors who trade in both markets.[3] When their domestic holdings returns go down, international investors have lower wealth and are more averse to the strategic risk of other investors selling off these international holdings. This increases the incentive of these investors to withdraw from their international investments, prompting lower returns. Similarly, when domestic holdings returns increase, these investors have higher wealth, are less averse to strategic risk, and hence they increase their investments abroad. This generates international co-movement in returns of assets that are held by the same investors, even without common fundamentals. Kyle and Xiong (2001) also propose wealth effects as an explanation for financial contagion. In this case convergence traders suffer trading losses and have a reduced capacity for bearing risks. This motivates these traders to sell their positions in

[3] Broner, Gelos, and Reinhart (2006) suggest that foreign investor's risk aversion goes up during a crisis, which in equilibrium leads to lower prices.

both countries, leading to lower market liquidity, increased price volatility in both markets, and increased correlation.[4]

If institutions are leveraged then losses in one market will cause forced liquidations in another [Calvo (1999)]. Such effect is intensified when there is information asymmetry and herding by uninformed agents who cannot distinguish whether the institutions' trades are done based on information or liquidity [Calvo (1999) and Yuan (2005)]. The correlation of returns is asymmetric. These papers suggest that foreign funds' coordinated purchases/sales decisions drive international stock returns.

Griffin, Nardari, and Stulz (2004) show that when an investor is less informed about the foreign market and has extrapolative expectations, investors are more likely to invest more abroad following good returns at home—that capital can be pushed abroad. An even simpler explanation for this would be that managers are reducing large positions in favor of smaller ones. From this perspective, the ownership return is exogenous and responsible for pushing capital abroad, either because investors necessarily have more capital or because they rebalance away from the best performing assets.

Dumas, Lewis and Osambela (2009) develop a general equilibrium model under the assumption of asymmetric beliefs between foreign and domestic investors.[5] One implication of the model is that once a foreign stock becomes 'known' to domestic investors, the domestic investors would then be willing to hold more of such foreign stocks and require less expected returns from these foreign stocks. International ownership is therefore very important because it measures how much a stock is known to international investors.

[4] Empirically, Bae, Karolyi, and Stulz (2003) measure contagion, and Cho, Kho, and Stulz (1999) and Boyer, Kumagai, and Yuan (2006) measure the impact of foreigners in a crisis.

[5] In addition to the usual risk factors in CAPM, they derive the additional factor of foreign sentiment risk. In their model, domestic investors invest in fewer foreign stocks and demand higher expected returns to invest in such stocks because they do not have the ability to correctly interpret the information regarding the foreign stocks.

C. Price Pressure from Fund Flows

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

Category and Habitat The category view [Barberis and Shleifer (2003)] hypothesize that stocks move together because investors lump them into categories (e.g. value vs. growth) to easily describe them. The ownership return of a stock could simply proxy for the type or style of stocks that an institution prefers. Barberis, Shleifer, and Wurgler (2005) propose a 'habitat' view of co-movement where investors trade in a limited set of stocks, if investors in a habitat have certain views then they push prices up and down together.[6] Part of this habitat investing comes from observable characteristics of the stocks. Institutional owners pick the same style of stocks but part of such habitat investing is unobservable; many funds pick the same types of stocks over time. Ownership returns may represent a common habitat of stocks that investors may purchase together. To examine the category based view, we use detailed common style proxies. However, our measure of ownership return maps closely to the conceptual nature of the habitat view.

D. Other potential reasons

There are other potential reasons that a stock's return may be related to its ownership return. For example, the ownership returns may represent the views of economic fundamentals coming from the

[6] Kumar, Page, and Spalt (2009) provide evidence for the habitat view of co-movement by documenting correlated trading and co-movement among stocks with within stocks of similar geography, price ranges, and lottery features.

capital of origin. It might also represent exchange rate rebalancing the extent of foreign operations, or the level of foreign ownership. We control for these in our empirical work.

II. Data and Methodology

A. Data

Our international institutional holdings come from Factset/Lionshares. Ferriera and Matos (2008) is the first academic paper to use the annual institutional filings from this data source. We follow many of their cleaning procedures though augmented with other standard checks for 13f filings as described in Appendix A. Like Ferriera and Matos (2008), we obtain the historical Lionshares database that is free from survivorship bias. FactSet do not disclose their sources and exactly how they compile their Lionshares data, but they use data from available filings that they can obtain in various countries. Their coverage appears to be short on hedge funds outside of the United States. Wei (2010) analyzes the integrity of the data in an appendix, and he finds that the United States and the United Kingdom account for slightly over 70 % of non-domestic capital.

The Lionshares dataset contains two main databases: the aggregate institutional filings (similar to 13f in the United States), and the mutual fund database (that has mutual fund filings, similar to N-CSR mutual fund filings in the United States). Lionshares provides the number of shares held by a fund or institution, as well as the total shares outstanding for each stock and point in time. We aim to maximize data coverage from both databases and hence use the institutional database as our primary database but add additional ownership data from the fund database if the parent institution is not in the institutional ownership database.[7] Some holdings data are not reported regular intervals, and we carry the holdings information over to the next available report date. For the last holding report, we

[7] If the parent firm is present in the institutional ownership data in a given quarter, then we do not include the firm's mutual fund filings to avoid double-counting. Because reporting frequencies differ we do not attempt to reconcile the institutional and mutual fund files for the same fund.

extrapolate the holdings by the number of months between last two reports. We use holdings data for the last month within a quarter, and compute the change in percentage holdings during that time period. Appendix Table AI details the frequency of coverage by database for the final sample and shows that about half of the data is quarterly, with the majority coming from the aggregate institutional filings. Appendix Table AII details the coverage by country of our database in three of our sample years.

For returns and market value data, we use Thomson Financial's Datastream total returns indices and market values. We download data in local currency and convert to U.S. dollar using exchange rates from Datastream. To screen for common equity, we use screens from Griffin, Kelly, and Nardari (2009) and updated by Griffin, Hirschey, and Kelly (2010) which eliminate preferred stock, warrants, unit trust, investment trust, duplicates, and other non-common equity. We primarily utilize weekly, monthly, and quarterly returns. Similar to the papers above, we use reversion and extreme return filters to smooth potential data errors as described in Appendix A. The exception is in the United States, where the data is from Center for Research in Security Prices (CRSP) and where we restrict our sample to common equity with CRSP share codes of 10 or 11. We identify American Depository Receipts (ADR) and Global Depository Receipts (GDR) and their parent firms using matches obtained from both Datastream and Lionshares. We use the returns of the parent firms as the returns for the depository receipts. In the final dataset, we record ADR/GDR identifiers in our dataset. After examining reporting conventions, we calculate ownership in a stock as the combined ownership of the ADR/GDR and the home country stock. We source the percentage of closely held shares and the percentage of foreign sales from the WorldScope database and set missing observations of both variables to zero if missing. Further details are in Appendix A.

Additionally, to ensure that our results are not driven by infrequent trading, we require at least 30 percent of weeks to exhibit trading in the previous year. The percentage of zero returns, the main measure of liquidity used by Bekaert, Harvey, and Lundblad (2007), is similar to Lesmond, Ogden, and

Trzcinka (1999)'s transactions costs measure, but is less subject to estimation problems. To gauge the relative size of firms across countries, we use common U.S. breakpoints and group all firms into these bins based on their U.S. dollar market capitalization. Table I shows the percent of firms with foreign ownership coverage, the number of firms with foreign ownership, and the fraction of market capitalization held by the foreign institutions for those firms with coverage in the Lionshares database over the January 1, 2000 to March 31, 2009 period. Panel A is for developed markets, while Panel B is for developing (emerging) markets, where the classification of emerging countries/markets is based on Morgan Stanley Capital Index (MSCI) classification in 2006. Panel A shows that developed countries outside of the United States on average have some Lionshares foreign ownership coverage for 40.2 percent of firms in the smallest market capitalization quintile. In the second quintile through to the largest quintile, the average percentages of firms with foreign ownership coverage are 71.9, 84.7, 87.6, and 91.7 percents. Across countries, in the largest quintile the Lionshares foreign ownership coverage is above 80 percent in all countries except Cyprus, Iceland, Spain, and Switzerland. In emerging markets in Panel B, the percentage of firms with foreign ownership coverage ranges from 25 percent in the smallest quintile to 56.9 percent in quintile four. In the largest quintile, 85.6 percent of firms have some Lionshares foreign ownership coverage. Coverage is about 80 percent in all countries except China, Croatia, Indonesia, and South Africa. In terms of the number of firms with foreign ownership coverage, the sample is more heavily tilted towards developed markets where all size bins have more than 1,000 firms compared to 314 to 597 firms per bin in emerging markets. Overall, our sample includes a total of 13,101 firms, 8,791 of which are from outside of the United States.

Finally, for stocks with foreign ownership, we report the percent of foreign institutional ownership. Panel A shows that firms in developed countries outside of the United States have ten percent foreign ownership in the largest size quintile, and 1.7 percent in the smallest size quintile. Panel B shows similar coverage in emerging markets with 9.4 percent of shares held by foreigners in the largest

quintile and 1.7 percent in the smallest. These percentages vary widely across markets, but in most country-size bins foreigners hold more than one percent of a stock.

