How Global is Your Mutual Fund? International Diversification from Multinationals*

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Abstract

We show that mutual funds worldwide provide substantial international exposure through their domestic holdings of multinationals. An average domestic fund's international exposure increases by 32 percentage points when we consider international corporate diversification. We find that funds with higher indirect international exposure perform better in both the cross section and the time series. This outperformance is more pronounced among small fund families, and funds that invest in small stocks, growth stocks, and less developed capital markets. Our findings support the hypothesis that international diversification from multinationals reduces the transaction and information costs of investing abroad and captures fund manager skill.

JEL Classification: F23, G11, G15, G23

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1. Introduction

Investors are reluctant to invest in foreign markets despite the risk reduction benefits of international portfolio diversification. This home bias in investors' portfolios has been attributed to transaction and information costs of investing in stocks away from home.[1] Markets have increasingly integrated in recent decades, but there are still significant barriers associated with international equity ownership (e.g., Karolyi and Stulz (2003), Stulz (2005), and Bekaert, Harvey, Kiguel, and Wang (2016)).

While ownership of foreign companies – *direct international exposure* – has received considerable attention in the home bias literature, the exposure to international capital markets through ownership of domestic stocks that have foreign operations – *indirect international exposure* – has been mostly overlooked. A notable exception is Cai and Warnock (2012) who use survey data on portfolio holdings of U.S. investors to show that investors obtain significant international exposure through holdings of domestic stocks. This occurs because the largest members of major stock indices are frequently multinational companies whose sales come to a substantial extent from global operations. For example, the percentage of foreign sales of S&P 500 companies is about 44% of total sales and the extent of foreign sales is even higher in other major indices such as the FTSE 100 with 76%.[2]

Investors thus can diversify risks internationally either directly through *international portfolio diversification* of their holdings of foreign stocks or indirectly through *international corporate diversification* of their holdings of domestic stocks. These two types of international diversification can differ substantially and have different implications for portfolio performance. International portfolio diversification enables an investor to hold small minor-

[1] See, for example, French and Poterba (1991), Tesar and Werner (1995), Dahlquist, Pinkowitz, Stulz, and Williamson (2003), Ahearne, Griever, and Warnock (2004), and Kho, Stulz, and Warnock (2009). Theoretical work on home bias also notes that investors underweight foreign securities (e.g., Van Nieuwerburgh and Veldkamp (2009)). See Cooper, Sercu, and Vanpée (2013) for a survey.

[2] S&P Dow Jones Indices (2018) "S&P 500 2017: Global Sales - Year in Review", and FTSE (2017) "The Global Sales Ratio, Global and Domestic Firms".

ity positions in a relatively large number of foreign stocks. These positions typically can be acquired and liquidated fairly easily in financial markets. However, there may be foreign markets with low liquidity, limited information availability, and constrained monitoring opportunities due to dispersed ownership, geographic distance, and cultural differences.

Alternatively, international corporate diversification allows a domestic company to diversify internationally by operating in other countries. Through foreign direct investment (FDI), a corporation has control over these foreign operations and often establishes a significant physical presence of employees and capital. International corporate diversification can enhance shareholder value by exploiting firm-specific assets, increasing operating flexibility, and meeting investors' diversification preferences. Investors may be willing to pay a premium if corporations can reduce the costs of international diversification for them. On the other hand, international corporate diversification can destroy value through the complexity of managing multinational companies and inefficient cross-subsidization of less profitable business units. Overall, there is mixed evidence regarding the valuation of multinational companies.[3]

Using a comprehensive sample of open-end equity mutual funds domiciled in 29 countries over the 2005-2015 period, we find that indirect international exposure constitutes a significant fraction of a fund's total exposure to stock markets. This suggests that funds diversify not only through direct ownership of foreign stocks but also through investing in domestic firms that source part of their sales abroad. While foreign stocks represent only 48% of an average mutual fund's portfolio, international exposure increases to 67% when we take into account the fraction of foreign sales of domestic companies. In the case of domestic funds, foreign stocks represent only 9% of a funds' portfolio, but international exposure increases to about 41% when we take into account the fraction of foreign sales. We conclude that home

[3]Brewer (1981) and Fatemi (1984) find no statistical difference in risk-adjusted performance between multinationals and purely domestic firms. Denis, Denis, and Yost (2002) find that globally diversified firms trade at a discount relative to a portfolio of single-segment domestic firms operating in the same industries. There is also evidence consistent with a global diversification premium reflecting the value of operating flexibility (Chang, Kogut, and Yang (2016)) and financial flexibility (Jang (2017)) during the 2007-2008 financial crisis.

bias is not as severe as previously documented in the literature when we take into account the exposure to international markets from multinationals located in the fund's country of domicile.

Figure 1 shows the total international exposures of mutual funds as of the last quarter of 2015 in selected countries (ranked by the size of mutual fund industry). The figure shows the direct international exposure through investment in foreign stocks and the indirect international exposure through investment into domestic multinational companies as a fraction of fund holdings. The remaining fraction corresponds to purely domestic exposure. The indirect exposure represents a significant fraction of the fund holdings and ranges between 14% for Australia to 35% for Switzerland.

Given the potential cost-reduction and diversification benefits of the indirect international exposure, we test whether this exposure is associated with fund performance. We find that indirect international exposure has a positive effect on fund risk-adjusted performance in the cross section of domestic funds. On average, a one-standard-deviation increase in indirect international exposure is associated with an 7.5 basis points increase in monthly four-factor alphas in the sample of domestic funds. On the other hand, the results are mixed for direct international exposure, which has an ambiguous impact on fund performance. The tests control for benchmark-, country-, and time-fixed effects, and a comprehensive set of determinants of fund performance. The results are robust when we use a larger sample that includes both domestic and international funds.

The results show that indirect international exposure continues to have a positive and significant effect on fund performance when we include fund-fixed effects. Thus, the estimated outperformance is significant in the time series, which indicates that performance improves after a fund increases its indirect international exposure. We find that a one-standard-deviation increase in indirect international exposure is associated with a 4.6 basis points increase in monthly four-factor alphas in the sample of domestic funds. We conclude that indirect international exposure has a positive effect on fund performance in both the

cross section and the time series.

We also employ a characteristic-based adjustment to the returns of the stocks in a fund's portfolio. We adjust the returns based not only on market capitalization and book-to-market ratio, but also on the fraction of foreign sales of the firms that funds invest into. Our results suggest that outperformance is not an artifact of funds investing in multinationals but rather reflects the fund managers' ability to invest in companies that successfully geographically diversify their operations.

The results are robust when we use alternative measures of fund performance such as benchmark-adjusted returns, value added, excess returns (over the risk-free rate), gross returns, Sharpe ratio, information ratio, five-factor alpha including a illiquidity return premium, and alphas based on world, regional, and country-specific factors. Importantly, the results do not hold for passive funds and are more pronounced among the most active funds, which suggest that the outperformance is not a mechanical effect but rather is generated by managerial skill.

We next examine the heterogeneity in the relation between fund performance and indirect international exposure. International investments carry significant transaction and information costs. Some of these costs are fixed and therefore may be higher among small fund families and funds with lower assets under management. We also expect such costs to depend on the types of stocks that funds invest in. For instance, small-cap stocks are typically less liquid and information asymmetries are more pronounced. These costs may also change according to the characteristics of the stock markets and we hypothesize that such costs may be higher in less developed capital markets. Consistent with our hypotheses, we find that the performance benefits of indirect international exposure are larger in small fund families. In addition, we find that the benefits are more pronounced when funds invest in small-cap and growth stocks. The level of development of capital markets to which the funds are exposed also matters. The performance benefits are more significant for countries with smaller and less liquid stock markets, and with greater barriers to foreign investment.

To study whether indirect international exposure exhausts the international diversification benefits for mutual fund investors by region of the world, we perform spanning tests following Huberman and Kandel (1987), DeSantis (1994), Bekaert and Urias (1996), Errunza, Hogan, and Hung (1999), and Bae, Elkamhi, and Simutin (2019). We find that returns of U.S. mutual funds investing in foreign stocks are spanned by U.S. domestic funds with differential indirect international exposure. In contrast to the U.S., international mutual funds domiciled elsewhere in the world are not spanned by their domestic counterparts with above- and below-median indirect international exposure. The differential results between these regions may be due to the dominating role of the U.S. stock market. Whereas it is important for foreign investors to obtain direct exposure to the U.S. market, it is less important for U.S. investors to obtain direct exposure to foreign markets, as U.S. multinationals already provide fairly large diversification benefits.

We contribute to the extensive literature on mutual funds by proposing a new and economically important determinant of fund performance – indirect international exposure – acquired by investing in local firms that are internationally diversified. We provide evidence that the fraction of foreign sales of domestic companies play a role in explaining fund performance.[4] Specifically, we show that international corporate diversification is related to fund performance.

We also contribute to the home bias literature. This literature shows that most investors hold local stocks in excess of the country weights on the world market portfolio, but has mostly overlooked the role of multinationals in providing international diversification benefits. Errunza et al. (1999) examine whether U.S. investors can replicate the benefits of international diversification by simply investing in U.S. stocks. They find that international diversification does not provide significant gains beyond those attainable with foreign market mimicking portfolios, formed based on domestically traded securities in the U.S. Bae et al.

[4]This vast literature includes, for example, Carhart (1997), Daniel, Grinblatt, Titman, and Wermers (1997), Kacperczyk, Sialm, and Zheng (2005), Kacperczyk, Sialm, and Zheng (2008), Cremers and Petajisto (2009), Schultz (2010), Amihud and Goyenko (2013), Doshi, Elkamhi, and Simutin (2015), Berk and van Binsbergen (2015), and Cremers, Ferreira, Matos, and Starks (2016).

(2019) show that investing in developed market firms that trade with emerging markets provides diversification benefits not attainable by investing directly in emerging stock markets. Moshirian, Pham, Tian, and Wu (2018) show that after a firm makes a cross-border acquisition, it attracts investment from the destination-country funds. This mechanism is different from ours as it studies direct investment in foreign companies, while we investigate investment in domestic firms that provide economic exposures to foreign markets. Our study offers new insights to the home bias literature. First, we show that the degree of home bias in mutual fund holdings worldwide is smaller than previously documented after we adjust for the international exposure of the firms that funds invest in. Second, we show that indirect international exposure can play an important role in reducing the transaction and information costs of investing internationally.

2. Data and Variable Definitions

In this section, we describe the data sources and variables, and report summary statistics.

2.1. Data

Data on the performance of equity mutual funds over the 2005-2015 period come from the Lipper survivorship bias-free database, which covers many countries worldwide.[5] Although multiple share classes are listed as separate observations in Lipper, they have the same holdings and the same returns before expenses. We therefore use the primary share class as our unit of observation and aggregate fund-level variables across different share classes using total net assets (TNA) weights. We exclude offshore funds (e.g., funds domiciled in Luxembourg or Dublin), funds of funds, and closed-end funds. Our main sample consists of

[5]See Ferreira, Keswani, Miguel, and Ramos (2013), Cremers et al. (2016), and Ferreira, Matos, and Pires (2018) for a detailed description of Lipper's worldwide data coverage. Lipper's worldwide data coverage is comprehensive compared to aggregate statistics from the Investment Company Institute (2015).

actively-managed equity funds but we also examine passive funds (index funds and exchange-traded funds) in placebo tests.

We obtain information on each fund's portfolio holdings from the FactSet Ownership database, which cover the portfolio holdings of mutual funds worldwide.[6] In calculating international exposure measures, we exclude holdings of American Depositary Receipts (ADRs) as these holdings differ from the direct ownership of foreign stocks. Specifically, we match each Lipper fund with the fund's portfolio holdings data in FactSet using ISIN and CUSIP fund identifiers as well as management company and fund names. We focus our analysis on the sample of domestic funds because they can provide more indirect international exposure than international funds.[7] International funds are restricted to invest in local stocks by their mandates. Our baseline sample of domestic funds includes 3,581 open-end equity funds in 29 countries that managed $4 trillion as of December 2015. We also examine the sample of both domestic and international funds (including foreign, regional, and global funds), which includes 7,304 open-end equity funds in 29 countries that managed $6.3 trillion as of December 2015. Table IA.1 in the Internet Appendix reports the distribution of funds by country and year. The U.S., the U.K., and Canada are the three countries with the highest number of fund-year observations.

We use the FactSet Fundamentals database to measure the percentage of sales that come from sources other than the country of domicile (based on the headquarter location). Under both U.S. GAAP and IFRS accounting standards, companies are required to disclose sales not only in their country of domicile but also in foreign countries. In additional tests, we make use of the FactSet Revere Geographic Exposure database that provide firms' sales to each individual country worldwide as reported in 10-K and other corporate filings, and sales estimated based on country GDP weights.[8]

[6] Ferreira and Matos (2008) provide a detailed description of this database.

