Can International Funds Navigate Changing Global Investment Environments?

Abstract

We uncover a reliable positive relation between a fund's country rotation intensity and its subsequent performance across funds and over time. Funds that change their country allocations with the greatest intensity have an average annualized value added of $32 million per fund. A fund's change of holdings in a country is associated with future outperformance in those holdings. The outperformance is concentrated on the downside when funds sell country holdings before subsequent poor country market returns and currency depreciation. High country rotation funds attract inflows only if they have superior past performance.

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1. Introduction

Much research and market wisdom affirms that investors who seek international diversification and growth in foreign markets should invest in low-cost, passive international funds.[1] Recent years have shown that the global investment environments could change quickly and sharply. Wars, pandemics, trade disputes, political upheaval, and other financial and economic factors can shape investment returns in a country suddenly and dramatically. Investing in an active international fund may help investors navigate the unexpected shifts in the global investment environments. Indeed, according to the Investment Company Fact Book (2022), over 80% of the $3.5 trillion international equity fund asset market is actively managed in the U.S. in 2021, compared to only 64% of domestic equity fund assets. For active international funds and their performance outcomes, country allocation decisions can be as important as their individual security selection decisions.

Research on active country allocation strategies of international equity funds highlights the benefits of funds concentrating on specific countries. The information-based theory of home bias van Nieuwerburgh and Veldkamp (2009) suggests that investors should focus on building their informational advantages on a few countries instead of rotating across countries. Prior empirical research has found that portfolio concentration on a few countries or industries led to higher performance (e.g., Kacperczyk, Sialm, and Zheng, 2005; Choi et al., 2017; Schumacher, 2018; Jagannathan, Jiao, and Karolyi, 2022). Yet, another approach of active country allocation, a strategy of "country rotation," has received little attention in the literature. This is an investment

[1] The theoretical and empirical underpinnings for international portfolio choice lie with Solnik (1974), Adler and Dumas (1983), Errunza and Losq (1989), French and Poterba (1991), Bohn and Tesar (1996), De Santis and Gerard (1997), Stulz (1999), Errunza, Hogan, and Hung (1999), Dahlquist and Harvey (2001), Karolyi and Stulz (2003), Glassman and Riddick (2006), among many others.

strategy that involves reallocating assets among various countries – rotating in and out of countries as time progresses – to capitalize on the performance of different national markets during different phases of the global economic cycle.

Why might country rotation strategies be worthy of study? For one, Paul Samuelson suggests that there is more inefficiency in macro markets than micro markets.[2] Gârleanu and Pedersen (2022) build an equilibrium model showing that most inefficiency arises from macro sources when the number of assets becomes large, which is the case for international investing. Under this model, investors can make money on a large scale mainly through timing or buying the market factors. A model developed by Pástor, Stambaugh, and Taylor (2017) also hypothesizes mutual funds can exploit time-varying opportunities and mispricing through trading and finds that active domestic mutual funds perform better when they trade more. In this sense, active international funds are especially well equipped to rotate their country asset allocations to exploit macro-inefficiency and time-varying opportunities in different national markets. Meanwhile, mixed evidence exists on whether funds have market timing skills in a domestic setting.[3] All these previous studies focus on the ability to time a single market, the U.S. market. Studying country rotation strategies can yield new evidence on funds' ability to keep track of and time the stock markets and currency returns of a large number of countries.

[2] In a private 1998 letter from Paul Samuelson to John Campbell and Robert Shiller, as shared in Shiller (2015), Samuelson writes that: "modern markets show considerable micro efficiency. In no contradiction to the previous sentence, I had hypothesized considerable macro-inefficiency, in the sense of long waves in the time series of aggregate indexes of security prices below and above various definitions of fundamental values." Samuelson (1998) makes a similar statement. Jung and Shiller (2005) and Xiao, Yan, and Zhang (2021) examine Samuelson's dictum through predictability regressions in the US and global markets. Glasserman and Mamaysky (2023) also support Samuelson's dictum.

[3] Some studies (e.g, Henriksson and Merton 1981; Becker, Ferson, Myers, and Schill 1999; Jiang 2003) find that fund managers do not have market timing ability; others (e.g., Chance and Hemler 2001; Bollen and Busse 2001; Jiang, Yao, and Yu 2007; Chen and Liang 2007; Kacpercyzk, van Nieuwerburgh, and Veldkamp 2014; Bodnaruk, Chokaev, and Simonov 2019; Zambrana and Zapatero 2021) find positive market timing ability.

In this study, we empirically test whether international equity funds can attain superior investment performance by actively changing, or "rotating," their country asset allocations. If certain international funds are skilled in identifying time-varying investment risks and opportunities in different markets that comprise their investment mandate, they would move their assets from countries with poorer investment prospects to those with better investment prospects and at the right time. When funds perceive more dramatic changes in the investment environments in different markets, they would shift their country allocations more dramatically and with greater intensity. This conjecture implies a positive cross-sectional and time-series relation between the level of country rotation and subsequent fund performance.

We first define and measure country rotation. It is the extent to which a fund changes in absolute terms its country allocations between two quarters. That is, the higher a fund's country rotation is, the more assets a fund shifts *across countries* between two quarters. We seek to understand how much active international funds change their country portfolio weights from quarter to quarter, what the attributes and qualities of those funds that do so more than others are, and whether the funds pursuing more aggressive country rotation strategies are better at navigating the changing environments in different countries.