Appendix Table AIII shows descriptive statistics on local institutional ownership and market capitalization of firms in each country in our sample. It is important to note that in all countries other than the United States, Canada, Sweden and the U.K., ownership of domestic institutions reported in Lionshares is rather low (as shown in Appendix Table AI). Because of this reason, and also because our theories are focused on foreign holdings, we only examine the holdings of institutions domiciled outside of the country of interest. For additional analyses on mutual fund flows, we use U.S. domiciled funds from CSRP Mutual fund holdings and returns data beginning in September 2003 and ending in May 2009.

B. Methodology

A thought experiment may be useful here. Suppose there are two companies, one electronics firm in Korea and another hotel chain in the U.K. Their correlation should only be affected by world-common business cycle. Now suppose a U.S. mutual fund decides to invest in these two companies. The two companies are now connected through common ownership by the mutual fund. If many similar institutions hold these two firms then this has the potential to create additional correlation between the Korean and U.K. firm. Indeed, our empirical results show that such common ownership linkage increases correlations of stocks in different countries.

As an example of the foreign ownership return, consider the Korean stock Samsung. First, we consider the largest holder of Samsung, Capital World Investor. We calculate the value-weighted return each period to Capital World Investor coming from all of its positions outside of Korea. Capital World Investor's foreign return is then weighted by the relative proportion of its position in Samsung relative to all other foreign holders. Since Capital World Investor is the largest holder of Samsung, it will take the largest weight in Samsung's ownership return. After performing the same calculation for

all other foreign investors in Samsung and aggregating across investors, we obtain Samsung's foreign ownership return, R_{iF}, which captures the return on the portfolio holdings of institutional shareholders of Samsung outside of Korea. Appendix B shows a simplified version of this calculation.

More generally, we define the total ownership return of stock i, R_{io}, as follows:

$$R_{io} = \sum_{j=1}^{N} W_{ij} R_{-ij} \tag{1}$$

where j=1 to N denote the funds that have ownership holdings of stock i. For notational simplicity, we suppress the time subscript t, but it should be understood that the weights are as of the end of the last quarter, while the returns are over the course of the current quarter. W_{ij} is the percentage of market capitalization of stock i held by fund j at the end of the previous quarter. R_{-ij} denotes the returns of all other stocks (excluding stock i) owned by fund j in the current quarter and is calculated as follows:

$$R_{-ij} = \sum_{k=1}^{M} V_{kj} R_k \tag{2}$$

where M is the total number of other stocks that fund j holds other than stock i. V_{kj} is the percentage of market capitalization of stock k in the portfolio that fund j holds at the end of the last quarter. R_k denotes the return of stock k in the portfolio that fund j holds in this quarter. We can further decompose the institutional ownership return into the portion that comes from stocks that are in the same country as firm i (i.e. domestic), and a portion that comes from stocks outside the country (i.e. foreign):

$$R_{-ij} = \sum_{k=1}^{K1} V_{kj} R_k + \sum_{k=K1+1}^{M} V_{kj} R_k \tag{3}$$

Note that we distinguish here by the country of incorporation of stock i, not the location of fund j owning the stock. Hence, the ownership return can be computed as the sum of two components.

$$R_{io} = \sum_{j=1}^{N} W_{ij} \left(\sum_{k=1}^{K1} V_{kj} R_k \right) + \sum_{j=1}^{N} W_{ij} \left(\sum_{k=K1+1}^{M} V_{kj} R_k \right) \quad (4)$$

where k=1 to $K1$ are the stocks in the country where the firm is located (i.e. domestic stocks). K=$K1$+1…M are the stocks outside of that country (i.e. foreign stocks).

The first component $\sum_{j=1}^{N} W_{ij} \left(\sum_{k=1}^{K1} V_{kj} R_k \right)$ is the return of the other stocks owned by its holders in the same country. We call this component the owners' domestic return, R_{iD}.

The second component, $\sum_{j=1}^{N} W_{ij} \left(\sum_{k=K1+1}^{M} V_{kj} R_k \right)$, measures the return of the stock holdings of firm i's holders in other countries. We call this the foreign ownership return, R_{iF}. It is the main variable of interest in the paper. Empirically, R_{iD} is highly correlated (often above 0.95) with the local market index return, which led to severe multicollinearity issues in initial analyses. In contrast, the foreign ownership return (R_{iF}) can come from a diverse set of countries where the owners hold shares which leads to much better identification.

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

$$\sum_{j} W_{ij} = 1 \quad \text{and} \quad \sum_{k=K1+1}^{M} V_{kj} = 1.$$

Summing these weights to one allows interpreting our results more easily since foreign ownership returns of different firms will be comparable. The ownership return captures the composition of holdings of the owners of a stock, but not level of foreign institutional ownership. Therefore, in order to capture the effect of different degrees of ownership on stocks, we sort the stocks into buckets of different levels of foreign ownership.

For our control variables, to avoid introducing a bias by regressing a stock on itself, our local market and industry benchmarks exclude the stock of examination and are hence stock specific.[8]

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

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

A. Cross-sectional Regressions

We expect the impact of ownership returns and change in ownership to increase in the level of foreign ownership.[9] Hence, Panel A of Table II reports results quarterly cross-sectional Fama-MacBeth (1973) regressions for stocks in three different ownership bins. The advantage of quarterly regressions is that we can trace the direct effect of changes in foreign ownership as well as the ownership return. To control for the expected local and global cost of capital changes we use prior estimated betas times the contemporaneous local or global stock return movement. For stocks with low foreign ownership (0-1 percent), a one percent increase in the ownership return is associated with a 21.7 basis point increase in the stock's return.

If the ownership return enters by capturing returns in other stocks, it may proxy for how the investors in a stock will change their ownership. Hence, we include the change in foreign ownership in the cross-sectional regressions. The second specification shows that the affect is similar if one controls for contemporaneous changes in quarterly ownership, indicating that the quarterly ownership return is doing much more than capturing for contemporaneous changes in ownership. Nevertheless, changes in ownership are strongly related to a stock's quarterly return, similar to U.S. findings of a strong con-

[8] We remove the stock of examination when constructing the local market return and remove the local market return when constructing the global market. For consistency, the global industry return also only includes stocks in a given industry outside of the country of examination.

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

temporaneous relation between quarterly institutional ownership and returns by Wermers (1999) and Nofsinger and Sias (2000).[10]

After controlling for local and global markets, and industry, the coefficient on the ownership return is only 0.09. However, as expected, for stocks with one to five percent foreign ownership the size of this coefficient strengthens to 0.223 and to 0.395 for stocks with high foreign ownership. The *t*-statistic on the change in foreign ownership strengthens substantially for the higher institutional ownership bins, yet the coefficient itself falls. One possible explanation for this affect is that a one percent increase in foreign ownership will likely have more price impact for a stock where foreigners only own half a percent of the stock than for a stock that already has more than five percent already held by foreign investors. We will later examine the importance of the components of the change in ownership in more detail, but now turn to investigating the ownership return. Since the ownership return uses the previous quarter's holdings, the return can be constructed at more frequent intervals.

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

In specification (3 and 4), we include the lagged foreign ownership coefficient. Lagged effects show no significance at the monthly frequency and potentially some significance at the quarterly fre-

quency in the prior year though our time-series seems too short to make such inferences at the quarterly frequency. However, at the weekly frequency the lags are significant, though concentrated in the prior week. In subsequent analysis, we will concentrate on examining this contemporaneous affect.

In Table III, we estimate panel regressions with time fixed effects and standard errors are clustered by firm to account for firm and time effects.[11] We examine stocks with over five percent foreign ownership at the quarterly frequency. We find that after controls for the local and world cost of capital, and the industry return, the ownership return coefficient is 0.313 with a t-statistic of 5.35. This is similar to the coefficient of 0.395 and t-static of 4.76 in Panel A of Table II.[12] Given that our sample increases over time, the panel regressions put more weight on recent periods, while Fama-MacBeth regressions treat each period equally.

B. Time-series Regression

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

We first examine the importance of the ownership return in a specification beyond the local market return. The average coefficient on the ownership return (specification #3) is 0.308 in the 2000 to 2002 period (Panel A), 0.207 from 2003 to 2005 (Panel B), and 0.208 from 2006 to the first quarter

[11] The dimensions of our dataset are too large to cluster standard errors by both firm and time. However, when there are only a few clusters in one dimension, clustering by the more frequent cluster yields results that are almost identical to clustering by both firm and time (Petersen, 2009, p. 460).
[12] Panel regressions with firm and quarter fixed effects indicate considerably larger t-statistics (in Supplemental Table SII).

of 2009 (Panel C). This coefficient is similar in size to that of the world market (0.361, 0.183, and 0.171 for the three sub-periods in specification (2)) or global industry return (0.409, 0.247, and 0.237 in specification (4)).[13] The coefficients on the return are not necessarily the appropriate metric for judging economic importance since the industry, market, and ownership returns may vary to different degrees. Examining the incremental adjusted R^2 between specifications 2-4 as compared to specification one shows that the incremental explanatory power of the ownership return is above that from the world return, but not quite as large as that of the global industry return. Regressions (6) and (7) show similarly large coefficients and incremental explanatory power on the ownership return, above the local market, global market, and industry factors. This indicates that the importance of ownership is not attributable to fundamentals proxied for by global market or industry fundamentals.