[7] A domestic fund is a fund whose geographic focus is the same as its country of domicile.

[8] FactSet Research Systems (2014), "FactSet Geographic Revenue Exposure (GeoRev): Data and Methodology Guide."

2.2. Variable Definitions

Let $f \in F$ denote a mutual fund, $c \in C$ a country, and c_f the domicile country of fund f. Firms are denoted by $i \in I$ with some key subsets: I_c is the set of stocks domiciled in country c, I_f is the set of stocks in fund f's portfolio, and I_{c_f} represents the set of fund f's holdings in the fund's domicile country. V_{if} is the market value of fund f's holdings of firm i and π_i is the fraction of foreign sales in firm i's total sales.[9] Our indirect exposure measures are computed at the quarterly frequency based on quarterly fund holdings data and annual foreign sales of the firms in the fund's portfolio; the time index is suppressed for simplicity.[10]

We measure a fund's direct ownership of foreign stocks without any adjustment for foreign sales:

$$Direct\ International\ Exposure_f = 1 - \frac{\sum_{i \in I_{c_f}} V_{i,f}}{\sum_{i \in I_f} V_{i,f}}. \tag{1}$$

We also measure the *Indirect International Exposure* of fund f defined as the (portfolio) weighted-average of foreign sales (as a fraction of the firm's total sales) of all domestic firms in its portfolio:

$$Indirect\ International\ Exposure_f = \frac{\sum_{i \in I_{c_f}} \pi_i \times V_{i,f}}{\sum_{i \in I_f} V_{i,f}}. \tag{2}$$

The *Indirect International Exposure* variable captures the bias in total international exposure that results from failing to adjust for foreign sales generated by multinational companies based on the fund's domicile country.[11] The total international exposure is the sum of *Direct International Exposure* and *Indirect International Exposure*. Since domestic funds mostly invest in domestic stocks, they can rely more extensively on indirect international exposure

[9] If there are different share classes of the same firm in a fund's portfolio, we aggregate them to calculate the firm's overall portfolio weight.

[10] We use the most recent foreign sales prior to the beginning of the quarter in which fund holdings are reported.

[11] Our measures ignore the sales of foreign companies generated in the fund's domicile country. For example, a U.S. mutual fund holds a German multinational firm that generates some of its sales in the U.S. This feedback effect reduces the direct international exposure of international funds.

than international funds. International funds can only rely on indirect international exposure to the extent that they invest in stocks of the country of fund domicile (i.e., domestic stocks). While regional funds (only those whose investment region includes the country of domicile) and global funds may be able to invest in domestic stocks and thus have some indirect exposure, foreign funds should have very low indirect international exposure. For these reasons, we focus on the sample of domestic funds in which fund managers can actively choose whether to have indirect exposure or not.

Our main performance measure uses risk-adjusted returns (alphas) calculated based on the Carhart (1997) four-factor model. Following Bekaert, Hodrick, and Zhang (2009), we estimate four-factor alphas using regional factors based on a fund's investment region in the case of domestic, foreign, and regional funds. We use global factors in the case of global funds and emerging market funds.[12] For each fund-month, we estimate factor loadings using the previous 36 months of return data (we require a minimum of 24 months of return data),

$$R_{i,t} = \alpha_i + \beta_1 MKT_{i,t} + \beta_2 SMB_{i,t} + \beta_3 HML_{i,t} + \beta_4 MOM_{i,t} + \varepsilon_{i,t}, \tag{3}$$

where $R_{i,t}$ is the return net of fees in U.S. dollars of fund i in month t in excess of the one-month U.S. Treasury bill rate; $MKT_{i,t}$ is the excess return in the fund's investment region in month t; $SMB_{i,t}$ is the average return on the small-capitalization stock portfolio minus the average return on the large-capitalization stock portfolio in the fund's investment region; $HML_{i,t}$ is the difference between the return on the portfolio with high book-to-market stocks and the return on the portfolio with low book-to-market stocks in the fund's investment region; and $MOM_{i,t}$ is the difference between the return on the portfolio with the past 12-month stock winners and the return on the portfolio with the past 12-month stock losers in the fund's investment region, excluding the immediately preceding month. Using the estimated factor loadings over the prior 36 months, we subtract the expected return from

[12]The fund's investment regions (based on the geographical focus) are North America, Europe, Asia Pacific, Emerging, Global (ex-U.S.) and Global.

the realized fund return to obtain the fund's abnormal return in each month.

To analyze the robustness of our results, we adopt several additional performance measures. First, we estimate fund alphas based on a five-factor model that incorporates the illiquidity return premium (*IML*) developed in Amihud, Hameed, Kang, and Zhang (2015a). The *IML* factor is constructed as the difference between the monthly return on the most illiquid and the least illiquid quintile portfolios in a fund's investment region. We use the illiquidity premium based on the value-weighted portfolio returns.[13]

Second, we use characteristic-adjusted returns based on Daniel et al. (1997). Our measure adjusts not only for the market capitalization and the book-to-market ratio, but also for the foreign sales. This adjustment is important as the performance of funds with high indirect international exposure may be driven by the foreign sales of the firms they invest in. Each month, within each firm domicile region, we first form five market capitalization-sorted portfolios.[14] We further split each of these five portfolios based on book-to-market quintiles. Then, we split each of these 25 regional portfolios into two based on whether foreign sales exceed 25% of total sales or not.

Third, we compute the value added measure of Berk and van Binsbergen (2015), defined as the product between gross abnormal return and lagged TNA (in millions of U.S. dollars). The gross abnormal return is the abnormal four-factor return plus one-twelfth of the expense ratio.[15]

Finally, we report results using alternative performance measures, such as excess returns (over the risk-free rate), benchmark-adjusted returns (i.e., the difference between the fund's return and the return on its benchmark), Sharpe ratio (i.e., the ratio of the excess return to the fund total risk), and information ratio (i.e., the ratio of the alpha to the fund idiosyn-

[13]We thank Allaudeen Hameed for sharing the *IML* data. The data are available starting in 2007, which reduces the number of observations relative to our baseline results. The illiquidity return premium has also been used by Amihud, Hameed, Kang, and Zhang (2015b) and Amihud, Hameed, Kang, and Zhang (2019).

[14]The regions are North America, Europe, Asia Pacific, and emerging markets.

[15]Since our database includes international funds, it is not feasible to use their set of Vanguard index funds as benchmark portfolios. Berk and van Binsbergen (2015) find consistent results using four-factor adjusted returns and benchmark-adjusted returns.

cratic risk). In addition, we consider alternative factor models that include country-specific, regional, and world factors.

2.3. Summary Statistics

Our baseline sample includes actively-managed domestic equity mutual funds between 2005 and 2015. Panel A of Table 1 shows summary statistics for the sample of domestic funds, and Panel B shows summary statistics for the sample of all funds (domestic and international funds). Panel A reports that the average indirect international exposure is 32.3% in the sample of domestic funds. Domestic funds mostly invest in domestic stocks with only 8.6% direct international exposure. Panel B presents summary statistics for the sample of all funds, which show that direct international exposure is 47.7% on average. The average indirect international exposure for this sample is 19.3%. Figure 2 shows the average of the international exposure measures over time for both samples. There is a slight upward trend in international exposure during our sample period.

The average fund has a monthly four-factor alpha of -0.042% and -0.114% per month in the sample of domestic funds and the sample of all funds, respectively. The average fund age is 14.5 years in the sample of domestic funds. Domestic funds have an average TNA of $917 million and a fund family TNA of about $40 billion. The average TNA and fund family TNA of international funds are smaller than those of their domestic counterparts. The variable definitions are provided in Table A.1 in the Appendix.

Table IA.2 in the Internet Appendix reports the country averages of our international exposure measures and other fund characteristics. The indirect international exposure is the highest in Switzerland, Austria, and Sweden, and the lowest in Indonesia, China, and Poland in the sample of domestic funds. Table IA.3 reports the averages of the home bias measures before and after adjusting for indirect international exposure. This table also reports the average share of each country in the world market portfolio. For example, U.S. equity funds

overall invest 68.5% of their holdings in domestic stocks, although U.S. stocks account for only 32.5% of world market capitalization. After indirect international exposure is taken into consideration, the U.S. funds' exposure to purely domestic markets decreases from 68.5% to 46.1%. Table IA.4 reports the correlation coefficients between fund characteristics and international exposure measures. The correlation between direct international exposure and indirect international exposure is -0.135. This correlation is negative because direct international holdings do not have indirect international exposure by construction.

3. Main Results

In this section, we investigate the fund performance implications of indirect international exposure using both a portfolio and a regression approach.

3.1. Portfolio Results

To examine the performance of funds with different levels of international exposure, we sort funds into five portfolios at the beginning of each month according to their level of indirect or direct international exposure. For each quintile portfolio, we compute the equal-weighted average excess return in each month using four-factor alphas based on a fund's investment region.

Columns (1) and (2) of Table 2 present the results for the sample of domestic funds. While funds in the lowest indirect exposure quintile (i.e., Quintile 1) exhibit an alpha of -10.3 basis points per month, funds in the highest indirect exposure quintile (i.e., Quintile 5) exhibit an alpha of 8.6 basis points per month. The difference in performance of 18.9 basis points per month is economically and statistically significant. In contrast, there are less significant performance differences among domestic funds with different levels of direct international exposure. Funds with the highest direct international exposure *underperform*

funds with the lowest direct international exposure by 4.8 basis points per month, but this difference is not statistically significant.

Columns (3) and (4) present the results for the sample of all funds. The impact of indirect international exposure on fund performance is similar to that of domestic funds. Funds in the top quintile of indirect international exposure outperform funds in the bottom quintile by 21 basis points per month, which is statistically significant at the 1% level. Funds with a high direct international exposure *underperform* funds with a low direct international exposure by 14.9 basis points per month. The evidence suggests that there are performance benefits associated with indirect international exposure, while the costs seem to outweigh the benefits for the case of the direct international exposure.

3.2. Baseline Regression Results

In this section, we study the relation between indirect international exposure and fund performance using multivariate regressions, which allow us to control for fixed effects and several fund characteristics that are important determinants of fund performance.

Table 3 presents the estimates where the dependent variable is the four-factor alpha based on a fund's investment region. The main explanatory variable is the lagged indirect international exposure based on a firm's foreign sales from the previous fiscal year relative to the quarter in which fund holdings are measured. The regressions also include the lagged direct international exposure and other fund characteristics, fund benchmark-fixed effects, fund domicile country-fixed effects, and time (month-year)-fixed effects. Standard errors are clustered at the fund level.

Columns (1) and (2) present the results for the sample of domestic funds. Consistent with the portfolio results, we find that the indirect international exposure is positively related to fund performance. A one-standard-deviation increase in the indirect international exposure (0.156) results in an increase in the four-factor alpha of 7.5 basis points per month using

the estimate in column (1). The direct international exposure coefficient is negative, and economically and statistically weaker than the indirect exposure coefficient.

In order to capture the time-series relation between international exposure and fund performance, we also run the regressions with fund-fixed effects, which absorb country- and benchmark-fixed effects. Consistent with the cross-sectional regression results, column (2) shows that the indirect international exposure coefficient is positive and significant. These results are also economically significant: a one-standard-deviation (within-fund) increase in the indirect international exposure (0.041) is associated with a 4.6 basis points increase in the four-factor alpha. In the fund-fixed effects specification, we find that the direct international exposure is not significantly associated with fund performance.

Columns (3) and (4) report the results for the sample of all funds. The economic magnitude and the statistical significance of the results for the indirect international exposure are similar to those for domestic funds. The estimate in column (3) indicates that a one-standard-deviation (i.e., 0.187) increase in indirect international exposure is associated with a 7 basis points increase in the four-factor alpha. We also find similar estimates when we include fund fixed effects. The estimate in column (4) indicates that a one-standard-deviation (i.e., 0.032) increase in indirect international exposure is associated with a 3.6 basis points increase in the four-factor alpha.

The coefficients on the control variables are in line with prior studies that find that performance is negatively related to fund size and expenses but positively related to family size (e.g., Chen, Hong, Huang, and Kubik (2004), Gil-Bazo and Ruiz-Verdú (2009), Pástor, Stambaugh, and Taylor (2015), Cremers et al. (2016), and Ferreira et al. (2018)).

3.3. Alternative Performance Measures

Table 4 presents the results using alternative performance measures. Panel A uses the sample of domestic funds. Columns (1) and (2) report the results using alphas based on a

five-factor model that adds the illiquidity return premium of Amihud et al. (2015a) to the Carhart (1997) four-factor model. We obtain consistent results with the four-factor model when we use the five-factor model. These results indicate that the performance effect of indirect exposure is not explained by differences in liquidity.