We then look deeper into holdings data and examine how country weight changes are associated with fund country holding returns. Our study not only describes the breadth of country rotation skills among funds but also examines whether such skills come from the upside or downside, country market timing, stock selection, or currency valuation timing. We further link such skills once uncovered to the macro environments and characteristics of the funds, fund managers, and underlying country markets. Finally, we examine fund flows to reveal investors' perceptions of country rotation strategies.

International funds in our sample, on average, change their country allocations by 7.7% of their total net assets between two quarters with a standard deviation of 5.3%. Consistent with our main conjecture, funds with high levels of country rotation do have superior subsequent performance across funds and over time. When sorting funds into quintiles based on their country rotation, we find that subsequent portfolio performance increases with the country rotation quintile. Funds in the highest country rotation quintile have an average benchmark-adjusted return of 2.28% per year. This performance is significantly higher than that of funds in the lowest country rotation quintile which have a benchmark-adjusted return of 0.6% per year. Funds that change their country allocations the most also deliver a sizable value added (Berk and van Binsbergen, 2015), with an average annualized value added of $32 million per fund. For the same fund, panel regressions suggest that a one-standard-deviation increase in the level of its country rotation is associated with an increase in annualized benchmark-adjusted returns of 0.36%.

Country rotation can arise simply from shifts in valuations alone and not necessarily by means of strategic actions by fund managers. In a value-weighted world index, for example, if a country's market has a greater increase in valuation than others in a quarter, then this country will have a greater weight in this quarter. We examine whether country rotation net of valuation effects can predict fund returns. We compute a measure of active country rotation by removing the valuation effects driven by underlying individual stock holdings in each country. The positive relation between country rotation and performance remains the same. We compute two other passive country rotation measures by using either each active fund's benchmark passive index or its country portfolio weights and country market returns. After adjusting for the level of passive country rotation, we find that the country rotation of active international funds still reliably predicts fund performance.

Our main sample is based on active international funds with a global mandate for all countries. We next shift our focus to active *regional* funds that have fewer countries to choose from because of the narrower scope of their mandates. In this case, we would expect all else equal country rotation to be less effective in predicting future returns. Once we limit our data sample to active regional funds, we confirm that country rotation no longer predicts subsequent fund returns. We also perform another counterfactual test by limiting our data sample to passive index funds. International index funds also exhibit country rotation merely driven by market valuation effects. If the country rotation-performance relation is due to skills in navigating changing investment environments in different markets, index funds should not exhibit it. We find that country rotation does not predict future returns among passive index funds.

We next advance to a more granular level of analysis based on changes in fund holdings in each country from one quarter to the next. Such portfolio weight changes in each country are the building blocks of our overall country rotation measure for a given fund. We first examine whether fund country weight changes in a country are associated with subsequent fund country holding returns. We find that overall country holding weight changes are associated with outperformance on these specific holdings, relative to the fund's own overall returns and relative to the fund's benchmark index returns. Interestingly, we find that the positive performance link from country weight changes is asymmetric and comes primarily from avoiding downside losses. Funds are able to reduce portfolio weights in a country before negative returns in their specific holdings in that country. On the upside, funds reveal no such predictive ability.

To investigate this asymmetry further, we examine whether the country market returns in local currency, stock-picking component in local currency, and currency returns vis-à-vis US dollars are driving the fund country holding returns. We find that funds' reduction of portfolio

weight in a country is associated with lower country stock market returns and currency depreciation in the subsequent period. This suggests that funds can anticipate poor outcomes in the stock and currency markets and reduce their country weights ahead of time. On the upside, fund holding returns do not outperform. While funds have some ability to pick stocks that do better than the country market indices, they do not appear to time their increased country allocations well. The two effects cancel out each other, and in the end, funds have no upside outperformance.

We also conduct further investigations on whether funds monitor macro information in timing their withdrawal from countries. Greenwood et al. (2022) show that financial crises around the world can be predicted by rapid credit and asset price growth in the nonfinancial business or the household sector. They create a "business Red-zone indicator" and a "household Red-zone indicator" based on these two early warning signals that help predict financial crises over the next three years. We incorporate Red-zone indicators from Greenwood et al. (2022) and examine whether funds take advantage of these early macro warning signals. Funds' ability to withdraw money from countries experiencing subsequent poor market returns is particularly strong when the country is in a business Red-zone. We do not find any significant effect when funds increase country weights, nor when a country is in a household Red-zone. International funds seem to pay special attention to countries that are in a business Red-zone and effectively withdraw from those positions when the country is about to experience poor market returns.

Finally, we examine the relation between country rotation and fund flows. To now, there has been no systematic measurement and reporting of country rotation strategies for a fund let alone whether country rotation is associated with positive fund performance. It is an open empirical question whether investors pay enough attention to search for high country rotation funds and provide them with higher flows. We find that country rotation does not attract flows in general.

But for the subset of funds with either superior past performance or high Morningstar rating, country rotation does significantly attract incremental future fund inflows. Our interpretation is that well-performing or highly rated funds receive more attention from investors. In that case, the skills associated with country rotation would then get recognized and attract inflows.

2. Data and summary statistics.

We obtain information on U.S. international equity mutual funds from Morningstar. Our sample period is from 1991Q1 to 2022Q1. Morningstar reports fund holdings, fund assets, fund returns, and other fund-level characteristics. We focus on active U.S. international equity funds with global investment mandates, which include funds in specific Morningstar categories.[4] We exclude fund-quarter observations with below $10 million total net assets.