It is possible that the global market return is not fully able to capture the importance of the world market because it includes all stocks, including those not heavily held by foreign investors. If markets are partially segmented, then the global return would matter but only to the extent that it captures the returns of globally held stocks. To examine this possibility, we construct a separate global market return that weights stocks by their dollar amount of foreign ownership rather than their dollar amount of market capitalization. Regression (8) shows that the ownership return coefficients are still of large magnitude with this alternative world market control.

We now turn to a more formal evaluation of the various models. Bekaert, Hodrick, and Zhang (2009) convincingly argue that comparing models with the mean squared error of correlations is appropriate for examining which model best characterizes the covariance matrix of returns. We follow their procedures, except rather than using portfolios, we use individual stocks.. Ang, Liu and Schwartz

[13] Because the global market and the foreign ownership return are highly correlated, when both terms are included the global market coefficients are often negative (in specification 6). Interestingly, the local market beta in specification (2) is 0.603, 0.815, and 0.874 across the three subperiods, whereas the world market betas average 0.361, 0.183, and 0171. Although not our focus, it is interesting that these results show much more importance to the local market than to the rest of the world. These results are broadly in line with similar firm-level regressions in Griffin (2002) that show the dominance of local factors with data ending in the mid-1990s. The importance of the world market is larger than in his paper, presumably because these stocks are held by foreigner investors and the later time period.

(2008) propose using individual stocks instead of portfolios in tests of expected returns. For specifications in Panel D, we follow Bekaert, Hodrick, and Zhang (2009) and estimate the regressions over six-month periods to allow for possible time-variation. Bootstrapped *p*-values are computed following their procedure where we bootstrap from the time-series of our MSEs to compute an empirical distribution.

Panel D shows that the MSE with only the local market is 0.038, whereas it improves to 0.026 when the ownership return is added. Interestingly, the improvement due to adding the global industry or world market return to the local market factor is extremely similar (MSEs of 0.026 and 0.025) to that of a model with only the global market. Other specifications examine the incremental improvement from adding the ownership return onto models without the factor and find that the ownership return leads to smaller MSEs than using a model with the global market, industry returns, or global market with ownership cap weights. Industry and world market returns are also important for improving fit and not redundant.

C. Sorts

As another gauge of the economic importance of a stock's ownership return, we sort all stocks over a given quarter into those with ownership returns above (below) a given threshold. We start by examining all stocks with more than five percent foreign ownership and with ownership returns above 2.5% as compared to those with returns below 2.5% in a quarter. Supplemental Table SIV shows that stocks with high ownership returns exhibit an average excess return[14] of 3.3 percent versus -2.1 percent for stocks with ownership returns below 2.5%. Interestingly, the effect is rather symmetric. The difference between the performance of the high and low ownership return portfolios is only from the time-series of the ownership return which has both a high and a low returns. Despite only 17 quarters, the differences are highly significant. As we increase the threshold of the ownership return the magnitude of the

[14] Returns are in excess of the local market index excluding the respective stock.

differences between the high and low return portfolios increase as expected. However, the number of quarters also shrinks as we require each quarter to have at least ten stocks to be included.

We next examine if institutional ownership shifts in the direction of the returns. All portfolios with high foreign ownership exhibit small selling but the selling is much more intense when ownership returns are negative. This indicates that the owners of the stock are indeed moving in the direction of the ownership return. It also points to a richer examination of institution ownership changes to disentangle possible explanations for this ownership.

IV. Why do Ownership Returns Matter?

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

A. Country of Origin

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

Cross-sectional regressions are shown in Panel A of Table V. The owners' home market return has some ability to explain returns with no controls (specification 1), but not in the presence of the ownership return ((2)) and the other important variables (from specification 6 in Table II). More im-

portantly specification (2) shows that the ownership return and change in ownership are unaffected by the home ownership return.

B. Foreign Exchange Returns and Foreign Sales

Since our foreign ownership return may capture something related to foreign exchange or operations, in specification (3) and (4) we include the return on a trade-weighted index for the country in which the stock is incorporated. The currency index is in terms of the local currency relative to trade-weighted basket of foreign currencies, and is obtained from J.P. Morgan. Specification (3) and (4) show that this index is largely unimportant and unrelated to the ownership return.

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

C. Style

The category based view of Barberis and Shleifer (2003) suggests that co-movement is driven because investors classify stocks into bins such as value and growth. This style index return could capture variation due to categorization [Barberis and Shleifer (2003)] or due to the habitat [Barberis, Shleifer, and Wurgler (2005)] in which certain investors trade. We use the seven dimensions of styles of each fund. We calculate a style return for each of the seven types of institutional investors in Lionshares. We create fund style returns in each quarter. For each fund, we construct its returns by computing the holdings' value weighted returns. We then construct style index returns by summing up the fund returns in each style with value weights. For each stock, we construct its

stock specific style returns. For example, if a stock is 40% owned by value funds & 60% owned by growth funds, we construct the style returns to be: 0.4*global average value fund returns+0.6*global average growth fund returns. This is our stock specific style returns. Similar to the concept of the ownership return, we use these style returns to construct a security specific style return where the style index return is based on the fraction of the firm's holdings by every investor in the style category. Specification (7) and (8) show that style returns are important, for explaining cross-sectional return variation, however, the size of ownership return coefficient and change in ownership is largely unaffected. Additionally, we construct value minus growth and small minus large returns to use as time-series controls.[15]

D. Emerging and Developed Markets, Size and Liquidity

Panel A of Table V first examines our quarterly cross-sectional regression results (first shown in Table III) separately for emerging and developed markets. Interestingly, the ownership return coefficient is highly significant in developed markets but not in emerging markets. The lack of statistical significance in emerging markets could be a simple result of lack of power with the smaller sample, but the coefficient is much smaller as well. This result is opposite to theories such as Kodres and Pritsker (2002) which call for the effect to concentrate in emerging markets.

We also examine if the effect is greater for smaller stocks, or for those with less liquidity. Like most other tables, all of the stocks are required to have at least 5% foreign ownership and a minimum of trading on 30% of the days in the previous year. Surprisingly, the effect is greater in the larger stocks. When we sort our sample into those stocks with trading on more than 50% of the days in the previous year (and those with 30-50% of days traded), we find that our results are much more pronounced among the more liquid stocks. The fact that the ownership effect is more important in large

[15] In time-series regressions (similar to those in Table IV), the inclusion of the style factors adds some additional explanatory power, but only marginally diminishes the importance of the ownership return.

liquid stocks suggests that the ownership returns are an important facet of diversification internationally.

We now decompose changes in ownership into various components to see which of the components is most strongly related to returns. We do this first at the institutional level, where our data coverage is greatest. Nevertheless, to investigate the importance of flows, we examine the CRSP mutual fund return and holdings data, which also contains the holdings on international securities. Here we are able to obtain precisely capture flows and measure the extent of reallocation. We describe the analysis below first at the mutual fund level. For the institutional level we have no allocation component and must approximate flows.

We compute such a stock-level measure in three steps. First, we measure the percentage change in equity holdings of each institution on each stock from last quarter to the current quarter. Second, we decompose the percentage change of holdings into four components: flows, equity appreciation, allocation in or out of equities, and stock picking. Third, we aggregate these components across fund holders for a stock and obtain a stock-level measure.

We can decompose the change in equity holdings for fund *n* on stock i into the change that is due to flows, returns of the holdings (appreciation), allocation (asset allocation into equity from other asset classes), and the stock picking (allocation into this particular stock) component:

$$
\begin{aligned}
\textit{Percentage Change Equity Holdings}_{i,n,t} &= \frac{q_{i,n,t} w_{n,t} TNA_{n,t}}{M_{i,t}} - \frac{q_{i,n,t-1} w_{n,t-1} TNA_{n,t-1}}{M_{i,t-1}} \\
&= \left(\frac{q_{i,n,t-1} w_{n,t-1} (TNA_{n,t} - TNA_{n,t-1}(1+R_{n,t}))}{M_{i,t-1}} \right) + \frac{q_{i,n,t-1} w_{n,t-1} TNA_{n,t-1}}{M_{i,t-1}} R_{n,t} + \\
&\left(\frac{q_{i,n,t-1} w_{n,t} TNA_{n,t}}{M_{i,t-1}} - \frac{q_{i,n,t-1} w_{n,t-1} TNA_{n,t}}{M_{i,t-1}} \right) + \left(\frac{q_{i,n,t} w_{n,t} TNA_{n,t}}{M_{i,t}} - \frac{q_{i,n,t-1} w_{n,t} TNA_{n,t}}{M_{i,t-1}} \right) \\
&= Flow_{i,n,t} + Appreciation_{i,n,t} + Allocation_{i,n,t} + Stock\ picking_{i,n,t}
\end{aligned}
$$

where $TNA_{n,t}$ is total net asset of fund n at time t, $q_{i,n,t}$ is the portion of equity holdings for fund n that is invested in stock i at time t, $M_{i,t}$ is the market value of stock i at time t, and weight $w_{n,t}$ is the equity share of the fund at time t.