We also employ a characteristic-based adjustment to the returns of the stocks in a fund's portfolio based on Daniel et al. (1997). Besides the market capitalization and the book-to-market ratio, we also adjust for the level of foreign sales as the outperformance of funds with high indirect international exposure might be driven by the foreign sales of the firms that they invest into. Columns (3) and (4) present the results. We find that outperformance is not an artifact of funds investing in multinationals but rather reflects the funds' ability to invest in companies that successfully diversify internationally.

Columns (5) and (6) show the results using the value added measure of Berk and van Binsbergen (2015) as dependent variable. A one-standard-deviation increase in the indirect international exposure in the cross-sectional specification in column (5) results in an increase in the value added of about one-quarter of a million dollars. The direct international exposure coefficient is positive, but both economically and statistically substantially weaker than the indirect exposure coefficient. The time-series specification in column (6) indicates that a one-standard-deviation increase in the indirect international exposure is associated with an increase in value added of more than one-hundred thousand dollars. The results in Panel B using the sample of all funds funds are consistent with those in Panel A.

3.4. Alternative Factor Models

The results in Table 3 use factors based on the the fund's focus region. Table 5 uses alphas based on global, regional and country-specific factors as dependent variable. Columns (1) and (2) report the results using four-factor alphas based on global factors. The table also reports the results from an eight-factor model based on both the fund's investment region

factors and global factors in columns (3) and (4). This is a more stringent specification than our baseline model as it captures not only the region-specific risks but also global risks. Our results are robust to these alternative measures of fund performance.

Columns (5)-(8) of Table 5 report the results using four-factor alphas based on based on the fund's investment country factors as well as the results using eight-factor alphas based on both country-specific factors and regional factors. The indirect international exposure coefficients remain positive and significant, but with lower magnitudes. This may be due to measurement error in country-specific factors in countries with a relatively low number of stocks.

3.5. Future Returns

We also investigate whether the impact of changes in indirect international exposure can predict future alphas for horizons longer than one month. In order to test the persistence of the relation between performance and indirect exposure, we first calculate the quarterly average of the monthly alpha for each of the next four quarters. Then, we run our baseline tests using the average alpha for each of the next four quarters as dependent variables. Table IA.5 in the Internet Appendix reports the results, which indicate that the effect remains statistically significant during the next four quarters, although the effect declines with the horizon.

4. Cross-Sectional Heterogeneity

In this section, we examine the heterogeneity of the relation between fund performance and indirect international exposure using fund and country characteristics.

4.1. Fund Characteristics

We first investigate the heterogeneity of the relation between performance and indirect international exposure using several fund characteristics: TNA measured both at the fund and the family level, and fund style (i.e., firm size and book-to-market) based on the characteristics of the fund's stock holdings. Small fund families and small funds are likely to face relatively higher transaction and information costs when investing abroad. Thus, they may benefit more from investing internationally using home-based multinationals with economic exposure to other countries. In each month and country, we sort funds into terciles based on their lagged fund family TNA or fund TNA. We then interact our indirect international exposure measure with the indicator variables for fund family size terciles and fund size terciles. All regressions also include indicator variables for the direct effect of family size and fund size.

Table 6 presents the regression results for the sample of domestic funds. Columns (1) and (2) show that the relation between performance and indirect international exposure is more pronounced among funds that belong to small fund families. The relation is significantly weaker among funds that belong to families in the top tercile of fund family TNA. Columns (3) and (4) report the results for fund size terciles, which suggest that the relation between indirect international exposure and fund performance is not significantly affected by fund size.[16]

We next study the role of fund style in the relation between performance and indirect international exposure. We expect transaction and information costs to be higher for funds investing in small and growth stocks, as discussed by Schultz (2010). Thus, these funds would benefit more from indirect international exposure. We use the Lipper fund classification into 12 fund styles based on market capitalization (large, multi, mid, or small) and book-to-market ratio (value, core, or growth), which is only available for about half of our sample.

[16]The total effect of indirect international exposure is positive and statistically significant at 1% for all fund size terciles.

We then construct a *Large* indicator variable that takes a value of one for large-cap funds and zero for multi, mid, and small cap funds. Similarly, we define a *Value* indicator variable that takes a value of one for funds investing in value stocks and zero for funds investing in core and growth stocks. We interact our indirect international exposure measure with the indicator variables for *Large* or *Value* fund style. All regressions also include indicator variables for the direct effect of fund style.

Columns (5) and (6) show the differential effect of indirect international exposure on the performance of large-cap funds. The estimates of the indirect international exposure coefficients are positive and statistically significant for the benchmark group of funds that is composed of all funds other than large cap funds. The negative and significant coefficient on the interaction term between the indirect international exposure and the *Large* indicator variable suggests that the positive impact of indirect international exposure is more pronounced for funds investing in small- and mid-cap stocks.

Next, we include the interaction of the indirect international exposure with the *Value* indicator variable. The cross-sectional and times-series regression estimates in columns (7) and (8) suggest that the relation between indirect international exposure and fund performance is positive and significant for funds investing in growth and core stocks. The coefficient on the interaction term between the indirect international exposure and the *Value* indicator variable is negative and significant in the case of the fund fixed effects specification. We find that the effect of indirect international exposure on performance is insignificant for funds that focus on value stocks when we sum the interaction term coefficient and the indirect international exposure coefficient.[17]

4.2. Country Characteristics

Our indirect international exposure variable is constructed based on the firm's total foreign sales. The FactSet Revere data allow us to observe foreign sales of each stock at the

[17]Table IA.6 in the Internet Appendix reports the results for the sample of all funds.

country level and calculate separately a fund's exposure to different countries. We use this granular data to exploit the cross-country variation in the performance-indirect international exposure relation. We require funds to have non-missing foreign sales information for at least 75% of their portfolio holdings.

We hypothesize that the positive impact of indirect international exposure on fund performance is less pronounced for funds that invest in stock markets with lower asymmetric information and high liquidity, which arguably corresponds to more developed capital markets. In order to test this prediction, we use several measures to proxy for the exposure of the fund portfolio to developed markets: (1) stock market capitalization-to-GDP; (2) stock market turnover (i.e., ratio of the value of total shares traded to the average market capitalization); (3) financial openness (proxied by the index of Chinn and Ito (2006), which measures a country's degree of capital account openness); (4) MSCI developed market index membership; and (5) legal enforcement (La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)).[18]

In order to calculate a fund's indirect exposure to developed markets, we first estimate the exposure of each domestic stock in the fund's portfolio to developed markets. We split countries into two groups based on the sample median of our developed market proxies in each year and generate an indicator variable for developed markets that takes a value of one for countries above the median of the distribution of each proxy, and zero for countries below the median. Then, we take the sales-weighted average of this indicator variable to obtain an exposure measure at the stock level. Thus, the stock-level exposure to developed markets is the average proportion of sales generated in developed markets. A fund's exposure to developed markets is the portfolio-weighted average of stock-level exposures to developed markets.

Table 7 presents the estimates of the indirect international variable and the indirect inter-

[18]Legal enforcement is based on the following five variables: the efficiency of the judicial system, the rule of law, the corruption level, the expropriation (outright confiscation and forced nationalization by the government), and the likelihood of contract repudiation by the government; the variables are rescaled to range between zero and ten, and higher values correspond to superior levels of legal enforcement.

national exposure to developed markets variables. In all specifications, the estimates of the indirect international exposure coefficient are positive and significant, which indicates that indirect exposure is associated with higher fund performance in less developed markets. The negative and significant coefficient on the indirect exposure to developed markets indicates that the effect is attenuated for funds with higher exposure to developed markets. This result holds across all our measures of capital market development. However, the coefficients on the indirect exposure to developed markets are not statistically significant for the the MSCI membership and legal enforcement measures. We conclude that indirect international exposure generates more benefits in terms of performance when a fund is more exposed to less developed markets.

5. Fund Risk and Diversification

In this section, we discuss the effect of indirect international exposure on fund risk and diversification.

5.1. Risk-Return Trade-Off

Our baseline tests focus on fund performance measured by alpha which adjusts for common risk factors and style but not for portfolio risk. If indirect international exposure helps funds to diversify their portfolios, then this benefit can impact the fund return volatility or the fund risk-return trade-off. Given the wide coverage of our sample of funds with different investment objectives, it is important to control for the volatility in returns.

Panel A of Table 8 reports the regression results for excess returns (over the risk-free rate), total risk and the Sharpe ratio, respectively. Total risk is the annualized standard deviation of fund return using a 12-month window. The Sharpe ratio is calculated as the annualized excess return divided by the annualized standard deviation of the fund return

(i.e., total risk) using a 12-month window. We find that the indirect international exposure provides significantly higher excess returns and higher Sharpe ratios to investors in both the cross section and time series. While in the cross section the relationship between total risk and indirect international exposure is insignificant, in the time series, they are negatively associated.

Panel B of Table 8 provides additional results on the risk-return trade-of based on benchmark-adjusted returns, tracking error and information ratio, respectively. Tracking error is the standard deviation (annualized) of the benchmark-adjusted return. The information ratio is the ratio of the four-factor alpha to the standard deviation of the residuals from the four-factor model (i.e., idiosyncratic risk) using a 12-month window. We find that the indirect international exposure is associated with higher benchmark-adjusted returns, lower tracking error and higher information ratios.

Overall, our findings suggest a negative relationship between indirect international exposure and portfolio risk. This is consistent with indirect international exposure providing international diversification gains to fund investors. Table IA.7 in the Internet Appendix shows that the results are similar in the sample of all funds.

5.2. Spanning Tests

To study whether indirect international exposure exhausts the international diversification benefits for mutual fund investors, we perform portfolio spanning tests following Huberman and Kandel (1987), DeSantis (1994), Bekaert and Urias (1996), Errunza et al. (1999), and Bae et al. (2019). We regress the returns (value weighted) of all international funds in a region (i.e., U.S., Europe or Asia-Pacific) on the returns of domestic funds with below- and above-median indirect international exposure in the same region. The portfolio of international funds is spanned by the two portfolios of domestic funds with differential indirect international exposure if the intercept of the regression is zero (i.e., $\alpha = 0$) and if

the sum of the loadings on the two domestic returns is equal to one (i.e., $\beta_1 + \beta_2 = 1$).

Column (1) of Table 9 shows the results for the sample of U.S. funds. The alpha of the regression is close to zero indicating that international U.S. funds do not provide significantly different risk-adjusted performance than domestic funds with different exposures to U.S. multinationals. Furthermore, the exposure of international funds to domestic funds with above-median indirect exposure (i.e., $\beta_2 = 0.684$) is larger than the exposure to domestic funds with below-median indirect exposure (i.e., $\beta_1 = 0.377$). The sum of the two loadings is not significantly different from one (i.e., $\beta_1 + \beta_2 = 0.377 + 0.684 = 1.061$). We conclude that the joint hypothesis that the alpha equals zero and the sum of the two betas equals one cannot be rejected at a conventional significance level (i.e., $p = 0.269$). Thus, returns of U.S. funds investing in foreign stocks are spanned by U.S. domestic funds with different indirect international exposure.

In contrast to the U.S., international funds domiciled in Europe and Asia-Pacific are not spanned by their domestic counterparts with above- and below-median indirect international exposure, as reported in columns (2) and (3). The rejection of the spanning hypotheses for these regions is due to the fact that their betas do not add up to one. However, their alphas are not statistically different from zero. The different results between these regions may be due to the dominating role of U.S. stock market in the world. Whereas it is important for foreign investors to obtain direct exposure to the U.S. market, it is less important for U.S. investors to obtain direct exposure to foreign markets, as U.S. multinationals already provide fairly large diversification benefits.

6. Alternative Sources of Performance

In this section, we conduct several tests to better understand the sources of the superior performance of funds that provide more indirect international exposure.

6.1. Expense Ratio

Our results so far indicate a positive relation between indirect international exposure and fund performance particularly for funds that belong to small fund families and focus on small and growth stocks. We argue that holding the level of total international diversification constant, indirect international diversification should be associated with lower fund fees.

We examine this hypothesis by estimating regressions in which the dependent variable is the monthly total expense ratio. Table 10 presents the results. Consistent with our hypothesis, we find a smaller coefficient on the indirect international exposure than the direct exposure, which suggests that diversifying through investments in home-based multinationals is associated with significantly lower expense ratios for the funds. However, the economic magnitude of the indirect international exposure is small. The estimate in column (2) indicates that a one-standard-deviation increase in indirect international exposure is associated with a 0.06 basis point decrease in the monthly expense ratio. This effect is small relative to the overall performance effect of 4.6 basis points in Table 3.[19] We conclude that most of the outperformance is due to differences in gross performance and not due to fees.