International stock returns data are from Thomson Reuters Datastream International. To alleviate the influence of data errors in the international returns data, we winsorize stock returns at 0.1% and 99.9% in each country. U.S. stock returns data are from the Center for Research on Security Prices (CRSP). All the returns data are denominated in U.S. dollars. We compute monthly country stock market returns for non-U.S. countries by value-weighting all the primary common stock shares in a country in the Datastream datasets.[5] We use the CRSP value-weighted market returns as the U.S. market monthly returns. Exchange rates data are also from Datastream.

Country rotation measures the extent to which a fund changes its country allocations between two quarters. Country rotation is defined as follows.

[4] These categories include Foreign Large Blend, Foreign Large Growth, Foreign Large Value, Foreign Small/Mid Blend, Foreign Small/Mid Growth, Foreign Small/Mid Value, World Large-Stock Blend, World Large-Stock Growth, World Large-Stock Value, and World Small/Mid Stock.

[5] To minimize potential biases arising from small and illiquid stocks, we remove those stocks in the bottom 10% market cap in each country.

$$\text{Country rotation} = \frac{1}{2}\sum_{c=1}^{C}\left|w_{c,q} - w_{c,q-1}\right|,$$

where $w_{c,q}$ is the percentage of total net assets that a fund allocates to stocks in country *c* at the end of quarter *q*. The higher a fund's country rotation is, the more assets a fund moves across countries between two quarters. As an example, a fund invests 30% of its assets in U.K. stocks and 70% of its assets in Chinese stocks at the end of quarter *q*, and the fund invested 50% of its assets in U.K. stocks and 50% of its assets in Chinese stocks at the end of quarter *q-1*. Then, the country rotation of this fund in quarter q is $\frac{1}{2}(|30\% - 50\%| + |70\% - 50\%|) = 20\%$, which implies that this fund moves 20% of its assets across countries in the quarter.[6] Country rotation ranges from 0% to 100% for long-only mutual funds that do not buy on margin.

In Table 1, we present the summary statistics. The average country rotation is 7.7%, implying that, on average, funds change their country allocations by 7.7% of their total net assets between two quarters. Country rotation has a standard deviation of 5.3%. The 5th percentile of country rotation is at 2.4%, and the 95th percentile is at 17.4%. On average, we have 335 active U.S. international equity funds in our sample in a year. An average fund has approximately $2.3 billion assets under management and invests in 22 countries. On average, a fund holds 9 stocks in a country per quarter and the median is 3 stocks. Country weight change is the change in portfolio weight of one country's holdings during a quarter (i.e., $w_{c,q} - w_{c,q-1}$). The average country weight change is 0.003% with a standard deviation of 1.05%.

Fund benchmark-adjusted raw returns are fund monthly raw returns minus the monthly returns of the corresponding category benchmark index. Morningstar assigns a unique benchmark index to funds in each category based on the investment scope and styles of underlying holdings.

[6] Table A2 of the internet appendix presents an example of calculating country rotation for the Morgan Stanley Active International Allocation Fund using the fund's reported country portfolio weights.

Different categories are associated with different indices. For example, the benchmark index for the World Large-Stock Growth category is the MSCI ACWI Growth USD index, whereas the MSCI World Ex USA SMID Value USD index is the benchmark for the Foreign Small/Mid Value category.[7] We obtain the category benchmark index returns data from Thomson Reuters Datastream International. The average fund benchmark-adjusted raw return is 0.05% per month. Fund flows are, on average, 0.3% per month. The average annual expense ratio is 1.2%. Funds in our sample have an average fund age of 14 years. Each fund has, on average, three portfolio managers in the management team. We also calculate active shares, industry concentration, and country concentration following previous literature. Data variable descriptions are available in the Appendix I.

3. Understanding country rotation strategies.

3.1 Country rotation over time.

Figure 1 presents the average country rotation over time. We categorize funds into five groups based on their average country rotation in a year and plot the average country rotation of these five groups. The group with the highest country rotation exhibits around 15% country rotation over time, as compared to 4% in the group with the lowest country rotation. The group of funds with the highest country rotation also shows substantially higher fluctuations in the level of country over time compared to other groups. This figure indicates considerable heterogeneity in the country rotation intensity levels across different funds. And funds actively change country allocations over time.

[7] We provide a full list of the benchmark index of each category in Table A1 of the internet appendix.

In Figure 2, we show the persistence of country rotation. We first rank all funds into five groups each quarter based on their country rotation levels. For all the funds in each group, we compute the average active country rotation four quarters before and after. We see, on average, funds in all five groups remain in their respective quintiles from four quarters before to four quarters after the formation quarter.

3.2 Country rotation and fund characteristics.

We relate the level of country rotation to fund characteristics in Table 2. In Panel A, we sort funds on country rotation intensity and report fund characteristics for each group. The fund characteristics include fund size, expense ratio, turnover ratio, fund age, number of managers, active share, industry concentration, and country concentration.

We find that the level of country rotation decreases as fund size increases. Funds with larger assets under management would incur higher transaction costs when they move assets across countries since markets may be inelastic, as pointed out in Gabaix and Koijen (2021). Smaller funds, however, can move their investments from country to country without a huge price impact. We also find high country rotation funds tend to charge high expense ratios. This potentially suggests that high country rotation funds demand higher fees and more resources to pay the cost to acquire information in different markets (Gârleanu and Pedersen, 2022) or that higher-expense funds are more skilled.