We show the detailed decomposition in the appendix. We follows the standard literature which backs out monthly flows as the difference between total net assets and what assets would be had they simply grown passively:

$$Flow_{n,t} = TNA_{n,t} - TNA_{n,t-1}(1+R_{n,t}) \tag{5}$$

where $R_{n,t}$ is the return of fund n during quarter t, and $TNA_{n,t}$ is the total asset value at the end of quarter t.[16] When we turn to the institutional level data where we do not have TNA, we simply approximate this with the total equity positions. We apply this $Flow_{n,t}$ for fund n and apply them proportionally into fund n's stock holdings i using previous quarter's holdings weights to get $Flow_{i,n,t}$.

Aggregating the components across funds gives us a measure of the flow-induced, returns-induced appreciation, and allocation effects of the shareholders in each firm i:

$$\begin{aligned} &Flows_{i,t} = \sum_{n=1}^{N} Flows_{i,n,t},\ Appreciation_{i,t} = \sum_{n=1}^{N} Appreciation_{i,n,t}, \\ &Allocation_{i,t} = \sum_{n=1}^{N} Allocation_{i,n,t},\ Stock\ picking_{i,t} = \sum_{n=1}^{N} Stock\ picking_{i,n,t} \end{aligned} \tag{7}$$

Based on these measures, we can test whether or not stock i's returns are driven by new flows coming into or out of the fund, the appreciation from other securities, stock picking, or allocating capital into equities (from bonds or cash).

Furthermore, appreciation from other securities can be decomposed into returns from domestic equity holdings (excluding stock i itself) and foreign equity holdings of fund n. Domestic equity holdings are equity holdings of fund n which are located in the country where firm i is located, while

[16] Our definition of the flow represents the dollar growth of a fund that is due to new investments at the end of the month.

foreign equity holdings are equity holdings of fund n that are outside of the country where firm i is located.

Table VI presents cross-sectional regression results for the decomposition for stocks with high foreign ownership (> 5 %) at the aggregate Factset institutional level in Panel A, and then with CRSP mutual fund flows in Panel B. In Panel A, we are able to separate the appreciation component due to domestic and foreign investors. The foreign appreciation term is similar to our foreign ownership return except for weighting. The ownership returns constrain the holdings weights of all foreign owners to sum up to one, while the weights in the passive change in foreign holders do not sum up to one. Rather, they sum up to the actual amount of dollars that such foreign holdings earn for the funds. Hence, the passive change in foreign holdings is a more accurate measure of the wealth effect of the funds which represent the level of wealth. The two measures can be very different if say, foreign holding is a tiny portion of the funds' portfolios. In that case, ownership returns could still be a big value while passive change in foreign holdings is a small value.

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

Ownership returns and passive changes in foreign holdings are computed similarly and should both be driven by the fund's return in other securities.Hence, it is not surprising that foreign apprecia-

tion is highly significant when only controlling for flows and stock picking (in specification 6), but it is marginally insignificant after controlling for appreciation (specification 7).

In Panel B, we turn to using CRSP mutual fund data on non-U.S. securities. With the more precise flow measure it is positively related to returns but not in the presence of the market and industry controls (specification 3 and 6). The allocation component is insignificant indicating that money managers switching cash positions are not a main driver of stock returns. Unlike aggregate institutional stock picking in Panel A, mutual fund stock picking is also insignificant. The ownership return and appreciation component, though highly correlated (correlation of 0.77) are both statistically significant indicating that neither a superior measure.

Overall, in terms of the relation between cross-sectional ownership changes and returns, both panels seem to indicate a strong role for stock appreciation, some role for stock picking, a less important role for flows, and no role for equity timing. It is not clear how to interpret the appreciation component, the positive relation could be due to a firm's habitat appreciating, or the existing holders reweighting equity away from the appreciating firms.

To further understand the channel of ownership linkage, we regress changes in ownership on the ownership return in Table VII. We only find a weak link between changes in ownership and the ownership return. This is initially inconsistent with wealth effects but it is puzzling since we obtain similar findings with the foreign appreciation component and it is component of the change in ownership by construction. We find that the reason that appreciation is only weakly related to appreciation is that is negatively related to the stockpicking component.

E. Time Clustering and Asymmetries

As previously discussed, economic theories point to the effects of ownership mattering only in periods of extreme stress. We estimate Fama-MacBeth cross-sectional regression each week and then sum the

coefficients over a rolling 26-week period.[17] Figure 1 plots the coefficients over the July 2000 to March 2009 period. Panel A shows that the industry and ownership coefficients are of similar magnitude and remarkably stable. The coefficients are never below zero and range between 0.10 and slightly over 0.60. Panel B shows coefficients that also include the local market index. Here industry is relatively more important than the ownership return in later periods of the sample. Nevertheless, the ownership coefficient is always positive and typically greater than 0.15. Supplemental Figure S6 plots the quarterly regression coefficients and also finds generally positive coefficients on the ownership returns and the change in foreign ownership across the entire 2001 to 2009 time period.

In Table VIII we examine asymmetries by looking at the extreme bottom twenty and five percent of ownership returns. There is no evidence that the affects of the ownership return are stronger in such periods. The contagion literature postulates that when investors face imminent financial constraints, they would sell off their other holdings. This leads to higher correlation among stocks owned by the investors. To that end, we examine stocks with investors experiencing the worst outflows among all stocks (lowest 5% and 20%). We find that stocks experiencing large outflows do not experience a stronger ownership return.

V. An ADR test and Diversification Implications

A. ADR Listing and Ownership Returns

We first perform a simple test to see if the ownership return is related to a change in ownership composition. ADR listings and effective dates are identified through the Bank of NY website. We hold the weights in the ownership return constant at the average of what the ownership weights are in the one year after listing. Hence, we use the same ownership weights when forming the ownership return before and after listing. If the ownership composition shifts around the listing date, then the

[17] The Fama-MacBeth coefficients and t-statistics over the entire period are summarized in specification (2) of Table III, Panel A.

post-listing ownership returns should closer to returns than that pre-listing. We run pooled regressions following Foerster and Karolyi (1999), who find that U.S. market betas increase following listing.

Table IX show that the ownership return has a larger coefficient in the year following the ADR listing. As one would expect, the increase in the ownership betas is stronger in stocks that experience an increase in foreign ownership along with the ADR listing and the result is robust to controlling for the local and U.S. market returns (specifications 2 and 3).

B. Foreign Ownership and World Betas

Although most of our results are focused on the ownership linkage channel and we control for world market returns. However, we should also note that foreign ownership seems to play a direct role in global market variation. Namely global market betas are largely increasing in the level of foreign ownership (as shown in supplemental Table SV and SVI and Supplemental Figure S1 and S2). We will now show the diversification implications of these findings.

C. Diversification Implications

A simple but useful practical diagnostic is to compare the covariance between firms within a population relative to a representative firm's variance. Solnik (1974) showed that investors could diversify their risk domestically to approximately 27 percent of the average variance of a typical US stock if diversifying across U.S. stocks, but they could lower their diversification limit to 11 percent by diversifying across stocks internationally. Following Heston and Rouwenhorst (1994), others use these metrics to compare diversification across countries and industries. The unconstrained diversification limit is the average covariance for pairs of stocks that are in both different countries and in different industries.

Panel A of Table X shows that for stocks with no foreign ownership the average variance is 7.1 percent of individual stock variance which is even slightly below Solnik's 11 percent. However, for stocks with more than five percent foreign ownership the limit is 18.8 percent of the average firm's

variance.[18] Figure 2 graphically shows the limits to unconstrained diversification limits for stocks with different levels of foreign ownership.

To gauge similar implications for ownership linkages we take the prospective of a fund manager looking to diversify into stocks that he does not already hold. We regress the fund's return on each stock's foreign ownership return over the prior two year's rolling window and compute ownership betas for each fund. We then sort all stocks into bins according to the level of their ownership betas and examine the average covariance of that stock with the fund over the next year and then average across all funds and covariances in the ownership beta bins. Panel B of Table X shows the average covariance of these stocks with the funds for stocks with low and high ownership betas. The average covariance is 0.027, 0.039, 0.05, and 0.064 as one moves from low to high ownership betas. If a fund manager adds a security with a high ownership linkage (beta) to their fund the average covariance is 2.33 times (0.064/0.027) as to what the average covariance is for a stock with a low ownership linkage. Overall, our findings show an important role for both the level of foreign ownership and ownership returns in international diversification.

VI. Conclusion

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

[18] Panel A and B of Supplemental figure S8 shows that this effect comes from both country and industry diversification.

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

There are a variety of reasons why international holdings may matter. We find evidence against economic fundamentals, partial integration, country-of-capital origin, contagion, de-leveraging, style investing, and flows as being the sole drivers of the ownership return. Additionally, we are unable to reject the view that investors trade in the same habitat of stocks and this is why their returns move together.

Our results have important practical implications to investors who wish to minimize their risk. To the extent that one diversifies across industries and countries, but is not able to escape from who is holding a security, a firm's ownership base may actually be the most important consideration when examining international diversification. Our findings suggest that international investors should not just pay attention to whether a stock is held by foreign investors, but the specific composition of a firm's shareholder's stock holdings.

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Appendix A: Data sample cleaning

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

Next, we provide more details on the merging procedure. Stocks in Lionshares data are identified by CUSIP, ISIN and SEDOL. CUSIP is main identifier for assets that the 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. Lionshare records how many shares that a fund or an institution holds. From this number we construct the percentage of ownership by dividing the number of shares outstanding. The numbers of shares are provided in a separate dataset offered by Lionshare. In the dataset, we often encounter zero or missing number of shares outstanding and we treated this problem by substituting non-zero value from the nearest future after we check that there is not a dramatic change in stock price.