6.2. Fund Activeness

Our baseline results could be driven by the differential performance of multinational companies. The results based on characteristic-adjusted returns do not support this idea but rather that the outperformance of funds with high indirect international exposure is driven by fund manager skill. To further address this issue, we estimate the impact of indirect exposure on the performance of passive funds (i.e., index funds and exchange-traded funds) whose tracking error is less than 0.01. Panel A of Table 11 shows that the estimated coefficients on the indirect international exposure are statistically insignificant in the sample of passive funds. These results suggest that the baseline findings for active funds can be

[19]Table IA.8 in the Internet Appendix reports similar results for the sample of all funds.

attributed to managerial skill rather than to the passive exposure to multinationals.[20]

In an alternative analysis, we use the active share measure of Cremers and Petajisto (2009) to proxy for fund activeness. Specifically, we sort funds in our main sample of domestic active funds into terciles based on their active share and then interact our indirect international exposure measure with indicator variables for these terciles. Panel B of Table 11 reports the results. We find that the effect of indirect international exposure is more pronounced for funds in the middle and top terciles of active share than for funds in the bottom tercile. This finding supports the notion that our results are driven by fund manager skill.

6.3. Pseudo Fund Returns

To further control for the performance of foreign portfolio investment, we calculate pseudo fund returns based on a hypothetical portfolio that is invested directly in local stocks in the countries where the sales are originated. The pseudo fund return is the monthly raw fund return calculated based on local stocks in the same industry as the stocks in a fund's portfolio. We first calculate industry returns by simply taking the equal-weighted average of the returns of all firms in the same industry and country in a given month. Next, in order to calculate a pseudo return at the firm level, we take the foreign sales-weighted average of these industry returns in the country where the firm's sales are generated. Finally, we take the portfolio-weighted average of the stock-level pseudo returns in order to calculate the fund-level pseudo returns.

Table IA.10 in the Internet Appendix presents the baseline regressions of fund alphas on indirect international exposure in which we control for pseudo fund returns. In columns (1) and (2) we control for the contemporaneous pseudo fund return and in columns (3) and (4) we control for the one-month lagged pseudo fund return. In all specifications, the

[20]In Table IA.9 of the Internet Appendix, we continue to find an insignificant relation between indirect international exposure and fund returns in the sample of all funds.

indirect international exposure coefficient remains positive and statistically significant, which suggests that the performance effect of indirect exposure cannot be explained by direct portfolio investment. We conclude that international corporate investment has different implications than international portfolio investment in terms of performance. The alphas are highly positively correlated with contemporaneous pseudo returns (with coefficients of about 0.7) and slightly negatively correlated with lagged pseudo returns (with coefficients of about -0.04).

6.4. Complicated Firms

Firms with foreign sales may be more complicated than purely domestic firms, which may explain our results. We extend the notion of complicated firms in Cohen and Lou (2012) to an international setting. Complicated firms are defined alternatively using three measures. The first measure is an indicator variable that takes a value of one for firms operating in more than one four-digit NAIC industry, and zero otherwise. The second measure is the average of the number of distinct four-digit NAICS industries in which a firm operates. The third measure is an indicator variable that takes a value of one if the firm's entity structure is a holding company, and zero otherwise.[21] All three stock-level measures are obtained from Factset and are aggregated at the fund-level by taking their portfolio-weighted averages. Table IA.11 in the Internet Appendix reports the results of our baseline regression when we control for the exposure to domestic complicated firms. The coefficient on the indirect international exposure remains positive and significant.

[21] In our sample, 61% of the firm-year observations are associated with more than one four-digit NAIC industry and only 1% of the observations belong to a holding company. The median number of distinct four-digit NAIC industries is two.

6.5. International Investment Treaties

We also employ an alternative measure of cross-country heterogeneity based on international investment agreements that can take the form of bilateral and multilateral investment treaties and free trade agreements following Bhagwat, Brogaard, and Julio (2020). The international investment agreements data is obtained from the United Nation's Investment Policy Hub website.[22] We collect bilateral investment treaties (BITs) between country pairs over the period 1991-2015. Then, we construct an indicator variable that takes a value of one if the firm's headquarter country has a BIT with the country in which the sales are generated. We carry this indicator variable forward starting with the year in which the treaty is signed. We calculate the stock-level exposure to foreign markets by simply taking the sales-weighed average of this indicator variable. Similarly, a fund's indirect international exposure to investment treaties is calculated as the weighted average of the stock-level exposure measures based on portfolio holdings lagged by one year relative to the quarter in which fund performance is measured.

Table IA.12 in the Internet Appendix reports the estimates of the regression of fund alpha on the exposure to BITs. The results show that the coefficient estimates on the exposure to BITs are positive and significant. Thus, funds more exposed to BITs tend to have better performance. The economic and statistical significance of the estimate is higher in the fund-fixed effects regressions.

7. Robustness

We present several robustness tests of our primary findings in the Internet Appendix. We first check the robustness of our findings from the baseline analysis in Table 3 using an alternative definition of indirect international exposure based on foreign assets rather than

[22]The data are available at: https://investmentpolicyhubold.unctad.org.

foreign sales. Columns (1) and (2) of Table IA.13 report the results. We continue to find a positive and significant effect of indirect international exposure on fund performance. We also check the robustness of our findings using firms' sales in each country, rather than their total foreign sales, drawn from the FactSet Revere database.[23]. Columns (3) and (4) of Table IA.13 show that the performance effect of indirect international exposure based on individual country sales is similar to those in Table 3.

In our baseline specifications we winsorize the explanatory variables as well as the dependent variables at the top and bottom 1%, but we do not winsorize our international exposure variables since these are bounded between zero and one. In Table IA.14 we repeat our baseline regressions with international exposure variables winsorized at the top and bottom 1% of the distribution. Our results remain qualitatively unchanged.

In Table IA.15, we check the robustness of our results to alternative methods to cluster the standard errors. Our results are robust when we cluster the standard errors at the fund family level and at the fund and year (two way) level. Table IA.15 also presents the results using the Fama-MacBeth cross-sectional regression approach. The results are also robust to this alternative estimation method.

The data used in this study allow us to begin our sample period in 2000 but the earlier years of the sample are dominated by U.S. funds. In order to obtain a more balanced distribution of countries, our baseline regressions in Table 3 focus on the 2005-2015 period. Table IA.16 shows that the results are robust when we use the extended sample period, 2000-2015. We also check the robustness of our results in two subperiods: 2005-2010 and 2011-2015. Table IA.16 reports the results, which suggest that our findings are similar across subperiods and not specific to a particular time period.

We also examine the relation between performance and indirect international exposure for domestic funds based on the fund's investment region: North America, Asia-Pacific, Europe, and emerging markets. These regions differ in capital market development, fund

[23]We obtain total foreign sales when we sum the firms' sales in each country other than the domestic country reported on FactSet Fundamentals

industry development, as well as regulatory environment. Panel A of Table IA.17 reports the estimates separately for each region in the subsample of domestic funds. We find that the impact of indirect international exposure on fund performance is pervasive across regions. Panel B of Table IA.17 provides similar results for the sample of all funds. We also restrict our sample to mutual funds domiciled in the U.S. to check if our results continue to hold in this sample, which is often the sample used in the mutual fund literature. Table IA.18 reports the results for the samples of U.S. funds and non-U.S. funds. Our baseline results hold in the non-U.S. sample both with and without fund-fixed effects. Similarly, indirect international exposure is positively correlated with fund performance in the sample of U.S. funds, but the relation is statistically insignificant in the cross section.

8. Conclusion

We show that mutual funds worldwide have a large indirect exposure to international stock markets through their holdings of home-based firms with foreign operations. We show that the home bias in fund portfolios is less severe when we take into account that firms source sales from foreign operations.

We find that indirect international exposure improves future fund performance. This effect seems to be driven by fund manager skill, rather than the performance of multinationals. The positive effect of indirect international exposure on fund performance is concentrated in funds with higher transaction and information costs such as funds that belong to small families, funds that invest in small stocks and growth stocks, and funds more exposed to less developed capital markets. These findings are consistent with the hypothesis that transaction and information costs impair international portfolio diversification and help to explain the home bias phenomenon.

Our results provide a new link between international portfolio diversification and international corporate diversification. We conclude that international corporate diversification

can play an important role in overcoming barriers to investing overseas and reducing home bias beyond the effect of international portfolio diversification.

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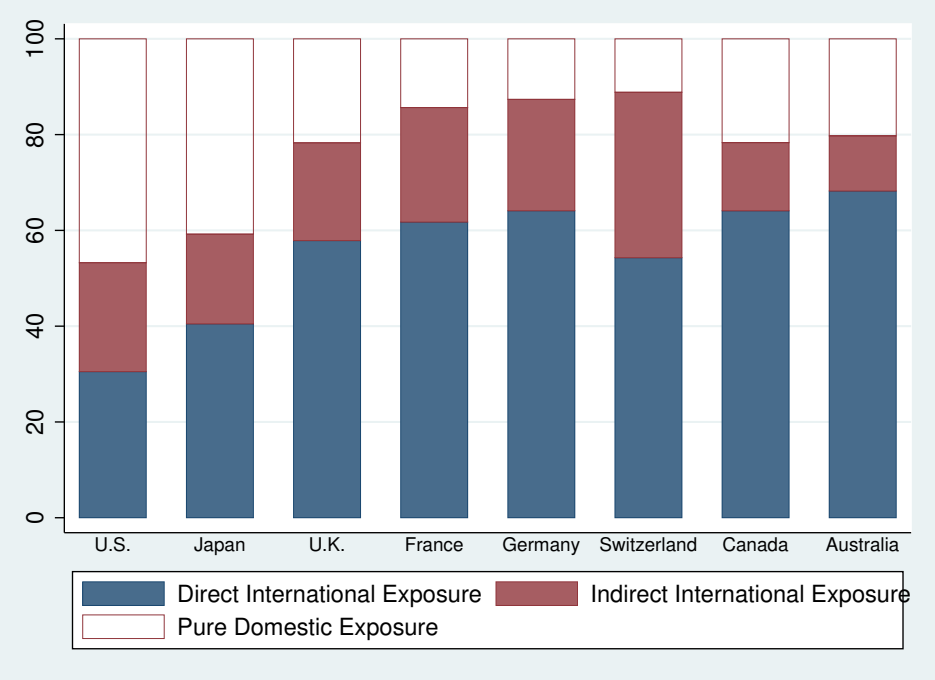

Figure 1: International Exposure Measures – Selected Countries

This figure shows the total international exposure as a percentage of total portfolio holdings in eight elected countries as of the last quarter of 2015. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. *Direct International Exposure* is the fraction of the funds holdings invested in foreign stocks. *Pure Domestic Exposure* is the fraction of fund holdings in pure domestic stocks, which corresponds to home bias adjusted for foreign sales of domestic companies. The sample consists of actively managed domestic and international equity mutual funds.