Funds need to trade assets in different countries to navigate the changing investment environments, and we confirm that turnover ratio is positively related to the levels of country rotation. This finding implies that funds with high country rotation may not merely move their assets across countries to follow countries' market portfolios. Instead, they also appear to pick

stocks tactically in different markets. Country rotation does not correlate with industry concentration, and high country-rotation funds have slightly higher country concentration.

In Panel B of Table 2, we regress a fund's country rotation in a quarter on various fund characteristics that are measured at the same time period. In Column (1), we include fund fixed effects to control for unobserved fund-level characteristics and quarter fixed effects to control for unobserved variables that change over time but not across funds. In Column (2), we only include quarter fixed effects. The regression analysis largely confirms the patterns observed in Panel A.

4. Country rotation strategies and international fund performance.

In this section, we examine the performance implications of country rotation. If a fund can navigate the changing global investment environments, then it should generate better performance after changing its country allocation with greater intensity.

4.1 Panel regressions.

We run the following regression:

$$R_{i,t+1} = \alpha + \beta \times country\ rotation_{i,t} + \gamma_i + \delta_t + \varepsilon_{i,t+1}, \quad (1)$$

where $R_{i,t+1}$ is fund *i*'s return minus category benchmark return in period *t+1* and $country\ rotation_{i,t}$ is fund *i*'s country rotation in period *t*. Fund performance is reported monthly, but country rotation is measured every quarter. We use fund performance in month *t+1*, and $country\ rotation_{i,t}$ is the fund's country rotation for the most recent quarter that ends before month *t+1*. In other words, we use the country rotation computed at a quarter-end to predict the fund monthly returns of the three months after that quarter-end. For example, the country rotation computed on 12/31/2021 would be linked to the three fund monthly returns of 1/2022, 2/2022, and

3/2022. γ_i and δ_t are fund and month fixed effects, respectively. All returns are denominated in U.S. dollars. We report the results in Table 3.

In Table 3, Columns (1) to (3), we explore the time-series relation between country rotation and fund performance by including fund fixed effects and month fixed effects. The fund fixed effects enable us to focus on within-fund time-series relations. The month fixed effects control for any unobserved variables that change over time but not across funds, such as macroeconomic conditions. This specification helps us to explore whether the same fund performs better when its country rotation increases. To allow for correlations of regression residuals within the same category and month, we compute standard errors clustered by category times month.[8]

In Panel A, the dependent variable is fund monthly raw return minus category benchmark index return. In Column (1) of Panel A, the coefficient on country rotation is 0.0056 with a t-statistic of 3.57. The standard deviation of country rotation is 5.3%. Thus, 0.0056 implies that a one-standard-deviation increase in a fund's country rotation translates into an increase in annualized fund benchmark-adjusted raw returns of 0.36% (= 0.0056 × 0.053 × 12). This number is substantial in that it is a 59% increase relative to the average annualized fund benchmark-adjusted raw return, which equals 0.6%.

Next, in Columns (4) to (6), we document the cross-sectional relation using the model specification with only month fixed effects. Here, we examine whether funds with higher country rotation perform better than funds with lower country rotation. In Column (4), the coefficient from the cross-sectional regression is 0.0039 with a t-statistic of 2.56. The coefficient 0.0039 implies that a one-standard-deviation increase in a fund's country rotation translates into an increase in annualized fund benchmark-adjusted returns of 0.25% (= 0.0039 × 0.053 × 12).

[8] The main results are robust to cluster standard errors by fund or double cluster standard errors by category and month.

We also estimate the relation between country rotation and fund performance with control variables. The controls include fund size, fund risk, expense ratio, turnover ratio, fund age, number of managers, active share, industry concentration, and country concentration. The details of the construction of each control variable are described in the Appendix I. These control variables have been documented in prior studies to have impacted mutual fund performance.[9]

Three measures on fund portfolio composition have been found in the literature to affect performance. They are active share (Cremers and Petajisto, 2009; Petajisto, 2013), industry concentration (Kacperczyk, Sialm, and Zheng, 2005), and country concentration (Choi et al., 2017). Controlling active shares addresses the concern that country rotation simply captures the activeness of the funds. Controlling the fund's industry concentration also alleviates the concern that funds with higher country rotation intensity perform better simply because they hold more industrially diversified portfolios (Roll, 1992; Heston and Rouwenhorst, 1994; Griffin and Karolyi, 1998). Controlling a fund's country concentration alleviates the concern that the country rotation-performance relation is driven by funds with higher country rotation holding more diversified portfolios and benefiting from international diversification.

Among all these control variables, in Columns (2) and (3) of Panel A, we find fund size is negatively related to international fund performance in the time-series regressions. Active share, industry concentration, and country concentration are not significantly related to international fund performance in both time-series and cross-sectional regressions. Importantly, the coefficients on country rotation remain positive and statistically significant after we include these control

[9] Chen et al. (2004) find fund size erodes mutual fund performance. Jordan and Riley (2015) find a negative relation between fund return volatility and fund performance. Kacperczyk, van Nieuwerburgh, and Veldkamp (2014) report that funds with superior stock-picking skills charge significantly higher expense ratios. Pástor, Stambaugh, and Taylor (2017) report a positive time-series relation between fund turnover and subsequent fund performance. Bär, Kempf, and Ruenzi (2011) find single managers are much more likely to achieve extreme (good or bad) performance outcomes.

variables. This result confirms that the positive country rotation-performance relation is not driven by the control variables that could potentially impact fund performance. The coefficient on country rotation from the specification with control variables, fund fixed effects, and month fixed effects is at 0.0053 with a t-statistic of 2.92 in Column (3) of Panel A. The coefficient on country rotation from the specification with control variables and only month fixed effects is 0.0040 with a t-statistic of 2.43 in Column (6) of Panel A.