U.S. stock returns and market values are from CRSP, while international stock returns and market values are from Datastream. U.S. stocks are identified by CRSP's PERMNO, while International stocks in this data are identified by Datastream codes (DSCD).

For U.S. stocks, we used 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 a depository receipt, Datastream also provides a mapping between DSCD of the underlying home listing and the ISIN. Using the above two datasets, we map

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

Lionshare provides institutional level data as well as fund level data. To utilize all of the holding data available, we make the two datasets to be institutional level by aggregating the fund level data into institutional level. We then merge these two datasets.[19] 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 date of institutional level data(13F) is usually fixed and quite regular; reports are made end of quarters and are in quarterly frequency. However, fund level data doesn't have fixed frequency and it is not necessarily reported on the end of each quarter, for example some fund could be reporting semi-annually at the end of April and October. To merge the two datasets, we use holdings data for the last month within a quarter. If the holdings data is missing, we fill in the holding data in the mutual fund dataset using the latest holding information. When there is 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 institutional level.

We use two data screens for returns on stocks. First, we use filters following Griffin, Kelly, and Nardari (2009) with some modification to account for varying data frequencies. The screen for quarterly data is as follows. If returns are greater than 1000% exclude everything from -1 to +1 quarter around the extreme event. We exclude returns <-0.98 if earlier than 30 days from the end of the time series available. If one weeks returns are greater than 500%, but the cumulative is less than

[19] If we only have institution holding data on a stock in a quarter but no holding data by any of its fund 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 the quarter, we use the institution level observation. Ferriera and Matos (2007) also make the same assumptions in preferring institution holdings record to fund holdings. In the case that a stock holding only appears in the fund holding but not in the institution holding record, we would retain that stock holding record by the fund. e.g. if Magellan hold stock X and Y in the fund dataset and Fidelity hold stocks X and Y in the institution dataset, we use Fidelity's holdings of X and Y. However, if Magellan owns stocks X and Y, and Fidelity owns stocks X only, then we will have the Fidelity's holding of stock X and retain Megallan's holding of stock Y.

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

Second, we apply a liquidity filter. We require a stock to have more than 30% trading days of non-zero return in the previous quarter in the case of cross sectional regression. In the case of time series regression, we use three years of holding data, we require a stock to have more than 30% trading days of non-zero return in the previous year.

Appendix B: Example on Ownership Linkage

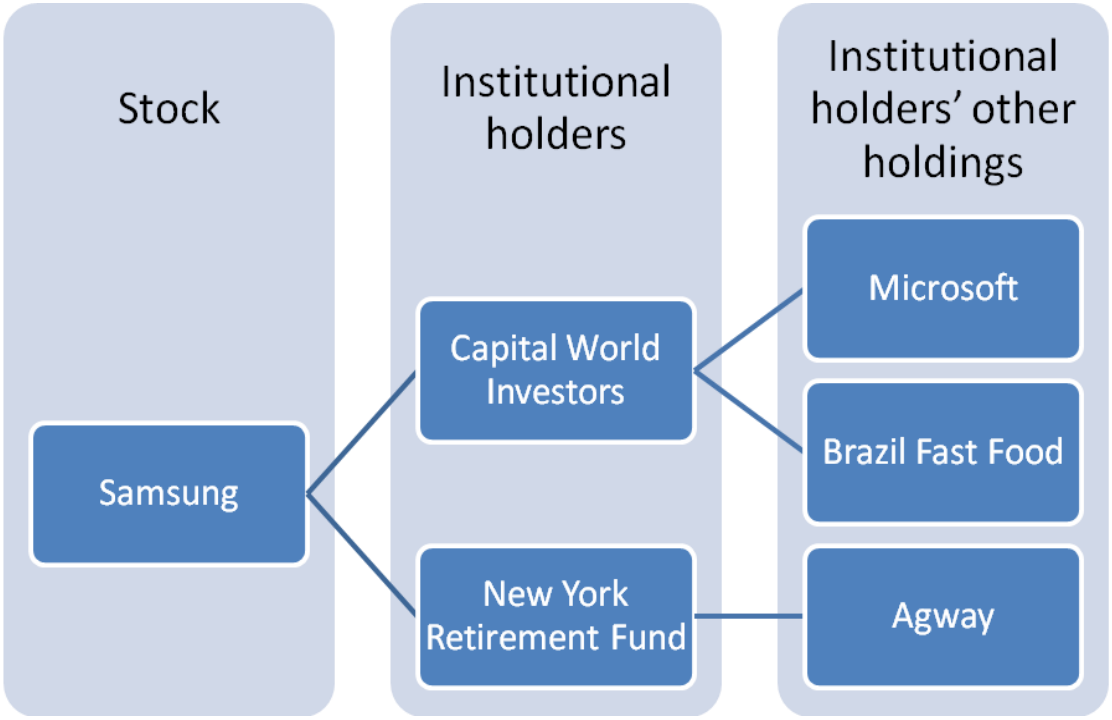


Table I: Summary Statistics

The table shows summary statistics on the percent of firms with foreign ownership, the number of firms with foreign ownership, and the percentage of foreign institutional ownership. 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). In each panel, results are broken down by country, region and by size quintiles (small to large, using common U.S. breakpoints), where size is measured by market capitalization in U.S. Dollars. The first column shows the percentage of firms that have data on foreign institutional ownership. The second column shows the number of firms with foreign ownership, and the third column shows the average percentage of (free-float adjusted) foreign institutional ownership. Foreign Ownership is free-float adjusted by dividing it by 1 minus the percentage of closely held shares, where missing values of closely held shares are set to zero. Averages are first taken by year and subsequently across time. The sample period is 01/05/2000-04/01/2009. Ownership data is from Lionshares, market capitalization data is from DataStream, and data on closely held shares is from WorldScope.

Panel A: Developed Markets

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

(continued)

Table I: Summary Statistics (continued)

Panel B: Emerging Markets

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

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

The table shows the results of Fama-MacBeth regressions of stock returns on an intercept (not reported), the foreign institutional ownership return (Ownership Return), the change in foreign ownership (Ownership Change), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and industry index returns excluding local market returns (Industry). The sample period is 01/05/2000-04/01/2009. The sample is limited to non-U.S. stocks with at least 30% non-zero trading days in the previous year. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Panel A shows results for stocks with alternative levels of foreign institutional ownership of 0%-1%, 1%-5%, >5% using quarterly returns. Panel B shows results for stocks with at least 5% lagged foreign institutional ownership for regressions with weekly, monthly and quarterly returns, respectively. Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

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

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

(continued)

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

Panel B: Foreign Institutional Ownership > 5%

	Weekly				Monthly				Quarterly			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Ownership Return	0.484	0.224	0.448	0.215	0.625	0.338	0.550	0.309	0.710	0.391	0.669	0.358
	(21.4)	(13.6)	(19.8)	(12.6)	(11.5)	(9.52)	(9.54)	(7.51)	(7.11)	(4.76)	(5.56)	(3.71)
Ownership Return (lagged)			0.114	0.097			0.076	0.060			-0.098	-0.069
			(4.80)	(5.64)			(1.69)	(1.54)			(-1.28)	(-1.01)
Ownership Return (lagged, avg. of 2, 3, 4)			0.094	0.080			0.023	-0.029			0.300	0.376
			(2.30)	(2.54)			(0.29)	(-0.47)			(1.68)	(3.07)
Local Beta*Local Market		0.784		0.782		0.789		0.788		0.768		0.746
		(81.3)		(82.2)		(32.5)		(33.1)		(15.4)		(15.3)
World Beta*World Market		1.354		1.347		72.950		72.986		0.203		0.223
		(2.33)		(2.39)		(1.02)		(1.02)		(0.40)		(0.47)
Industry		0.256		0.255		0.344		0.339		0.405		0.408
		(25.4)		(25.7)		(13.8)		(13.6)		(9.78)		(10.2)
Adjusted R^2	0.008	0.105	0.014	0.108	0.012	0.120	0.018	0.123	0.015	0.132	0.030	0.138
Average Number of Firms	2,117	1,997	2,108	1,990	2,118	2,002	2,077	1,969	2,088	1,607	1,622	1,441

Table III: Panel Regressions

The table shows the results of panel regressions with standard errors clustered by firm and quarter fixed effects of stock returns on an intercept (not reported), the contemporaneous and lagged foreign institutional ownership return (Ownership Return), the change in foreign ownership (Ownership Change), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and industry index returns excluding local market 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 sample period is 01/05/2000-04/01/2009. The table reports the coefficients, associated t-statistics as well as R^2 and the number of observations. Ownership data is from Lionshares, and return data for individual stocks, market indices and industry indices is from DataStream.