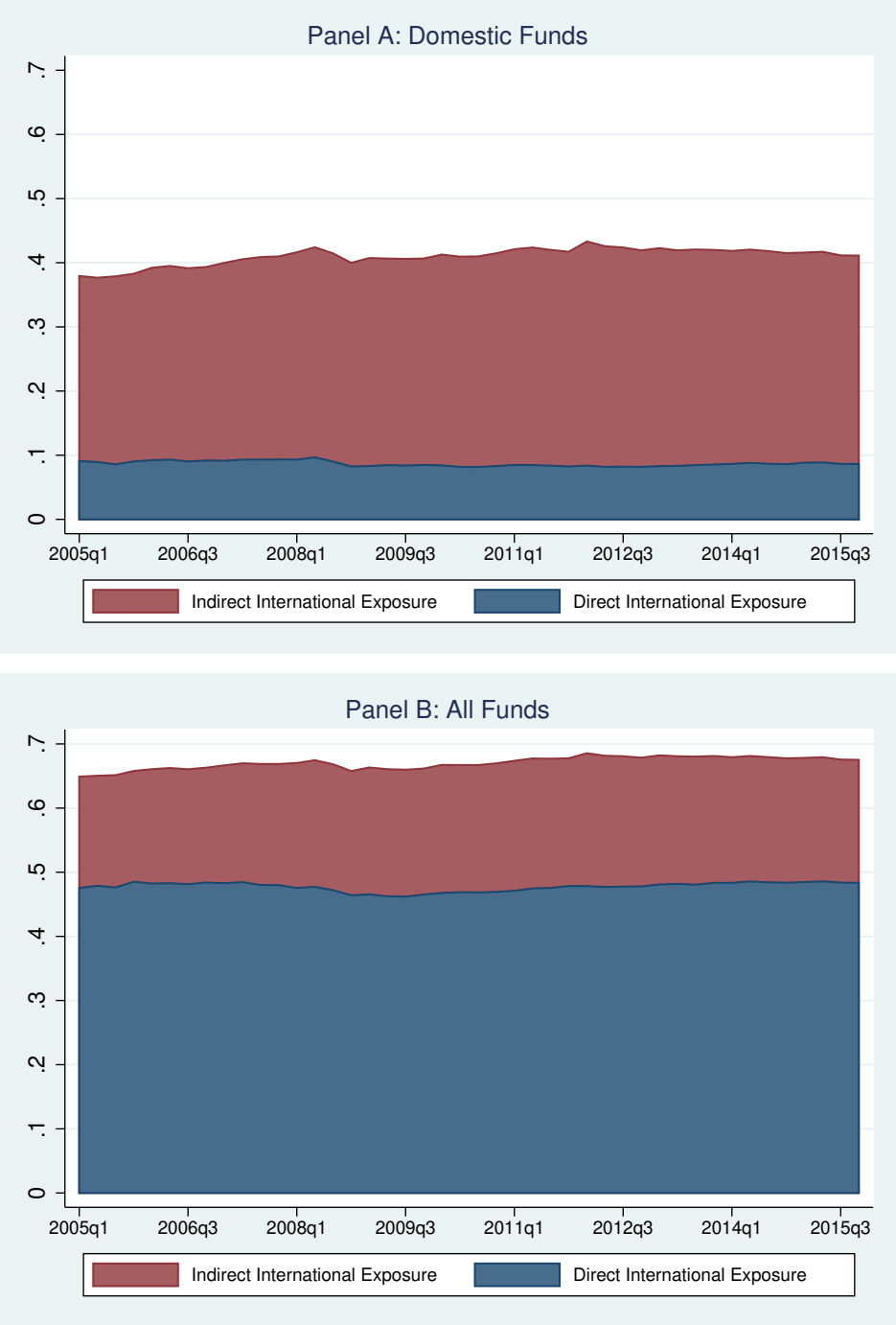

Figure 2: International Exposure Measures Over Time

This figure shows the average indirect and direct international exposure measures by quarter. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. *Direct International Exposure* is the fraction of the funds holdings invested in foreign stocks. The sample in Panel A consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. The sample in Panel B consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period.

Table 1: Summary Statistics

This table presents mean, standard deviation, 25th percentile, median, 75th percentile, and number of observations for each variable. The sample in Panel A consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. The sample in Panel B consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period. Variable definitions are provided in Table A.1 in the Appendix.

Panel A: Domestic Funds

	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Number of Observations
Indirect International Exposure	0.323	0.156	0.221	0.305	0.405	456,235
Direct International Exposure	0.086	0.121	0.009	0.052	0.111	456,235
Four-Factor Alpha (%)	-0.042	2.916	-1.325	-0.045	1.241	456,235
Five-Factor Alpha (%)	-0.031	3.092	-1.424	-0.031	1.362	360,572
Value Added ($ million)	0.471	47.982	-1.396	0.020	1.810	456,106
Characteristic-Adjusted Return (%)	0.380	2.798	-1.010	0.358	1.748	456,214
Fund Age	14.458	11.127	7.250	11.750	17.833	456,235
Fund TNA ($ million)	917	4,205	34	136	547	456,235
Family TNA ($ million)	39,908	131,357	724	4,594	23,724	456,235
Total Expense Ratio (%)	1.525	0.680	1.073	1.429	1.801	456,235
Flow (%)	-0.311	5.239	-1.681	-0.518	0.615	456,212
Total Load (%)	2.187	2.398	0.000	1.738	3.500	456,235
Number of Countries of Sale	1.166	0.888	1.000	1.000	1.000	456,235
Team Managed	0.510	0.500	0.000	1.000	1.000	456,235
Four-Factor Alpha (Global)	-0.026	3.231	-1.669	-0.019	1.612	456,235
Eight-Factor Alpha (Global + Regional)	-0.011	3.010	-1.370	-0.016	1.333	456,235
Four-Factor Alpha (Country)	-0.034	2.530	-1.057	-0.044	0.987	456,235
Eight-Factor Alpha (Country + Regional)	-0.045	2.559	-1.127	-0.062	1.025	456,235
Excess Return (%)	0.498	5.597	-2.539	0.851	3.831	456,235
Total Risk	0.181	0.089	0.115	0.159	0.227	456,230
Sharpe Ratio	0.398	3.581	-2.009	0.681	2.907	456,230
Benchmark-Adjusted Return (%)	0.003	1.967	-0.913	-0.017	0.901	455,409
Tracking Error	0.064	0.041	0.037	0.054	0.078	454,630
Information Ratio	-0.113	3.975	-2.550	-0.092	2.351	456,235
Active Share	0.724	0.224	0.588	0.769	0.913	403,233

Panel B: All Funds

	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Number of Observations
Indirect International Exposure	0.193	0.187	0.007	0.171	0.320	902,248
Direct International Exposure	0.477	0.431	0.050	0.293	0.984	902,248
Four-Factor Alpha (%)	-0.114	2.759	-1.352	-0.126	1.113	902,248
Five-Factor Alpha (%)	-0.110	2.903	-1.438	-0.112	1.211	713,476
Value Added ($ million)	0.068	43.214	-1.205	-0.000	1.288	901,976
Characteristic-Adjusted Return (%)	0.324	2.610	-0.992	0.292	1.607	902,083
Fund Age	13.482	9.901	6.917	11.083	16.917	902,248
Fund TNA ($ million)	726	3,697	31	111	403	902,248
Family TNA ($ million)	30,410	107,248	847	4,654	21,217	902,248
Total Expense Ratio (%)	1.616	0.663	1.176	1.550	1.960	902,248
Flow (%)	-0.281	5.443	-1.718	-0.481	0.690	902,198
Total Load (%)	2.609	2.558	0.025	2.000	4.025	902,248
Number of Countries of Sale	1.456	1.575	1.000	1.000	1.000	902,248
Team Managed	0.482	0.500	0.000	0.000	1.000	902,248
Domestic Fund	0.506	0.500	0.000	1.000	1.000	902,248
Global Fund	0.170	0.375	0.000	0.000	0.000	902,248
Regional Fund	0.248	0.432	0.000	0.000	0.000	902,248
Foreign Fund	0.077	0.266	0.000	0.000	0.000	902,248
Four-Factor Alpha (Global)	-0.123	3.027	-1.650	-0.125	1.386	902,248
Eight-Factor Alpha (Global + Regional)	-0.098	2.828	-1.383	-0.107	1.178	902,248
Four-Factor Alpha (Country)	-0.105	2.536	-1.192	-0.114	0.973	902,248
Eight-Factor Alpha (Country + Regional)	-0.113	2.568	-1.243	-0.124	1.006	902,248
Excess Return (%)	0.437	5.596	-2.559	0.740	3.775	902,248
Total Risk	0.181	0.087	0.115	0.158	0.227	902,242
Sharpe Ratio	0.347	3.578	-2.038	0.592	2.861	902,242
Benchmark-Adjusted Return (%)	-0.036	2.016	-0.982	-0.040	0.917	898,356
Tracking Error	0.066	0.040	0.039	0.056	0.080	895,747
Information Ratio	-0.277	3.981	-2.723	-0.270	2.181	902,248
Active Share	0.734	0.216	0.604	0.781	0.912	791,994

Table 2: Univariate Sort Results

This table presents average risk-adjusted performance for portfolios of mutual funds. Fund performance is the monthly alpha from the four-factor model estimated using regional factors based on a fund's investment region. In each month, funds are split into five quintiles based on last quarter's indirect and direct international exposure measures. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. *Direct International Exposure* is the fraction of the funds holdings invested in foreign stocks. The sample in columns (1) and (2) consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. The sample in columns (3) and (4) consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period. Variable definitions are provided in Table A.1 in the Appendix. Newey-West standard errors with 12 lags are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Domestic Funds		All Funds	
	Indirect International Exposure	Direct International Exposure	Indirect International Exposure	Direct International Exposure
	(1)	(2)	(3)	(4)
Quintile 1	-0.103	-0.038	-0.198	-0.048
	(0.013)	(0.013)	(0.007)	(0.008)
Quintile 2	-0.079	-0.056	-0.186	-0.022
	(0.009)	(0.009)	(0.006)	(0.005)
Quintile 3	-0.060	-0.023	-0.119	-0.110
	(0.008)	(0.007)	(0.007)	(0.006)
Quintile 4	-0.053	-0.007	-0.077	-0.192
	(0.008)	(0.007)	(0.006)	(0.005)
Quintile 5	0.086	-0.087	0.012	-0.197
	(0.009)	(0.009)	(0.006)	(0.007)
Quintile 5 - Quintile 1	0.189**	-0.048	0.210***	-0.149**
	(0.076)	(0.096)	(0.046)	(0.058)

Table 3: Baseline Regression Results

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample in columns (1) and (2) consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. The sample in columns (3) and (4) consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Domestic Funds		All Funds	
	(1)	(2)	(3)	(4)
Indirect international exposure	0.483***	1.118***	0.377***	1.137***
	(7.467)	(10.727)	(6.843)	(12.279)
Direct international exposure	-0.151**	-0.157	0.005	0.252***
	(-2.571)	(-1.373)	(0.124)	(3.322)
log(1+Fund age)	-0.005	-0.134***	0.007	-0.087**
	(-0.709)	(-2.655)	(1.275)	(-2.406)
log(Fund TNA)	-0.015***	-0.242***	-0.017***	-0.241***
	(-4.935)	(-21.414)	(-7.884)	(-30.083)
log(Family TNA)	0.016***	-0.085***	0.016***	-0.053***
	(6.951)	(-5.086)	(9.238)	(-4.486)
Total expense ratio (%)	-0.085***	-0.124***	-0.071***	-0.061***
	(-7.170)	(-3.994)	(-9.639)	(-3.168)
Total load	-0.000	-0.013	-0.002	-0.009
	(-0.182)	(-1.147)	(-1.551)	(-0.987)
log(1+Number of countries of sale)	0.024	12.478***	0.045***	12.640***
	(1.379)	(103.011)	(4.757)	(144.853)
Team managed dummy	0.009	-0.177	0.025***	-0.511
	(1.066)	(-0.198)	(4.073)	(-0.941)
Benchmark FE	Yes	No	Yes	No
Fund country FE	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes
Observations	456,235	456,235	902,248	902,248
Adjusted R^2	0.039	0.040	0.038	0.040

Table 4: Additional Performance Measures

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable in columns (1) and (2) is the alpha from the five-factor model estimated using regional factors (including the illiquidity return premium) based on a fund's investment region in each month. The dependent variable in columns (3) and (4) is the characteristic-adjusted return, defined as the fund portfolio-weighted average of the individual stock characteristic-adjusted returns, i.e., the difference between the individual stock return and the return of the size/book-to-market/foreign sales portfolio to which a stock belongs in each month. The portfolios are estimated using five quintiles based on size by five quintiles based on book-to-market ratio. These 25 portfolios are further split into two groups based on whether foreign sales exceed 25% of total sales or not. The dependent variable in columns (5) and (6) is the value added (in millions of U.S. dollars per month) estimated as the gross four-factor alpha multiplied by the lagged fund TNA. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample in Panel A consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. The sample in Panel B consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Domestic Funds

	Five-Factor Alpha		Characteristic-Adjusted Return		Value Added	
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect international exposure	0.379***	0.940***	0.273***	0.503***	1.647**	2.846***
	(4.856)	(6.642)	(3.467)	(4.238)	(2.053)	(2.733)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No
Fund country FE	Yes	No	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes
Observations	360,572	360,562	456,214	456,214	456,106	456,102
Adjusted R^2	0.043	0.043	0.090	0.103	0.004	0.004

Panel B: All Funds

	Five-Factor Alpha		Characteristic-Adjusted Return		Value Added	
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect international exposure	0.245***	1.007***	0.143**	0.403***	1.779***	4.520***
	(3.685)	(7.926)	(2.168)	(3.834)	(2.913)	(5.064)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No
Fund country FE	Yes	No	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes
Observations	713,474	713,445	902,083	902,083	901,976	901,969
Adjusted R^2	0.042	0.043	0.100	0.111	0.002	0.001