We also conduct similar analyses as in Panel A using net of fee fund returns in Table A3 of the internet appendix. Fund net of fee returns are the returns eventually earned by mutual fund investors. Specifically, we use fund monthly net of fee return minus category benchmark net of fee return as the dependent variable. We observe a similar relation between country rotation and fund performance as documented in Panel A of Table 3 after we consider fees.

4.2 Controlling for exposures to risk factors.

To alleviate the concern that the positive country rotation-performance relation is driven by funds' exposures to global risk factors or currency risk factors and Morningstar category benchmarks do not adjust for these risk factors, we regress fund benchmark-adjusted returns on country rotation intensity, along with estimated factor loadings on Fama and French (2017)'s developed market factors, and dollar and carry currency risk factors (Lustig, Roussanov, and Verdelhan, 2011). In Table A4 of the internet appendix, the coefficients on country rotation remain positive and significant after controlling for the exposures to these risk factors.

4.3 Controlling for valuation effects.

For active international equity funds, part of the country weight changes could be simply driven by valuation effects. In a value-weighted world index, for example, if a country's market has a greater increase in valuation than others in a quarter, then this country will have a greater

weight in this quarter. To capture the valuation effects, we construct two measures of passive country rotation and one measure of active country rotation.

First, we compute a measure of passive country rotation, *country rotation_market*, using active funds' country portfolio weights and country market returns denominated in U.S. dollars. Country rotation_market is $\frac{1}{2}\sum_{c=1}^{C}\left|\frac{w_{c,q-1}(1+R_{c,q})}{\sum_{c=1}^{C}w_{c,q-1}(1+R_{c,q})}-w_{c,q-1}\right|$, where $w_{c,q-1}$ is the percentage of total net assets a fund allocates to country *c* at the end of quarter *q-1* and $R_{c,q}$ is country *c*'s market return denominated in U.S. dollars in quarter *q*. Since we do not observe the exact time when funds change positions during the quarter, the construction of country rotation_market assumes funds change equity holdings right at the end of each quarter. Country rotation_market captures the valuation effects driven by local stock market movements and local currency valuation changes. In Panel B of Table 3, we find that country rotation_market is not positively related to fund performance.

Second, for each active global fund in our sample, we match up the passive index funds in the same fund category. We then compute the second measure of passive country rotation, *country rotation_index*, using these index funds' country allocation changes. Country rotation_index is $\frac{1}{2}\sum_{c=1}^{C}\left|w_{index\ fund,c,q}-w_{index\ fund,c,q-1}\right|$, where $w_{index\ fund,c,q}$ is the percentage of total assets that the index funds in the same Morningstar category as fund *i* allocate to country *c* at the end of quarter *q*. In Table 3 Panel B, we find country rotation_index is not related to fund performance. After controlling for passive country rotation, our original country rotation measure is still positively and significantly related to fund performance.

Finally, we compute a measure of active country rotation, *country rotation_active*, by removing the valuation effects driven by underlying individual stock holdings in each country. Specifically, country rotation_active is computed as $\frac{1}{2}\sum_{c=1}^{C}\left|w_{c,q}-\frac{w_{c,q-1}(1+R_{c,q}^{E})}{\sum_{c=1}^{C}w_{c,q-1}(1+R_{c,q}^{E})}\right|$, where $R_{c,q}^{E}$ is the

fund's equity holding returns in country *c* during quarter *q* computed based on holdings at the end of quarter *q-1*. It is denominated in U.S. dollars. The construction of country rotation_active assumes that funds change equity holdings right at the end of each quarter. Panel B of Table 3 again documents a positive and significant relation between country rotation_active and subsequent fund performance. Overall, these results suggest that the positive relation between country rotation and performance is not driven by passive valuation effects.

4.4 Country rotation-performance relationship via portfolio sorts.

In this subsection, we sort funds into quintiles based on their country rotation and construct a calendar time portfolio for each group to study the relation between country rotation and subsequent fund performance. In Panel A of Table 4, we find that portfolio performance increases with country rotation quintile. Funds in the highest country rotation quintile have an average benchmark-adjusted raw return of 0.19% per month (i.e., 2.28% per year). This performance is significantly higher than that of funds in the lowest country rotation quintile which have a benchmark-adjusted raw return of 0.05% per month (i.e., 0.6% per year). After fees, funds in the highest country rotation quintile also significantly outperform category benchmarks by 0.13% per month (i.e., 1.56 % per year). We also observe similar findings when sorting funds based on *country rotation_active*, the measure removing the valuation effects driven by underlying individual stock holdings in each country. The results are in Table A5 of the internet appendix.

4.5 Dollar country rotation and mutual fund skill value added.

Berk and van Binsbergen (2015) propose value added as a measure of mutual fund skill. Value added measures the dollar value that the fund manager extracts from the capital market and depends on both the abnormal return level and the amount of fund assets. If certain funds can identify investment risks and opportunities in different markets, the value they add from rotating

assets across countries should be related to the product of country rotation and fund size. For example, a fund with $1 billion dollar in assets under management (AUM) that moved 1% of its assets out of a country before that country's market crash would have added more value (or, at least, destroyed less value) than a fund with $1 million AUM that moved 10% of its assets out. We study the relation between dollar country rotation and value added in this section, calculating dollar country rotation as the product of country rotation and fund size at the quarter end.