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

Table IV: Time-Series Regressions with Ownership Returns

The table shows the results of time-series regressions of weekly stock returns on an intercept (not reported), the local market index excluding own stock (Local Market), the foreign institutional ownership return (Ownership Return), the world market index excluding the local market (World Market), industry returns excluding local market returns (Industry), and an ownership-weighted world market index (World Market with Ownership Weights). The sample period is 01/05/2000-04/01/2009. 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:

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

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

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

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

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

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

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

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

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

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

Panel A: First Quarter 2000 – Fourth Quarter 2002

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

Panel B: First Quarter 2003 – Fourth Quarter 2005

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

(continued)

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

Panel C: First Quarter 2006 – First Quarter 2009

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

Panel D: MSE Tests of Model Comparison

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

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

The table shows the results of Fama-MacBeth regressions of quarterly stock returns on various ownership variables and control variables. Panel A shows results with an intercept (not reported), the owners' home market return (Owners' Home Market Return), returns on the multilateral exchange rate index of the country of incorporation (Foreign Exchange Return), investment style returns (Style Return), the foreign institutional ownership return (Ownership Return), the interaction between the percentage of foreign sales and the ownership return (Foreign Sales*Ownership Return), the change in foreign ownership (Ownership Change), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and industry index returns excluding local market returns (Industry). The owners' home market return is a weighted average of the home market index returns where the owners are incorporated;the weights are based on the relative size of the funds' holdings in the stock. Foreign exchange returns is the returns on a trade-weighted currency index for the country in which the stock is incorporated. The currency index is in terms of the local currency relative to trade-weighted basket of foreign currencies, and is obtained from J.P. Morgan. In the Lionshares database, each fund is classified as one of the following styles: Aggressive, Deep Value, GARP, Growth, Index, Value, and Yield. To construct style returns, we first create fund style returns in each quarter by computing the value weighted return of its holdings. We then construct style index returns as the value-weighted average return of all funds in each style. Second, for each stock, we construct its stock specific style return as the holdings-weighted average of the returns of the styles into which its owners are classified. The sample consists of non-U.S. stocks held by U.S. funds 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 01/05/2000-04/01/2009. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Panel B shows results are shown for the full sample (All), as well as broken down by degree of market development (Emerging, Developed), market capitalization size (Small, Medium, Large), and trading activity (High, Medium, Low). Stocks are classified into emerging and developed markets based on the MSCI and S&P classifications. Stocks are classified into market capitalization buckets on the basis of lagged market capitalization in U.S. dollars, where small are the bottom 40%, medium are the next 30%, and large are the top 40%. Among the included sample, stocks are classified according to trading activity on the basis of the number of trading days in the prior year into those liquid stocks with more trading days (top half) and illiquid stocks with little trading (bottom half). Ownership data and information on investment styles is from Lionshares, while data on returns for individual stocks, market indicesand industry indices is from DataStream. Data on the % of foreign sales is from WorldScope (and set to zero if missing).

Panel A: Alternative Explanations

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

(continued)

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

Panel B: Small, Illiquid and Emerging Market Stocks

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

Table VI: Fund's Change in Holdings Decomposition

The table shows the results of Fama-MacBeth regressions of stock returns on an intercept (not reported), the local market index excluding own stock (Local Market), the foreign institutional ownership return (Ownership Return), the change in foreign ownership (Ownership Change), the change in fund holdings, fund flows, domestic appreciation, foreign appreciation, stock picking, a scaled measure of foreign appreciation, foreign appreciation scaled by holdings, and industry index returns excluding local market returns (Industry). Change of holdings, flows, appreciation, and stock picking are all scaled by lagged market capitalization as a ratio, and are standardized. The sample period is 01/05/2000-04/01/2009. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Elton, Gruber, and Blake (2001) show that there are a large number of errors associated with mutual fund mergers and splits in the CRSP mutual fund database, which leads to extreme values of flows. To prevent these outlier problems, we trim the top and bottom 1% tails of the net flows data based on the flow ratios. Panel A shows results for foreign funds and stocks with at least 5% lagged foreign institutional ownership. Panel B shows results for funds on CRSP. Ownership data is from Lionshares and CRSP Mutual Fund Database, while data on returns for individual stocks, market indices and industry indices is from DataStream.

Panel A: Foreign Funds and Stocks with Foreign Institutional Ownership > 5%

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Change in Holdings	0.007						
	(8.68)						
Flows		0.003	0.000		0.003	0.003	0.004
		(1.40)	(-0.18)		(1.40)	(1.82)	(2.49)
Domestic Appreciation		0.040			0.040		0.017
		(5.51)			(5.51)		(6.79)
Foreign Appreciation		0.013		0.016	0.013		0.013
		(4.30)		(4.96)	(4.30)		(4.26)
Stock picking		0.008			0.008	0.005	0.009
		(7.65)			(7.65)	(3.42)	(5.81)
Ownership Return						0.076	0.022
						(7.32)	(1.74)
Local Beta*Local Market							0.706
							(14.6)
World Beta*World Market							0.1
							(0.35)
Industry							0.380
							(10.0)
Adjusted R^2	0.003	0.032	0.002	0.007	0.032	0.020	0.145
Average Number of Firms per Qtr	2,262	2,262	2,262	2,262	2,262	2,088	1,607

(continued)

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

Panel B: CRSP Funds

	(1)	(2)	(3)	(4)	(5)	(6)
Change in Holdings	0.007					
	(0.77)					
Flows		0.021	0.007	0.048	0.046	0.007
		(2.43)	(0.70)	(3.93)	(6.23)	(0.69)
Appreciation		0.064	0.043			0.041
		(5.09)	(3.18)			(3.09)
Allocation		0.013	0.024		0.019	0.025
		(0.73)	(1.82)		(1.17)	(1.88)
Stock picking		-0.009	-0.007		-0.008	-0.008
		(-1.16)	(-1.40)		(-1.30)	(-1.46)
Ownership Return (CRSP)					0.147	0.054
					(4.05)	(2.29)
Local Beta*Local Market			0.643			0.617
			(6.64)			(6.46)
World Beta*World Market			0.702			0.690
			(2.08)			(2.10)
Industry			0.535			0.527
			(7.96)			(7.79)
Adjusted R^2	0.009	0.040	0.143	0.024	0.045	0.148
Average Number of Firms per Quarter	1,008	1,008	927	1,008	1,001	925

Table VII: Cross-sectional Regressions with Ownership Change

The table shows the results of Fama-MacBeth regressions of changes in ownership on an intercept (not reported), the foreign institutional ownership return (Ownership Return), lagged foreign institutional ownership returns, lagged ownership change, and lagged stock returns. 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 01/05/2000-04/01/2009. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Ownership data is from Lionshares, while data on returns for individual stocks is from DataStream.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ownership Return						0.011	0.012
						(1.53)	(1.53)
Ownership Return (lagged)		0.038	0.037		0.029	0.034	0.025
		(2.99)	(2.99)		(2.05)	(2.77)	(1.84)
Ownership Change (lagged)	0.091		0.096				0.090
	(4.13)		(7.91)				(7.43)
Return (lagged)				0.011	0.010		0.010
				(6.78)	(5.66)		(5.35)
Adjusted R^2	0.016	0.003	0.014	0.007	0.010	0.004	0.020
Average Number of Firms per Quarter	1,882	1,867	1,867	1,885	1,867	1,866	1,866

Table VIII: Asymmetries in Ownership Returns

Panel A of the table shows the results of Fama-MacBeth regressions of stock returns on an intercept (not reported), the foreign institutional ownership return (Ownership Return), the change in foreign ownership (Ownership Change), expected returns from a CAPM with local and world market index (Local Beta*Local Market and World Beta*World Market), and industry index returns excluding local market returns (Industry). Results are presented separately for observations with positive and negative ownership returns. 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 01/05/2000-04/01/2009. The table reports the average coefficients, associated t-statistics as well as average adjusted R^2. Standard errors are corrected with the Newey-West (1987) procedure with 4 lags. Panel B table shows the results of time-series regressions of stock returns on an intercept (not reported), the local market index excluding own stock (Local Market), negative observations of the local market index excluding own stock (Local Market (negative)), the foreign institutional ownership return (Ownership Return), and negative observations of the foreign institutional ownership return (Ownership Return (negative)). The sample is limited to non-U.S. stocks with foreign ownership above 5% in the beginning of 3 year periods. The regression models are as follows:

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

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

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

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

(continued)

Table VIII: Asymmetries in Ownership Returns (continued)

Cross-sectional Regressions

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

(continued)

Table IX: ADR Listing and Ownership Returns

The table shows the results of pooled regressions of stock returns of companies that listed an ADR on an intercept (not reported), the local market index excluding own stock (Local Market), the foreign institutional ownership return (Ownership Return) and the U.S. market index. All regressors are interacted with a dummy variable (ADR-Dummy) that takes the value 1 after the effective date of the ADR listing, and 0 otherwise. The sample period used is 4 quarters before and after the effective date, with the effective date between 01/01/2001-03/31/2008. The sample is limited to non-U.S. stocks. The table reports the coefficients, associated t-statistics as well as adjusted R^2. Results are shown separately for all firms, firms with an increase in foreign ownership, and firms with an increase in foreign ownership of at least 5%. The Ownership Return is calculated using average weights during the first year of ADR listing. These fixed weights were used to calculate the Ownership Return before and after the listing. Ownership data is from Lionshares, while data on returns for individual stocks and market indices is from DataStream. ADRs are identified based on Lionshare and DataStream information. Effective dates for ADRs are identified through the Bank of New York website (http://www.adrbnymellon.com/dr_directory.jsp).