Table 5: Alternative Factor Models

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable in columns (1) and (2) is the alpha from the four-factor model estimated using global factors in each month. The dependent variable in columns (3) and (4) is the alpha from the eight-factor model estimated using global factors and regional factors based on a fund's investment region in each month. The dependent variable in columns (5) and (6) is the alpha from the eight-factor model estimated using country factors based on a fund's investment country in each month. The dependent variable in columns (7) and (8) is the alpha from the eight-factor model estimated using country factors based on a fund's investment country and regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Four-Factor Alpha (Global)		Eight-Factor Alpha (Global + Regional)		Four-Factor Alpha (Country)		Eight-Factor Alpha (Country + Regional)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indirect international exposure	0.624***	1.285***	0.558***	1.228***	0.115**	0.463***	0.190***	0.498***
	(9.258)	(12.044)	(7.979)	(11.666)	(2.069)	(5.215)	(3.444)	(5.788)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	No	No	No	No
Investment Country FE	No	No	No	No	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	456,235	456,235	456,235	456,235	456,235	456,235	456,235	456,235
Adjusted R^2	0.038	0.038	0.037	0.039	0.049	0.050	0.052	0.054

Table 6: Effect of Fund Characteristics

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. Funds are classified into three groups based on their lagged family TNA and fund TNA in each country of domicile and month. Funds are also classified based on their style in terms of market capitalization (Large, Mid, Multi or Small) and book-to-market ratio (Value, Core or Growth) of portfolio holdings. The regressions include interactions of indirect international exposure with indicator variables for terciles of family TNA, terciles of fund TNA, fund style (firm market capitalization or book-to-market) as well as their direct effect (coefficients not shown). All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Fund Family TNA		Fund TNA		Fund Style Market Capitalization		Fund Style Book-to-Market	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indirect International Exposure	0.579***	1.165***	0.481***	1.004***	0.232**	0.749***	0.223**	0.779***
	(7.537)	(8.448)	(6.075)	(7.510)	(2.037)	(5.481)	(2.365)	(6.201)
Indirect International Exposure × Tercile 2	-0.048	0.117	-0.023	0.062				
	(-0.644)	(0.770)	(-0.290)	(0.454)				
Indirect International Exposure × Tercile 3	-0.234***	-0.307*	-0.020	0.207				
	(-3.276)	(-1.650)	(-0.278)	(1.267)				
Indirect International Exposure × Large					-0.275*	-0.478**		
					(-1.940)	(-2.454)		
Indirect International Exposure × Value							-0.215	-1.047***
							(-0.848)	(-3.470)
Benchmark FE	Yes	No	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	456,235	456,235	456,235	456,235	254,853	254,853	254,853	254,853
Adjusted R^2	0.039	0.040	0.039	0.040	0.066	0.070	0.066	0.070

Table 7: Effect of Investment Country Characteristics

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. The exposure measures are calculated based on FactSet Revere data, which provides a breakdown of foreign sales by each individual country. Funds are required to have at least 75% of their stock holdings value with non-missing total foreign sales. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. *Indirect International Exposure to Developed Markets* is the fraction of foreign sales generated in developed markets and is calculated based on a dummy variable that takes a value of one if the country in which the sales are generated is above-median for each developed market proxy, and zero otherwise. The developed market proxies are stock market capitalization-to-GDP, stock market turnover, financial openness, MSCI developed market index membership, and legal enforcement. Stock market turnover is the ratio of the value of total shares traded to the average real market capitalization. Financial openness is proxied by the index of Chinn and Ito (2006), which measures a country's degree of capital account openness. Legal enforcement is based on the following five variables as defined in La Porta et al. (1998): efficiency of the judicial system, rule of law, corruption, risk of expropriation (outright confiscation and forced nationalization by the government), and the likelihood of contract repudiation by the government (the variables are rescaled to range between zero to ten and higher values correspond to superior levels of legal enforcement). The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Variable definitions are provided in Table A.1 in the Appendix. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Stock Market Capitalization		Stock Market Turnover		Financial Openness		MSCI Membership		Legal Enforcement	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Indirect International Exposure	1.261***	2.873***	0.937***	2.355***	0.852***	2.386***	0.675***	2.282***	0.697***	2.263***
	(10.213)	(17.205)	(7.564)	(14.223)	(7.074)	(14.598)	(6.034)	(14.397)	(5.923)	(13.969)
Indirect International Exposure to Developed Markets	-0.634***	-0.961***	-0.281***	-0.247**	-0.235**	-0.338**	-0.055	-0.218	-0.072	-0.159
	(-6.939)	(-8.426)	(-3.236)	(-2.106)	(-2.388)	(-2.412)	(-0.497)	(-1.411)	(-0.709)	(-1.103)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	372,028	372,024	372,028	372,024	372,028	372,024	372,028	372,024	372,028	372,024
Adjusted R^2	0.044	0.047	0.044	0.047	0.044	0.047	0.044	0.047	0.044	0.047

Table 8: Fund Performance and Risk

This table presents estimates of ordinary least squares (OLS) regressions of fund risk and risk-adjusted performance measures. *Excess Return* is the fund return in excess of the one-month U.S. Treasury bill rate in each month. *Total Risk* is the annualized standard deviation of fund return using a 12-month window in each month. *Sharpe Ratio* is the ratio of the annualized excess fund return to the annualized standard deviation of fund return using a 12-month window in each month. *Benchmark-Adjusted Return* is defined as the the difference between the fund's return and the return on its benchmark in each month. *Tracking error* is the annualized standard deviation of the benchmark-adjusted return using a 12-month window in each month. *Information Ratio* is the ratio of the annualized four-factor alpha to the annualized standard deviation of the residuals from the four-factor model estimated using regional factors based on a fund's investment region using a 12-month window in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A

	Excess Return		Total Risk		Sharpe Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect international exposure	0.466***	1.004***	0.007	-0.011**	0.176***	0.408***
	(5.446)	(7.545)	(1.061)	(-2.267)	(3.328)	(4.741)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No
Fund country FE	Yes	No	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes
Observations	456,235	456,235	456,230	456,230	456,230	456,230
Adjusted R^2	0.678	0.679	0.764	0.829	0.670	0.671

Panel B

	Benchmark-Adjusted Return		Tracking Error		Information Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect international exposure	0.141***	0.423***	-0.047***	-0.016***	0.365***	1.120***
	(2.605)	(5.386)	(-6.381)	(-5.073)	(4.628)	(9.116)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No
Fund country FE	Yes	No	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes
Observations	455,409	455,409	454,630	454,630	456,235	456,235
Adjusted R^2	0.028	0.035	0.506	0.866	0.030	0.034

Table 9: Portfolio Spanning Tests

This table presents estimates of ordinary least squares (OLS) regressions of returns on a portfolio of international funds on the returns of two domestic fund portfolios: funds with below-median indirect international exposure, and funds with above-median indirect international exposure. The fund portfolios are weighted by TNA. The sample consists of actively managed domestic and international equity funds over the 2005 to 2015 period. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	U.S.	Europe	Asia-Pacific
	(1)	(2)	(3)
Return on Below-Median Domestic Funds (β_1)	0.377*	0.139**	0.310***
	(1.924)	(2.310)	(3.176)
Return on Above-Median Domestic Funds (β_2)	0.684***	0.785***	0.556***
	(3.267)	(13.698)	(5.166)
Constant (α)	-0.001	-0.001	-0.000
	(-0.737)	(-1.403)	(-0.115)
Observations	132	132	132
Adjusted R^2	0.864	0.969	0.816
$H_0 : \alpha = 0$			
F-statistic	0.544	1.968	0.013
p-value	(0.462)	(0.163)	(0.908)
$H_0 : \beta_1 + \beta_2 = 1$			
F-statistic	2.407	25.247***	13.343***
p-value	(0.123)	(0.000)	(0.000)
$H_0 : \alpha = 0, \beta_1 + \beta_2 = 1$			
F-statistic	1.325	14.555***	6.853***
p-value	(0.269)	(0.000)	(0.001)

Table 10: Total Expense Ratio

This table presents estimates of ordinary least squares (OLS) regressions of the total expense ratio. The dependent variable is the fund total expense ratio in each month (i.e., the annual expense ratio divided by 12). *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Variable definitions are provided in Table A.1 in the Appendix. F-statistic refers to the test of equality between the coefficient estimates for direct and indirect international exposure. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
Indirect International Exposure	-0.008	-0.015***
	(-1.495)	(-4.265)
Direct International Exposure	0.033***	0.000
	(5.863)	(0.117)
Past Performance (%)	-0.000***	-0.000
	(-5.268)	(-0.311)
log(1+Fund Age)	0.001	0.004***
	(1.139)	(2.784)
log(Fund TNA)	-0.005***	-0.004***
	(-15.309)	(-13.177)
log(Family TNA)	-0.003***	-0.001***
	(-9.480)	(-2.682)
Flow (%)	-0.000*	0.000**
	(-1.831)	(2.429)
Total Load	0.006***	0.002***
	(20.309)	(3.426)
log(1+Number of Countries of Sale)	0.006**	-0.014***
	(2.184)	(-4.740)
Team Managed	-0.005***	0.111
	(-4.406)	(1.575)
Benchmark FE	Yes	No
Country FE	Yes	No
Time FE	Yes	Yes
Fund FE	No	Yes
Observations	456,083	456,079
Adjusted R^2	0.594	0.931
F-statistic	33.07***	14.68***
p-value	(0.000)	(0.000)

Table 11: Passive Funds and Fund Active Share

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. Panel A reports the estimates for the sample of passive domestic equity mutual funds over the 2005 to 2015 period with a maximum tracking error of 0.01. Panel B reports the estimates of regressions that include interactions of indirect international exposure with indicator variables for terciles of active share as well as their direct effect (coefficients not shown). The sample in Panel B consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. All control variables are lagged by one period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Passive Funds

	(1)	(2)
Indirect international exposure	0.928	0.690
	(0.763)	(0.492)
Controls	Yes	Yes
Benchmark FE	Yes	No
Fund country FE	Yes	No
Month FE	Yes	Yes
Fund FE	No	Yes
Observations	15,010	15,009
Adjusted R^2	0.151	0.146

Panel B: Fund Active Share

	(1)	(2)
Indirect international exposure	0.241***	0.463***
	(2.772)	(3.198)
Indirect International Exposure × Tercile 2	0.204**	0.347*
	(2.320)	(1.917)
Indirect International Exposure × Tercile 3	0.280**	1.616***
	(2.283)	(6.757)
Controls	Yes	Yes
Benchmark FE	Yes	No
Fund country FE	Yes	No
Month FE	Yes	Yes
Fund FE	No	Yes
Observations	423,834	423,834
Adjusted R^2	0.038	0.038

Table A.1: Variable Definitions

Variable	Definition
Indirect International Exposure	Fraction of the funds holdings invested in domestic stocks weighted by foreign sales (FactSet Fundamentals and Ownership).
Direct International Exposure	Fraction of the funds holdings invested in foreign stocks (FactSet Fundamentals and Ownership)
Four-Factor Alpha	Alpha from the four-factor model estimated with 36 months of past fund return data and with regional factors based on a fund's investment region in each month (Lipper).
Five-Factor Alpha	Alpha from the five-factor model, including the illiquidity return premium, estimated with 36 months of past fund return data and with regional factors based on a fund's investment region in each month (Lipper).
Value Added	Gross four-factor alpha multiplied by the lagged fund TNA in millions of U.S. dollars per month.
Characteristic-Adjusted Return	Fund portfolio-weighted average of the individual stock characteristic-adjusted returns, i.e., the difference between the individual stock return and the return of the size/book-to-market/foreign sales portfolio to which a stock belongs in each month (Lipper).
Fund Age	Number of years since the fund launch date (Lipper).
Fund TNA	Total net assets in millions of U.S. dollars (Lipper).
Family TNA	Total net assets in millions of U.S. dollars of equity funds in the same management company excluding the own fund's TNA (Lipper).
Total Expense Ratio	Total annual expenses as a fraction of TNA (Lipper).
Flow	Percentage growth in TNA in a quarter, net of internal growth (assuming reinvestment of dividends and distributions) (Lipper).
Total Load	Sum of front- and back-end loads as a fraction of new investments (Lipper).
Number of Countries of Sale	Number of countries in which the fund is offered for sale (Lipper).
Team Managed	Dummy variable that takes a value of one if the fund is managed by a team, and zero otherwise (Lipper).
Excess Return	Fund return in excess of the one-month U.S. Treasury bill rate in each month (Lipper).
Total Risk	Annualized standard deviation of fund return estimated using a 12-month window in each month (Lipper).
Sharpe Ratio	Ratio of the annualized excess fund return over the risk free rate to the annualized standard deviation of total return estimated using a 12-month window in each month (Lipper).
Benchmark-Adjusted Return	Difference between the fund's return and the return on its benchmark in each month (Lipper).
Tracking Error	Annualized standard deviation of the benchmark-adjusted return using a 12-month window in each month (Lipper).
Information Ratio	Ratio of the annualized four-factor alpha to the annualized standard deviation of the residuals from the four-factor model estimated based on regional factors using a 12-month window in each month (Lipper).
Active Share	Fraction of a fund's portfolio holdings that differ from its benchmark index holdings in each month (Factset Ownership).