Following the approach in Berk and van Binsbergen (2015), we calculate the average value added for each fund in the sample, where value added is the fund benchmark-adjusted monthly raw return multiplied by fund size in the previous month. We adjust all fund size numbers by inflation by expressing all numbers in January 1, 2000 dollars. For each fund, we calculate its average dollar country rotation in the sample and rank funds into quintiles based on their average dollar country rotation. We then report the cross-sectional mean value added for funds in each of the five groups.[10]

In Panel B of Table 4, we find that the group of funds with the highest dollar country rotation has an average monthly value added of $2.7 million per fund. Namely, the average fund in this group has added value by extracting an economically significant $32 million a year (in January 1, 2000 dollars) from global financial markets. In contrast, the group of funds with the lowest dollar country rotation shows an average value added of -$28,700 per month. In Figure 3, we also test whether dollar country rotation can predict out-of-sample value added, following similar analysis in Berk and van Binsbergen (2015). At the end of each quarter, we sort funds into five quintiles based on their average dollar country rotation up till that point. We compute monthly

[10] Pástor, Stambaugh, and Taylor (2017) point out that a regression of value added on dollar turnover would involve heteroskedasticity since larger funds tend to have more volatile residuals. A regression of value added on dollar country rotation would be subject to the same concern. As a result, we do not conduct regression analysis here.

average value added for each fund over different future horizons, varying between 3 years to 5 years. We then average over funds in each dollar country rotation quintile. Figure 3 plots the time-series mean value added as well as the two standard deviation bounds for each group and time horizon. We find that funds with the highest dollar country rotation in the past exhibit higher out-of-sample value added over the future 3- to 5-year horizons than funds in other groups.

4.6 Country rotation-performance relations for funds with different characteristics.

Different fund characteristics may affect the relation between country rotation and subsequent performance. Smaller funds incur lower costs when they buy and sell in different countries and can trade less liquid stocks as they trade in smaller trading amounts. The larger pool of potential investments and lower costs could contribute to superior returns from country rotation in these small funds. Prior studies like Berk and Green (2004) and Pástor, Stambaugh, and Taylor (2017) postulate that skilled funds would charge higher expenses and fees than less-skilled funds. Thus, skilled funds as proxied by high expenses are more likely to perceive the changing investment environments correctly, and their country rotations would be more strongly related to future fund performance. To respond to changing environments in different markets, funds need to trade. The high-country rotation funds with high turnover would be more strongly related to future fund performance. Under these considerations, country rotation-performance relation would be stronger among smaller funds and funds with higher expenses and turnover.

We examine the country rotation-performance link for funds with different characteristics in Table 5. We first interact country rotation with turnover ratio, fund size, and fund expense ratio. We then run regressions of subsequent fund benchmark-adjusted raw return on country rotation and these interaction terms. We also control for the same set of variables as in Table 3. We find the coefficients on the interaction between country rotation and turnover (expense ratio) are

positive and significant in both time-series and cross-sectional regressions. And the coefficients on the interaction between country rotation and fund size are negative and significant in both time-series and cross-sectional regressions. Thus, Table 5 confirms that the country rotation-performance relation is stronger among smaller funds and funds with higher expenses and turnover.

4.7 Country rotation-performance relations for regional funds and index funds.

In Table 6, we perform a counterfactual test of the country rotation-performance relation using active regional funds. A good number of active international equity funds focus on a region or a country.[11] The mean and standard deviation of country rotation for active regional funds are 7.6% and 5.6%, which are like the ones of active global funds. If the positive country rotation-performance relationship in the funds with global mandates is due to skills in identifying risks and opportunities in different countries, then the narrower geographical scope of active regional funds would weaken the relationship. We, therefore, expect to find that the country rotation-performance relation is weaker among active regional funds. As before, we regress subsequent fund benchmark-adjusted raw return on country rotation. Table 6 shows that in both time series and cross-sectional tests country rotation no longer predicts subsequent fund returns among active regional funds.

We further test as a counterfactual the country rotation-performance relation based on passive U.S. international index funds with global mandates in Table 6. We observe country rotation for index funds because country weight changes could be simply driven by market valuation effects. The mean and standard deviation of country rotation for index funds are 5.5% and 9.2%. If the country rotation-performance relationship comes from active fund managers'

[11] Active international equity funds with regional investment mandates include funds in the following Morningstar categories: Diversified Emerging Markets, Diversified Pacific/Asia, Pacific/Asia ex-Japan Stock, China Region, India Equity, Japan Stock, Europe Stock, and Latin America Stock.

skills, then index funds should not exhibit such a relationship. Indeed, we find that country rotation no longer predicts future returns among international equity index funds.

4.8 Country rotation, fund turnover, and industry rotation.

Next, we look into whether country-rotation intensity is just another manifestation of fund turnover. Pástor, Stambaugh, and Taylor (2017) propose fund turnover to measure domestic funds' exploitation of profit opportunities in the U.S. In Table 3, the results show turnover is not significantly related to future fund performance after using country rotation and other control variables in the same regressions. In Panel A of Table A6 of the internet appendix, we regress fund benchmark-adjusted raw return only on turnover ratio. We find that turnover ratio is positively and significantly related to fund performance, a result that is consistent with Pástor, Stambaugh, and Taylor (2017). However, when we regress fund performance on both turnover and country rotation, we see only country rotation has positive and significant coefficients. The coefficients on turnover abate substantially and become insignificant.