	All Firms			**Firms with Increased Foreign Ownership**			**Firms with increased foreign ownership by 5%**		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Ownership Return		0.127	0.144		0.138	0.153		0.120	0.107
		(5.14)	(3.42)		(4.29)	(2.49)		(3.02)	(1.37)
Ownership Return * ADR-Dummy		0.048	0.108		0.114	0.319		0.113	0.406
		(1.45)	(1.91)		(2.72)	(4.03)		(2.19)	(4.07)
Local Market	1.026	1.004	1.004	1.059	1.037	1.036	1.078	1.063	1.064
	(64.65)	(58.4)	(58.2)	(52.6)	(47.0)	(46.4)	(44.4)	(40.5)	(40.1)
Local Market * ADR-Dummy	-0.031	-0.058	-0.063	-0.051	-0.105	-0.124	-0.026	-0.082	-0.105
	(-1.43)	(-2.43)	(-2.65)	(-1.92)	(-3.53)	(-4.11)	(-0.81)	(-2.31)	(-2.93)
U.S. Market	0.086		-0.019	0.098		-0.015	0.094		0.014
	(3.89)		(-0.50)	(3.5)		(-0.28)	(2.7)		(0.21)
U.S. Market * ADR-Dummy	0.022		-0.073	0.035		-0.237	0.011		-0.337
	(0.71)		(-1.39)	(0.90)		(-3.30)	(0.23)		(-3.69)
Adjusted R^2	0.287	0.288	0.288	0.299	0.301	0.302	0.290	0.292	0.293
Number of Observations	31,308			20,073			14,636		
Number of Firms	282			183			136		

Table X: Ownership Level, Ownership Beta and Portfolio Diversification

Panel A 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 all stocks with data between 01/05/2000 and 04/01/2009 with at least 90% non-missing returns and with at least 30% non-zero trading days in the previous year. For the U.S., only the largest third of firms based on the first subsample's market capitalization are included. Firms are required to have at least 30 non-missing return observations. For each country, year and institutional ownership groups, the number of firms is restricted to the smallest number of firms across institutional ownership groups to have the same number of stocks in each institutional ownership group. For each year, the average variance and co-variance is calculated for all stocks and subsequently the average across years is calculated. These average variances are used to illustrate the power of portfolio diversification.
Panel B shows the effect of portfolio diversification for alternative levels of foreign institutional ownership return betas estimated over rolling 2 year windows. The sample consists of all non-U.S. stocks with data between 01/05/2000 and 04/01/2009 with at least 90% non-missing returns, with at least 30% non-zero trading days in the previous year and with at least 5% foreign institutional ownership. Firms are required to have at least 30 non-missing return observations. For each fund, the universe of stocks is restricted to those not held by a fund. Over rolling 2-year windows, we regress the return of the fund on the foreign ownership return of each stock, as well as calculate the co-variance of their returns with the return of the fund. Subsequently, we sort each year the observations into 4 groups based on the estimated ownership return beta and calculate the average co-variance. The average co-variance as well as average variance are used to illustrate the power of portfolio diversification. Ownership data is from Lionshares, while data on returns for individual stocks is from DataStream.

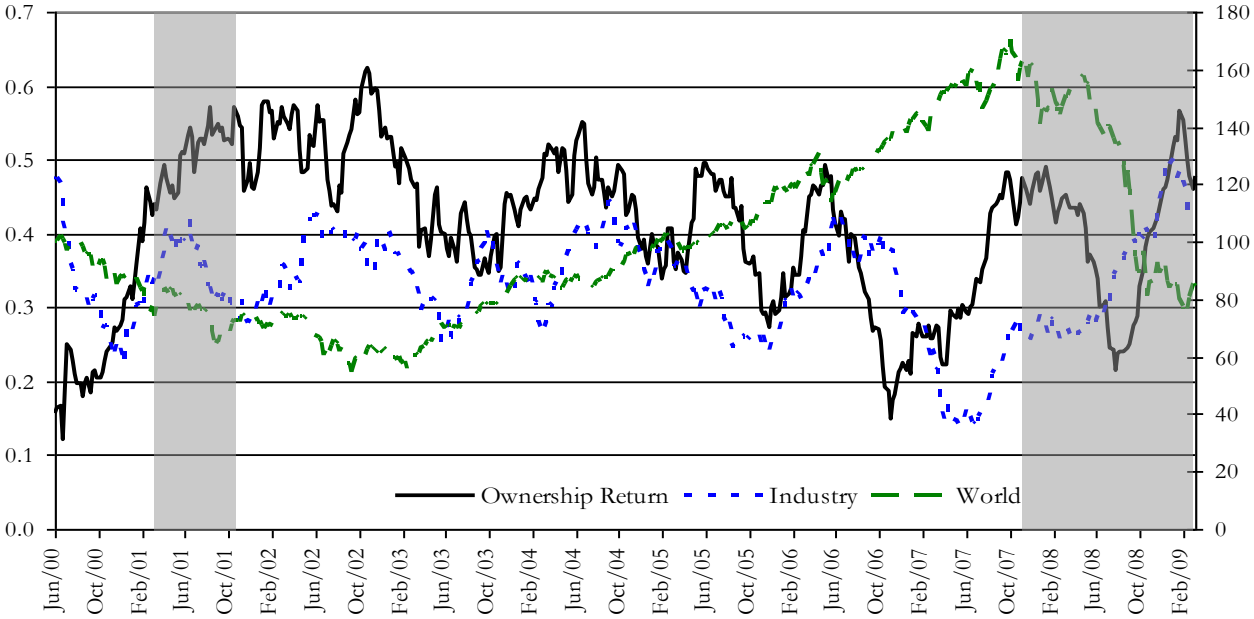
Panel A	FO=0%	0%<FO<1%	1%<FO<5%	5%<FO
Average Covariance	0.001	0.001	0.001	0.001
Average Variance	0.008	0.006	0.005	0.004
Covariance as a percent of Variance	7.077	9.290	13.730	18.823

Panel B	Low Ownership Beta	2	3	High Ownership Beta
Average Ownership Beta	0.504	0.766	0.944	1.243
Average Covariance	0.0003	0.0004	0.0005	0.001
Average Variance	0.004	0.004	0.004	0.003
Covaraince as a percent of Variance	6.983	10.705	14.282	19.520

Figure 1: Foreign Ownership Regression Coefficients Over Time

The figure shows the average of coefficients on Fama-McBeth cross-sectional regressions. The sample consists of non-U.S. stocks held by U.S. funds 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 01/05/2000-04/01/2009. Each week, a cross sectional regression is run over all firms in the sample. We then take the rolling average of these coefficients in the regressions over the past 26 weeks. The figure shows the moving average (MA). In Panel A, stock returns are regressed on an intercept (not reported), the foreign institutional ownership return, industry index returns (excluding the local market) (Industry ex loc) and world market index returns (World). In Panel B, stock returns are regressed on an intercept (not reported), the foreign institutional ownership return , industry index returns (excluding the local market) (Industry ex loc), the local market index return (Local) and world maket index returns (World). Ownership data is from Lionshares, while data on returns for individual stocks, market indices and industry indices is from DataStream.

Panel A: Coefficients on Foreign Ownership Return and Industry Index Return



Panel B: Coefficients on Foreign Ownership Return, Industry Index Return, and Local Index Return