Internet Appendix

How Global is Your Mutual Fund? International Diversification from Multinationals

December 21, 2020

Table IA.1: Sample by Country and Year

This table presents the average number of funds by country and year. The sample in Panel A consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. The sample in Panel B consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period.

Panel A: Domestic Funds

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	9	21	28	32	49	53	57	55	44	41	38
Austria	6	8	9	11	12	12	12	12	12	12	12
Belgium	20	18	15	13	11	10	8	8	8	9	9
Brazil			1	1	27	62	104	127	117	115	87
Canada	197	220	228	234	245	257	259	255	229	215	221
China				2	3	4	4	4	4	4	6
Denmark	12	16	16	15	18	18	16	17	18	17	21
Finland	15	16	17	17	16	18	19	18	18	19	17
France	86	100	97	105	98	94	94	91	92	92	97
Germany	57	57	57	56	51	45	42	43	41	41	40
Hong Kong	1	1	1	2	3	4	4	4	4	5	6
India	63	77	85	113	154	188	212	223	234	236	239
Indonesia							3	9	14	13	13
Italy	42	42	38	31	29	27	24	19	16	15	14
Japan	152	162	168	171	177	174	176	181	170	161	161
Malaysia	29	34	50	73	73	70	73	74	79	82	81
Netherlands	10	11	10	10	8	9	9	9	9	7	7
Norway	42	42	41	43	43	45	45	45	44	40	37
Poland	6	7	9	10	12	17	23	24	25	24	22
Portugal	15	17	17	17	17	17	17	15	12	12	10
Singapore	6	6	7	8	9	9	10	10	11	11	13
South Africa		30	40	52	72	81	83	91	91	91	91
Spain	61	67	71	73	69	64	60	55	47	45	41
Sweden	79	88	89	86	83	86	85	76	69	69	65
Switzerland	41	41	44	49	50	55	61	66	65	67	75
Taiwan					83	147	153	149	143	135	133
Thailand	11	7	31	75	75	75	33				
U.K.	223	240	252	264	276	290	291	290	273	278	283
U.S.	1,838	1,841	1,804	1,783	1,773	1,733	1,739	1,707	1,676	1,702	1,742
Total	3,020	3,169	3,221	3,344	3,537	3,661	3,714	3,677	3,563	3,555	3,581

Panel B: All Funds

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	21	43	53	67	101	111	123	124	112	105	100
Austria	120	132	139	145	142	147	160	166	168	167	159
Belgium	173	165	158	138	143	132	120	120	122	125	124
Brazil			1	1	28	63	104	127	117	115	87
Canada	496	555	577	587	590	630	644	638	580	546	564
China				2	3	4	6	6	6	5	9
Denmark	108	131	142	147	152	163	163	161	157	166	182
Finland	62	78	84	92	95	104	106	107	100	92	85
France	351	405	426	459	468	456	458	450	441	445	463
Germany	331	336	328	318	299	285	275	276	267	264	261
Hong Kong	17	22	25	28	31	44	52	52	51	54	56
India	63	77	85	113	154	189	217	232	242	243	245
Indonesia							3	9	14	13	13
Italy	244	235	191	148	137	122	113	100	87	81	78
Japan	197	205	219	222	233	236	251	266	274	267	264
Malaysia	29	34	52	76	82	84	94	97	106	109	108
Netherlands	63	72	73	67	68	66	68	72	70	63	67
Norway	101	101	100	100	99	107	113	115	114	102	100
Poland	8	8	10	11	13	22	33	38	39	39	35
Portugal	43	49	50	53	54	56	59	57	49	48	46
Singapore	65	64	62	63	65	67	67	67	64	60	60
South Africa		33	44	58	80	89	91	100	99	98	99
Spain	228	239	247	249	227	216	208	191	170	165	164
Sweden	213	227	227	223	224	231	230	213	197	199	193
Switzerland	117	121	121	134	150	164	175	182	181	183	200
Taiwan					103	209	245	254	268	259	250
Thailand	11	7	31	75	75	75	18	1			
U.K.	535	570	592	614	647	686	722	727	699	716	724
U.S.	2,282	2,309	2,294	2,307	2,339	2,341	2,397	2,423	2,402	2,469	2,570
Total	5,878	6,219	6,328	6,496	6,802	7,098	7,312	7,368	7,195	7,199	7,304

Table IA.2: Fund Characteristics by Country

This table presents the averages of international exposure measures and other fund characteristics by country. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. The sample in Panel A consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. The sample in Panel B consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period.

Panel A: Domestic Funds

	Indirect International Exposure	Direct International Exposure	Fund TNA ($ million)	Family TNA ($ million)	Observations
Australia	0.330	0.041	239	3,353	5,076
Austria	0.636	0.006	116	1,473	1,415
Belgium	0.414	0.117	138	5,302	1,550
Brazil	0.144	0.009	199	6,070	7,689
Canada	0.317	0.176	458	12,354	30,712
China	0.060	0.001	1,131	5,165	348
Denmark	0.562	0.060	161	2,279	2,205
Finland	0.603	0.073	173	1,968	2,270
France	0.527	0.078	269	5,732	12,533
Germany	0.540	0.072	687	16,946	6,369
Hong Kong	0.306	0.462	268	1,949	400
India	0.232	0.003	131	1,936	21,873
Indonesia	0.041	0.000	173	869	614
Italy	0.338	0.091	231	2,685	3,560
Japan	0.260	0.002	67.1	15,743	22,225
Malaysia	0.210	0.032	31.4	419	8,584
Netherlands	0.605	0.080	407	5,545	1,176
Norway	0.455	0.212	186	2,191	5,587
Poland	0.133	0.118	142	501	2,139
Portugal	0.323	0.037	44.9	316	2,002
Singapore	0.372	0.099	119	880	1,204
South Africa	0.188	0.228	199	1,798	8,656
Spain	0.456	0.048	73.3	1,158	7,832
Sweden	0.617	0.106	471	15,143	10,494
Switzerland	0.714	0.011	285	10,796	7,364
Taiwan	0.426	0.010	59.6	1,259	11,321
Thailand	0.141	0.007	22.5	310	3,475
U.K.	0.441	0.145	684	11,573	35,511
U.S.	0.275	0.087	1,511	70,870	232,051
Total	0.323	0.086	918	39,908	456,235

Panel B: All Funds

	Indirect International Exposure	Direct International Exposure	Fund TNA ($ million)	Family TNA ($ million)	Observations
Australia	0.167	0.502	297	4,171	11,386
Austria	0.061	0.904	84.7	1,566	19,742
Belgium	0.045	0.902	122	9,473	18,257
Brazil	0.144	0.009	199	6,076	7,716
Canada	0.149	0.621	299	13,816	76,865
China	0.055	0.148	1,084	5,431	477
Denmark	0.075	0.873	161	2,671	20,054
Finland	0.146	0.777	134	2,748	12,050
France	0.249	0.573	243	7,974	57,844
Germany	0.159	0.724	387	15,849	38,884
Hong Kong	0.096	0.850	279	4,035	5,189
India	0.230	0.015	129	1,936	22,321
Indonesia	0.041	0.000	173	869	614
Italy	0.082	0.782	252	3,644	18,426
Japan	0.190	0.276	81.1	17,683	31,601
Malaysia	0.179	0.176	28.1	463	10,440
Netherlands	0.109	0.834	344	5,582	8,977
Norway	0.226	0.600	277	3,531	13,814
Poland	0.119	0.216	107	487	3,044
Portugal	0.105	0.689	42	360	6,776
Singapore	0.077	0.817	64.2	869	8,448
South Africa	0.177	0.283	187	1,804	9,468
Spain	0.172	0.645	75.6	1,373	27,641
Sweden	0.284	0.589	421	16,631	28,520
Switzerland	0.279	0.614	191	13,200	20,759
Taiwan	0.273	0.370	61.8	1,329	19,045
Thailand	0.140	0.014	22.3	310	3,498
U.K.	0.209	0.601	559	12,706	86,776
U.S.	0.219	0.278	1,592	70,701	313,616
Total	0.193	0.477	726	30,411	902,248

Table IA.3: Home Bias Measures by Country

This table presents averages of domestic exposure and home bias measures by country. *World Share* is the share of a country's stock market capitalization in the world market portfolio. *Domestic Exposure* is the fraction of a fund's portfolio invested in domestic stocks. *Domestic Exposure Adjusted* is the difference between the fraction of a fund's portfolio invested in domestic stocks and its indirect exposure to foreign markets through domestic stocks weighted by foreign sales. The sample in columns (2) and (3) consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. The sample in columns (4) and (5) consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period.

		Domestic Funds		All Funds	
	World Share (1)	Domestic Exposure (2)	Domestic Exposure Adjusted (3)	Domestic Exposure (4)	Domestic Exposure Adjusted (5)
Australia	0.025	0.969	0.592	0.615	0.371
Austria	0.003	0.995	0.354	0.116	0.041
Belgium	0.007	0.858	0.440	0.104	0.057
Brazil	0.020	0.995	0.878	0.995	0.878
Canada	0.033	0.820	0.508	0.505	0.311
China	0.096	0.999	0.940	0.855	0.803
Denmark	0.005	0.936	0.372	0.143	0.060
Finland	0.004	0.946	0.327	0.285	0.100
France	0.037	0.922	0.348	0.407	0.157
Germany	0.030	0.957	0.375	0.358	0.141
Hong Kong	0.027	0.565	0.245	0.145	0.055
India	0.020	0.996	0.768	0.994	0.767
Indonesia	0.007	0.999	0.956	0.999	0.956
Italy	0.013	0.888	0.526	0.213	0.126
Japan	0.078	0.999	0.742	0.573	0.426
Malaysia	0.007	0.970	0.752	0.869	0.676
Netherlands	0.016	0.903	0.288	0.177	0.056
Norway	0.005	0.820	0.349	0.326	0.140
Poland	0.003	0.840	0.718	0.793	0.678
Portugal	0.002	0.964	0.637	0.286	0.192
Singapore	0.008	0.906	0.521	0.248	0.140
South Africa	0.008	0.768	0.572	0.735	0.547
Spain	0.014	0.948	0.472	0.359	0.184
Sweden	0.011	0.871	0.260	0.498	0.145
Switzerland	0.027	0.990	0.265	0.526	0.140
Taiwan	0.015	0.991	0.550	0.619	0.354
Thailand	0.004	0.994	0.867	0.832	0.725
U.K.	0.063	0.843	0.388	0.455	0.208
U.S.	0.325	0.891	0.600	0.685	0.461
Total	0.032	0.910	0.518	0.484	0.314

Table IA.4: Correlations

This table presents correlation coefficients of *Indirect International Exposure* and *Direct International Exposure* with fund characteristics. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. *Direct International Exposure* is the fraction of the funds holdings invested in foreign stocks. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Indirect International Exposure	Direct International Exposure
	(1)	(2)
Direct International Exposure	-0.135***	1
log(1+ Fund Age)	0.164***	0.053***
log(Fund TNA)	0.029***	0.124***
log(Family TNA)	-0.042***	0.095***
Total Expense Ratio (%)	-0.015***	0.027***
Total Load	0.062***	0.152***
log(1 + Number of Countries of Sale)	0.183***	0.007***
Team Managed	-0.102***	0.064***

Table IA.5: Future Returns

This table presents estimates of ordinary least squares (OLS) regressions of fund performance over the next four quarters. The dependent variable is the average monthly alpha within each quarter from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Quarter 1		Quarter 2		Quarter 3		Quarter 4	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indirect International Exposure	0.495***	1.200***	0.344***	0.861***	0.349***	0.888***	0.173***	0.584***
	(7.538)	(11.529)	(5.308)	(8.222)	(5.265)	(8.486)	(2.589)	(5.031)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	Yes	No	Yes	No
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	153,027	152,931	146,966	146,828	141,018	140,895	135,209	135,064
Adjusted R^2	0.044	0.043	0.044	0.046	0.045	0.045	0.045	0.043