Note that country rotation is computed at a quarterly frequency, while funds report turnover at an annual frequency. To make for a fairer comparison, we also compute country rotation intensity with a four-quarter horizon; namely, we calculate how much a fund moves its assets across countries in a one-year window. When we regress fund performance on both turnover and country rotation with a four-quarter gap, we again see only country rotation with a four-quarter gap has positive and significant coefficients. The coefficients on turnover again abate substantially and become insignificant. These findings give us additional confidence that it is a country-rotation strategy of active international funds that are a primary source of superior investment performance.

We perform a counter-factual test of our main results by examining industry rotation-performance relation in our sample of active international equity funds.[12] We construct industry rotation to measure the extent to which a fund changes its industry asset allocations between two quarters. Industry rotation is computed as $\frac{1}{2}\sum_{j=1}^{J}\left|w_{j,q} - w_{j,q-1}\right|$, where $w_{j,q}$ is the percentage of total net assets a fund allocates to industry *j* at the end of quarter *q*. Industry classification follows Kacperczyk, Sialm, and Zheng (2005). Panel B of Table A6 of the internet appendix shows that industry rotation is not related to subsequent fund performance. After controlling for industry rotation, country rotation still has positive and significant coefficients. This finding suggests that industry rotation does not contribute to active international fund performance.

5. Country weight changes and the performance of a fund's country holdings.

All our analyses so far focus on the country rotation and performance at the fund level. The building blocks of our country rotation intensity measure are the country weight changes in each country. If funds adjust their country asset allocations to navigate the changing investment environments in different countries, then we should also observe a positive relation between country weight changes and subsequent fund country holding performance. Thus, it is natural to extend our analysis to the fund-country level and delve into fund equity holdings to see if country weight changes are associated with subsequent fund country holding returns.

5.1 Baseline results.

In Table 7, we run the following regression:

$$R_{i,c,t+1} = \alpha + \beta \times \Delta w_{i,c,t} + \gamma_i + \theta_c + \delta_t + \varepsilon_{i,c,t+1}, \qquad (2)$$

[12] Roll (1992), Heston and Rouwenhorst (1994), and Griffin and Karolyi (1998) document the role of industrial composition in international stock returns.

where $R_{i,c,t+1}$ is the fund *i*'s equity holding return denominated in U.S. dollars in country *c* in period *t+1* and $\Delta w_{i,c,t}$ is fund *i*'s country weight change in country *c* in period *t*. Fund country holding returns are calculated at the monthly frequency, but country weight changes are measured every quarter. Thus, we use fund country holding returns in month *t+1*, and $\Delta w_{i,c,t}$ is the country weight change for the most recent quarter that ends before month *t+1*. In other words, we use the country weight change computed at a quarter-end to predict the fund country holding monthly returns of the three months after that quarter-end.

To compute fund equity holding returns in a country, each stock holding is weighted by the fund's dollar investments of this stock as a fraction of the fund's total dollar investments of all stock holdings in the same country. We include $\gamma_i, \theta_c, \delta_t$ as fund fixed effects, country fixed effects, and month fixed effects, respectively. To allow for correlations of regression residuals within the same category and month, we compute standard errors clustered by category times month. If there is a positive relation between country weight changes and subsequent fund country holding returns, we should observe β is positive and statistically significant.

In Column (1) of Table 7, β is 0.0219 with a t-statistic of 2.21. The standard deviation of $\Delta w_{i,c\,t}$ is 1.05%. Thus, a coefficient of 0.0219 means that a one-standard-deviation increase in country weight change is associated with a 0.28% (= 0.0219 × 0.0105 × 12) annualized increase in fund country holding returns.

5.2 Upside vs. downside asymmetry.

To achieve superior returns from changing country weights, funds could either benefit from increasing portfolio weights in a country to exploit the upside or lower their exposure to a country to avoid the downside on their country holdings. Thus, to better understand the positive relation between country weight changes and subsequent fund country holding returns, we split

observations into those with a country weight increase (namely, $\Delta w_{i,c,t} > 0$) and those with a country weight decrease (namely, $\Delta w_{i,c,t} < 0$).

In Columns (2) and (3) of Table 7, we find that the positive relation between country weight changes and subsequent fund country holding returns is mainly driven by funds correctly reducing their country weights to avoid downside risks. When funds increase their exposure to a country, country weight changes do not predict subsequent fund country holding performance. However, when funds reduce their weights in a country, β is 0.0438 with a t-statistic of 3.18. This finding indicates that the more funds lower their exposure to a country in a quarter, the worse the subsequent fund country holding performance in that country would be. Namely, funds are good at avoiding the downside risks.

To alleviate the concern that the above findings are driven by the overall fund-level return differences or the category-level differences across funds, in Columns (4) to (6), we use the difference between fund country holding returns and category benchmark returns as the dependent variable. In Columns (7) to (9), we use the difference between fund country holding returns and fund raw return as the dependent variable. We observe consistent results as in Columns (1) to (3).

5.3 Country timing, stock picking and currency returns in fund country holding performance.

In Table 8, we examine the role of country timing, stock picking and currency returns. We relate fund country holding performance to three factors: country market returns in local currency, the stock-picking component in local currency (i.e., fund country holding returns in local currency minus country market returns in local currency), and currency valuation returns (i.e., the returns in U.S. dollars from foreign currency valuation changes). The currency valuation return is computed as $\frac{S_{c,t+1}}{S_{c,t}} - 1$, where $S_{c,t}$=$/foreign currency. We regress these three factors on country weight changes, respectively. We also examine another specification with the log versions of

returns, where the fund country holding returns would linearly decompose into these three components. The results as reported in Table A7 of the internet appendix remain similar as we find in this subsection.