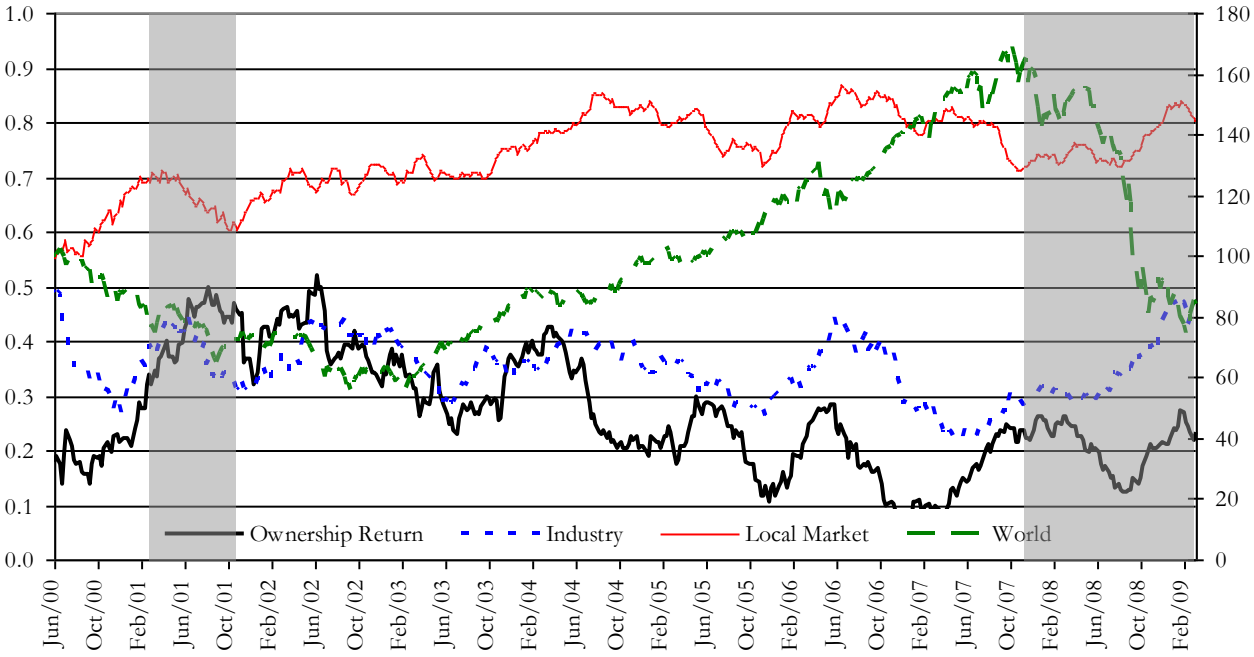
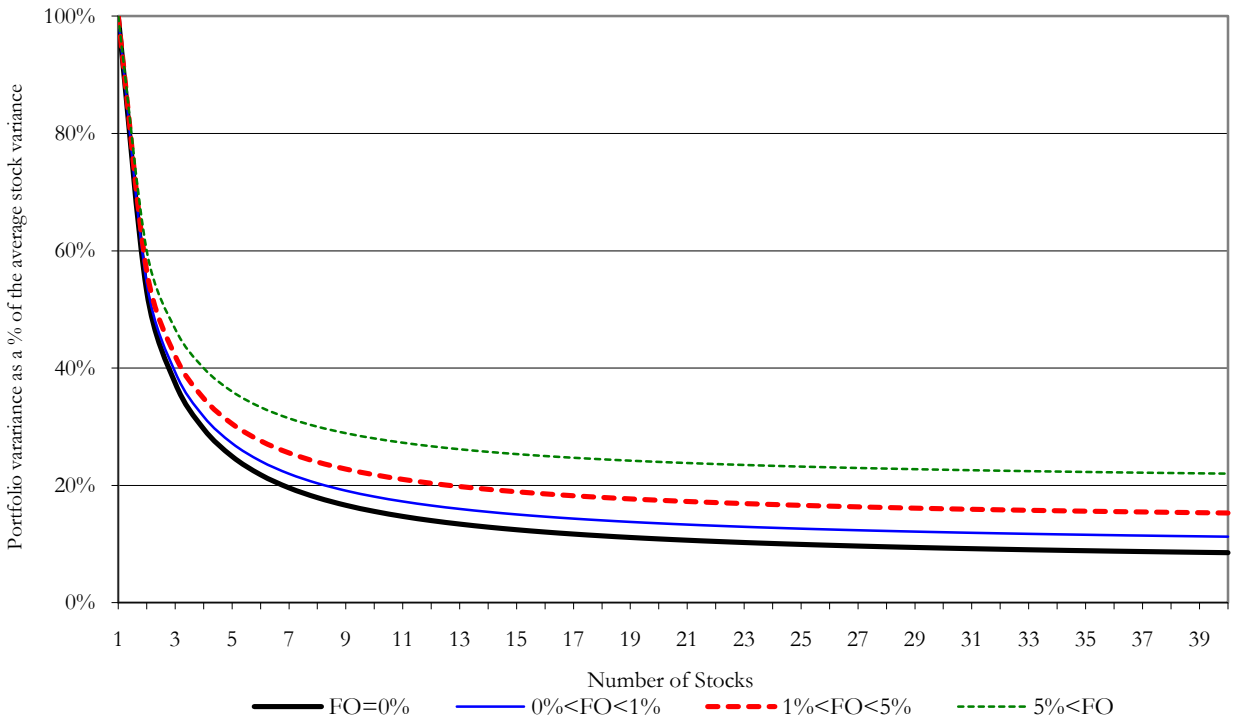


Figure 2: Ownership Level and Portfolio Diversification

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 all stocks with data between 01/05/2000 and 04/01/2009 with at least 90% non-missing returns and with at least 30% non-zero trading days in the previous year. For the U.S., only the largest third of firms based on the first subsample's market capitalization are included. Firms are required to have at least 30 non-missing return observations. For each country, year and institutional ownership groups, the number of firms is restricted to the smallest number of firms across institutional ownership groups to have the same number of stocks in each institutional ownership group. For each year, the average variance and co-variance is calculated for all stocks, as well as for pure industry or pure country diversification, as in Griffin and Karolyi (1998), and subsequently the average across years is calculated. These average variances are used to illustrate the power of portfolio diversification. Ownership data is from Lionshares, while data on returns for individual stocks is from DataStream.

Global Portfolio Diversification



(continued)

Appendix

Table AI: Summary Statistics on Update Frequency of Ownership Data

The table shows the percentage of institutions by country and data source, i.e. institutional level data (13F in the US and its equivalent in other countries) and the mutual funds database (MF). Results are split by updating frequency, i.e. annual, biannual, triannual and quarterly frequency. The last column shows the total. Ownership data is from Lionshares.

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

(continued)

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

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

Table AII: Summary Statistics on Data Sources

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

	2001		**2005**		**2008**		**Total**	
	13F	MF	13F	MF	13F	MF	13F	MF
Australia	1		51	51	86	85	326	318
Austria	41	41	66	65	83	82	569	563
Belgium	21	21	32	31	33	33	262	261
Canada	293	282	312	285	337	305	2,661	2,426
Denmark	27	27	45	44	57	56	382	377
Finland	20	20	54	53	56	54	414	405
France	33	30	164	157	151	144	1,173	1,112
Germany	109	109	117	117	159	157	1,144	1,136
Ireland	96	92	225	216	236	223	1,720	1,629
Italy	1	1	33	33	59	57	279	274
Japan	8		47	39	36	27	240	153
Luxembourg	424	419	685	673	769	756	5,396	5,307
Netherlands	24	23	49	42	46	40	385	337
New Zealand			2	2	3	3	9	9
Norway	21	21	31	31	30	30	235	234
Portugal	5	5	22	21	23	23	185	179
Spain	93	92	119	118	118	117	924	914
Sweden	38	37	73	71	89	87	566	550
Switzerland	45	39	83	74	110	99	715	638
United Kingdom	198	183	313	270	357	294	2,650	2,266
United States	2,275	849	2,697	800	3,146	861	26,235	8,128
Developed	**3,773**	**2,291**	**5,220**	**3,193**	**5,984**	**3,533**	**46,470**	**27,216**
Developed ex US	**1,498**	**1,442**	**2,523**	**2,393**	**2,838**	**2,672**	**20,235**	**19,088**

(continued)

Table AII: Summary Statistics on Data Sources (continued)

	2001		2005		2008		Total	
	13F	MF	13F	MF	13F	MF	13F	MF
Andorra			2	2	2	2	9	9
Argentina					1	1	3	3
Bahamas	1		4	2	6	2	32	9
Bahrain					1	1	3	3
Barbados			1		1		6	
Bermuda	6	2	12	9	15	12	99	66
Brazil					2		4	
British Virgin Islands	4	3	10	10	9	8	76	69
Cayman Islands	1	1	29	29	29	29	179	179
Chile							1	1
China					53	53	53	53
Cook Islands	1	1					1	1
Croatia					2	2	5	5
Cyprus					1		4	
Czech Republic			5	5	6	6	26	26
Estonia			1	1	6	6	17	17
Gibraltar							1	1
Greece			1	1	14	14	96	96
Hong Kong	2		15	10	18	13	91	54
Hungary			6	6	5	5	31	31
Iceland							3	2
India			28	28	34	34	196	196
Latvia					1	1	3	3
Liechtenstein			46	46	74	74	347	347
Lithuania					3	3	6	6
Malaysia			13	13	22	22	95	95
Malta					1	1	3	3
Mauritius	1	1	4	4	3	3	21	21
Monaco			1		1		5	
Namibia			2	2	3	3	15	15
Netherlands Antilles							2	2
Pakistan					2	2	2	2
Philippines			1	1			3	3
Poland			19	19	30	30	152	152
Romania			2	2	3	3	8	8
Saudi Arabia							1	1
Singapore			15	14	22	20	102	93
Slovakia			6	6	6	6	36	36
Slovenia			13	13	13	13	66	66
South Africa			31	31	68	68	366	365
South Korea					1		2	
Taiwan			1		4	2	13	5
Thailand			8	8	20	20	88	88
Turkey					1	1	2	2
Virgin Islands	1		2		2		16	
Emerging	**17**	**8**	**278**	**262**	**485**	**460**	**2,290**	**2,134**
All countries	**3,790**	**2,299**	**5,498**	**3,455**	**6,469**	**3,993**	**48,760**	**29,350**

Table AIII: Descriptive Statistics

The table shows descriptive statistics on the percentage of local institutional ownership and market capitalization of firms in the sample. To be included in the sample, firms are required to have non-missing data on lagged foreign ownership and at least 30% non-zero trading days in the previous year. Panel A shows statistics for Developed Markets, while Panel B shows results for Emerging Markets (based on the MSCI classification). In each panel, results are broken down by country, region and by size quintiles (small to large, using common U.S. breakpoints), where size is measured by market capitalization in U.S. Dollars. The first column shows the average percentage of (free-float adjusted) local institutional ownership. Foreign Ownership is free-float adjusted by dividing it by 1 minus the percentage of closely held shares, where missing values of closely held shares are set to zero. The second column shows the average market capitalization (in millions of U.S. Dollars). Averages are first taken by year and subsequently across time. The sample period is 01/05/2000-04/01/2009. Ownership data is from Lionshares, market capitalization data is from DataStream, and data on closely held shares is from WorldScope.

Panel A: Developed Markets

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

(continued)