Table IA.6: Effect of Fund Characteristics - Sample of All Funds

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. Funds are classified into three groups based on their lagged family TNA and fund TNA in each country of domicile and month. Funds are also classified based on their style in terms of market capitalization (Large, Mid, Multi or Small) and book-to-market ratio (Value, Core or Growth) of portfolio holdings. The regressions include interactions of indirect international exposure with indicator variables for terciles of family TNA, terciles of fund TNA, fund style (firm market capitalization or book-to-market) as well as their direct effect (coefficients not shown). All control variables are lagged by one period. The sample consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Fund Family TNA		Fund TNA		Fund Style Market Capitalization		Fund Style Book-to-Market	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indirect International Exposure	0.492***	1.175***	0.351***	1.013***	0.340***	0.857***	0.346***	0.860***
	(7.603)	(9.771)	(5.033)	(8.248)	(3.701)	(6.671)	(4.446)	(7.558)
Indirect International Exposure × Tercile 2	-0.112*	0.052	0.100	0.249*				
	(-1.683)	(0.368)	(1.315)	(1.868)				
Indirect International Exposure × Tercile 3	-0.260***	-0.189	-0.021	0.109				
	(-4.050)	(-1.057)	(-0.314)	(0.716)				
Indirect International Exposure × Large					-0.032	-0.394**		
					(-0.271)	(-2.200)		
Indirect International Exposure × Value							-0.236	-0.656**
							(-1.291)	(-2.383)
Benchmark FE	Yes	No	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	902,248	902,248	902,248	902,248	497,920	497,920	497,920	497,920
Adjusted R^2	0.038	0.040	0.039	0.040	0.040	0.044	0.040	0.044

Table IA.7: Fund Performance and Risk - Sample of All Funds

This table presents estimates of ordinary least squares (OLS) regressions of fund risk and risk-adjusted performance measures. *Excess Return* is the fund return in excess of the one-month U.S. Treasury bill rate in each month. *Total Risk* is the annualized standard deviation of fund return using a 12-month window in each month. *Sharpe Ratio* is the ratio of the annualized excess fund return to the annualized standard deviation of fund return using a 12-month window in each month. *Benchmark-Adjusted Return* is defined as the the difference between the fund's return and the return on its benchmark in each month. *Tracking error* is the annualized standard deviation of the benchmark-adjusted return using a 12-month window in each month. *Information Ratio* is the ratio of the annualized four-factor alpha to the annualized standard deviation of the residuals from the four-factor model estimated using regional factors based on a fund's investment region using a 12-month window in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of all (domestic and international) actively managed equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A

	Excess Return		Total Risk		Sharpe Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect international exposure	0.571***	1.535***	0.016***	-0.004	0.286***	0.925***
	(8.016)	(12.945)	(2.991)	(-0.904)	(6.213)	(11.963)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No
Fund country FE	Yes	No	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes
Observations	902,248	902,248	902,242	902,242	902,242	902,242
Adjusted R^2	0.712	0.712	0.771	0.840	0.699	0.701

Panel B

	Benchmark-Adjusted Return		Tracking Error		Information Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect international exposure	0.215***	0.583***	-0.027***	-0.017***	0.373***	1.231***
	(4.531)	(8.125)	(-4.594)	(-5.812)	(5.392)	(11.197)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No
Fund country FE	Yes	No	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes
Observations	898,356	898,356	895,746	895,746	902,248	902,248
Adjusted R^2	0.035	0.040	0.487	0.861	0.033	0.039

Table IA.8: Total Expense Ratio - Sample of All Funds

This table presents estimates of ordinary least squares (OLS) regressions of the total expense ratio. The dependent variable is the fund total expense ratio in each month (i.e., the annual expense ratio divided by 12). *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic and international equity mutual funds over the 2005 to 2015 period. Variable definitions are provided in Table A.1 in the Appendix. F-statistic refers to the test of equality between the coefficient estimates for direct and indirect international exposure. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
Indirect International Exposure	-0.005	-0.017***
	(-1.097)	(-5.576)
Direct International Exposure	0.015***	-0.002
	(5.066)	(-0.715)
Past Performance	-0.000***	0.000
	(-7.527)	(0.869)
log(1+Fund Age)	0.003***	0.004***
	(4.785)	(3.696)
log(Fund TNA)	-0.006***	-0.004***
	(-21.524)	(-16.346)
log(Family TNA)	-0.003***	-0.002***
	(-10.935)	(-4.736)
Flow	0.000	0.000***
	(0.287)	(4.727)
Total Load	0.005***	0.003***
	(21.738)	(7.493)
log(1+Number of Countries of Sale)	0.011***	-0.015***
	(8.085)	(-6.362)
Team Managed	-0.003***	0.043*
	(-3.491)	(1.735)
Benchmark FE	Yes	No
Country FE	Yes	No
Time FE	Yes	Yes
Fund FE	No	Yes
Observations	901,927	901,920
Adjusted R^2	0.557	0.922
F-statistic	28.44***	30.12***
p-value	(0.000)	(0.000)

Table IA.9: Passive Funds - Sample of All Funds

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable in columns (1) and (2) is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of passive domestic and international equity mutual funds over the 2005 to 2015 period with a maximum tracking error of 0.01. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively

	(1)	(2)
Indirect International Exposure	0.737	0.656
	(0.731)	(0.513)
Controls	Yes	Yes
Benchmark FE	Yes	No
Country FE	Yes	No
Time FE	Yes	Yes
Fund FE	No	Yes
Observations	18,305	18,304
Adjusted R^2	0.121	0.116

Table IA.10: Controlling for Pseudo Fund Return

This table presents estimates of ordinary least squares (OLS) regressions of fund performance controlling for pseudo fund return. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. *Pseudo Fund Return* is the monthly fund return calculated based on pure play firms in the same industry as the firms in a fund's portfolio. We first calculate an average industry return by simply taking the equally-weighted average of the returns of all firms in the same industry and country in a given month. Next, in order to calculate a pseudo return at the firm level, we take the foreign sales-weighted average of these industry returns in the country where the sales are generated. Finally, we take the portfolio-weighted average of the firm-level pseudo returns to calculate the fund-level pseudo returns. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Indirect International Exposure	0.283***	0.671***	0.472***	1.117***
	(4.548)	(7.294)	(7.436)	(10.643)
Pseudo Fund Return (contemporaneous)	0.696***	0.698***		
	(85.726)	(85.747)		
Pseudo Fund Return (lagged)			-0.039***	-0.042***
			(-8.052)	(-8.601)
Controls	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No
Country FE	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes
Observations	447,795	447,793	447,795	447,793
Adjusted R^2	0.204	0.206	0.039	0.040

Table IA.11: Controlling for Complicated Firms

This table presents estimates of ordinary least squares (OLS) regressions of fund performance controlling for the exposure to domestic complicated firms in a fund's portfolio. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. *Exposure to Complicated Firms* is the exposure of fund's portfolio to domestic complicate firms. Complicated firms are defined alternatively using three measures. In columns (1) and (2), complicated firms are those operating in more than one four-digit NAICS industry. In columns (3) and (4), the measure of complicated firms is the number of distinct four-digit NAICS industries in which a firm operates. In columns (5) and (6), complicated firms are those in which the entity structure is a holding company. All three firm-level measures are aggregated at the fund-level by taking their portfolio-weighted averages. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Multi Industry		Number of Industries		Holding Company	
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect International Exposure	0.436***	1.069***	0.503***	1.069***	0.482***	1.114***
	(6.642)	(10.268)	(7.541)	(10.196)	(7.415)	(10.681)
Exposure to Complicated Firms	0.192**	0.522***	-0.020	0.126***	-0.095	-0.923**
	(2.414)	(4.967)	(-0.882)	(3.689)	(-0.272)	(-2.020)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes
Observations	456,235	456,235	456,235	456,235	456,235	456,235
Adjusted R^2	0.039	0.040	0.039	0.040	0.039	0.040

Table IA.12: International Investment Treaties

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. The exposure measures are calculated based on FactSet Revere data, which provides a breakdown of foreign sales by each individual country. Funds are required to have at least 75% of their stock holdings value with non-missing total foreign sales. *BIT Exposure* is the fraction of of the fund's portfolio invested in a domestic company that has an investment treaty between its headquarter country and the country in which it generates foreign sales in the same year. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
BIT Exposure	1.179***	2.760***
	(5.908)	(8.300)
Controls	Yes	Yes
Benchmark FE	Yes	No
Country FE	Yes	No
Time FE	Yes	Yes
Fund FE	No	Yes
Observations	368,038	368,030
Adjusted R^2	0.044	0.046

Table IA.13: Alternative International Exposure Measures

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure - Assets* is the fraction of the fund holdings invested in domestic stocks weighted by foreign assets. *Indirect International Exposure - Country* is the fraction of the fund holdings invested in domestic stocks weighted by foreign sales using FactSet Revere data, which provides a breakdown of foreign sales by each individual country. Funds are required to have at least 75% of their stock holdings value with non-missing total foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Indirect International Exposure - Assets	0.448***	1.110***		
	(5.269)	(7.992)		
Indirect International Exposure - Country			0.635***	2.163***
			(7.434)	(14.770)
Controls	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No
Fund country FE	Yes	No	Yes	No
Month FE	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes
Observations	388,011	388,004	372,028	372,024
Adjusted R^2	0.037	0.038	0.044	0.047

Table IA.14: Winsorized International Exposure Measures

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. The international exposure measures are winsorized at the top and bottom 1%. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
Indirect International Exposure	0.511***	1.166***
	(7.829)	(11.040)
Direct International Exposure	-0.153**	-0.165
	(-2.413)	(-1.351)
Controls	Yes	Yes
Benchmark FE	Yes	No
Country FE	Yes	No
Time FE	Yes	Yes
Fund FE	No	Yes
Observations	456,235	456,235
Adjusted R^2	0.039	0.040

Table IA.15: Alternative Clustering

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. t-statistics adjusted for clustering at the fund family level in columns (1) and (2) and two-way fund and year in columns (3) and (4) are reported in parentheses. Column (5) reports the estimates of Fama-MacBeth cross-sectional regressions in which Newey-West t-statistics with 12 lags. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Clustering: Fund Family		Two-Way Clustering: Fund and Year		Fama-MacBeth
	(1)	(2)	(3)	(4)	(5)
Indirect International Exposure	0.484***	1.118***	0.483**	1.118**	0.367**
	(5.149)	(7.101)	(2.295)	(2.473)	(2.393)
Controls	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	No
Country FE	Yes	No	Yes	No	No
Time FE	Yes	Yes	Yes	Yes	No
Fund FE	No	Yes	No	Yes	No
Observations	456,172	456,172	456,235	456,235	456,235
Adjusted R^2	0.039	0.040	0.039	0.040	0.115

Table IA.16: Alternative Sample Periods

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	2000-2015		2005-2010		2011-2015	
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect International Exposure	0.303***	0.917***	0.415***	1.070***	0.556***	1.855***
	(4.888)	(9.561)	(4.294)	(5.524)	(6.558)	(13.512)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes
Observations	563,729	563,729	239,351	239,333	216,882	216,879
Adjusted R^2	0.045	0.049	0.039	0.036	0.059	0.061

Table IA.17: Sample Splits by Fund Investment Region

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. The estimates are show separately by fund investment region. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Domestic Funds

	North America		Asia-Pacific		Europe		Emerging	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indirect International Exposure	0.221***	1.235***	0.893***	1.133**	0.618***	1.246***	1.283***	1.959***
	(2.748)	(6.887)	(2.837)	(2.165)	(4.130)	(6.939)	(7.871)	(10.229)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	262,749	262,749	28,905	28,905	99,859	99,859	64,699	64,699
Adjusted R^2	0.024	0.027	0.179	0.185	0.072	0.073	0.360	0.363

Panel B: All Funds

	North America		Asia Pacific		Europe		Emerging	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indirect International Exposure	0.173**	1.104***	1.276***	2.292***	0.393***	1.022***	1.300***	2.107***
	(2.184)	(6.230)	(4.423)	(5.405)	(3.252)	(7.046)	(8.614)	(11.871)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No	Yes	No	Yes	No
Country FE	Yes	No	Yes	No	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	304,741	304,741	76,027	76,027	209,892	209,892	116,055	116,055
Adjusted R^2	0.022	0.025	0.062	0.069	0.060	0.062	0.324	0.325

Table IA.18: Samples of U.S. and Non-U.S. Funds

This table presents estimates of ordinary least squares (OLS) regressions of fund performance. The dependent variable is the alpha from the four-factor model estimated using regional factors based on a fund's investment region in each month. *Indirect International Exposure* is the fraction of the funds holdings invested in domestic stocks weighted by foreign sales. All control variables are lagged by one period. The sample consists of actively managed domestic equity mutual funds over the 2005 to 2015 period. Robust t-statistics adjusted for clustering at the fund level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	U.S. Funds		Non-U.S. Funds	
	(1)	(2)	(3)	(4)
Indirect International Exposure	0.156*	0.665***	1.042***	1.660***
	(1.825)	(5.160)	(10.813)	(12.930)
Controls	Yes	Yes	Yes	Yes
Benchmark FE	Yes	No	Yes	No
Style FE	Yes	No	No	No
Time FE	Yes	Yes	Yes	Yes
Fund FE	No	Yes	No	Yes
Observations	191,749	232,051	224,184	224,184
Adjusted R^2	0.114	0.073	0.098	0.099