Panel A of Table 8 shows that when funds increase their weights in a country, they earn superior returns from picking stocks but attain lower returns through poor country market timing. There is no effect associated with foreign currency returns. Overall, country weight changes are not significantly related to fund country holding returns when funds increase the weights in a country.

The reason for no upside gain may be because funds hold very few stocks in each country. Table A8 of the internet appendix presents the number of stock holdings in a country held by a fund in a quarter. The median number of holdings for each fund in each country is only 3 stocks. Funds hold even fewer stocks in emerging markets.[13] The limited number of stock holdings in each country suggests that stock-picking is the primary motivation to purchase stocks in a country and increase the country weights. It is not very likely that funds holding 3 stocks in a country are trying to time the upside of local stock markets or local currency appreciation. When increasing weights in a country, such funds may prioritize selecting stocks that outperform local markets but downplay or neglect the risks of local stock market fluctuations. They might wrongly believe the superior performance of the purchased equity holdings could outweigh the downside risks of local stock markets.

Panel B of Table 8 shows when funds decrease their weights in a country, that country's stock market would significantly drop in the subsequent period. Meanwhile, funds can also anticipate foreign currency depreciations. When funds decrease their weights in a country, the

[13] Emerging and developed market classification is based on International Monetary Fund (IMF)'s classification on advanced economies and emerging economies.

local currency would depreciate significantly in the subsequent period. But funds do not show stock-picking ability when reducing their country weights in a country.

Overall, these findings suggest that, when funds decrease country weights, they focus on monitoring macro environments and can successfully avoid downside risks of local stock markets and foreign currency valuations.

5.4 Developed vs. emerging markets.

In Table 9, we conduct analyses similar to those in Table 8 for developed and emerging markets, respectively. Panel A of Table 9 shows that fund country weight increases in developed markets are not related to subsequent country market returns in local currency, the stock-picking component in local currency, or currency valuation returns. But, when funds increase country weights in emerging market countries, they show some stock-picking ability but suffer much more from poor subsequent local country market returns. This finding also supports the argument in the previous subsection that when increasing weights in a country, funds may prioritize selecting stocks that outperform local markets but downplay the risks of local stock market fluctuations. Given the high information asymmetry and volatility of emerging markets, the results in Panel A of Table 9 show this phenomenon is more pronounced among emerging markets.

In Panel B of Table 9, we find funds' ability to anticipate subsequent poor country market returns and foreign currency depreciation is more robust and statistically significant among developed markets. In emerging markets, fund country weight decreases are positively related to country market returns and currency returns, but the findings are not statistically significant.

5.5 Performance of country-rotation strategies during the predictable financial crisis.

This subsection provides additional evidence that funds monitor macro information in timing their withdrawals from countries. Greenwood et al. (2022) show that financial crises around

the world can be predicted by rapid credit and asset price growth in the nonfinancial business or the household sector. They create Red-zone indicators based on these two early warning signals. Their business (household) Red-zone indicators take the value of one for country-years with nonfinancial business (household) credit growth over the past three years in the top quintile of the full-sample distribution, and stock market returns (house price growth) over the same window are in the top tercile. The probability of experiencing a financial crisis within the next three years is 45% for countries that are in the business Red-zone, and 37% for countries in the household Red-zone. These authors document that overheating in the business and household credit markets are separate phenomena and independently predict the arrival of future crises.

In Table 10, we incorporate Red-zone indicators from Greenwood et al. (2022) and examine whether funds can take advantage of these early macro warning signals.[14] We interact country weight changes with business Red-zone and household Red-zone dummies, respectively. Panel A of Table 10 shows the results when a fund increases portfolio weights in a country. There is no significant difference between whether a country in a Red-zone or not.

Panel B of Table 10 shows the results when a fund decreases portfolio weight in a country. Column (1) shows that country weight decrease is associated with subsequent lower country holding returns, especially when the country is in a business Red-zone. This effect is primarily driven by funds withdrawing money from countries that experience subsequent low local currency country market returns. We do not find any significant effect when using the household Red-zone indicator. Overall, these findings suggest that international funds pay special attention to countries

[14] We download the Red-zone indicators from Greenwood et al. (2022) from Professor Robin Greenwood's website. We are grateful to his sharing them. The data cover 42 countries and end in 2016. As a result of the shorter time sample, we have fewer observations in Table 8.

that are in the Red-zone and effectively withdraw from those positions when the country is about to experience subsequent poor market returns.

5.6 Valuation effects, full withdrawals, carry trades, hedging, and pure U.S. holdings.

Part of the country weight changes can be driven by valuation effects. To capture such effects, we construct two measures of passive country weight changes and one measure of active country weight changes. Table A9 of the internet appendix details these measures. Our first measure of passive country weight changes uses active funds' country portfolio weights and country market returns denominated in U.S. dollars. Since we do not observe the exact time when funds change positions during the quarter, this measure assumes that funds change equity holdings right at the end of each quarter. It captures the valuation effects driven by local stock market movements and local currency valuation changes. Second, we use the country weight changes by the benchmark index funds as the proxy for the valuation effects. Finally, we compute one measure of active country weight changes by removing the valuation effects driven by underlying individual stock holdings in each country. The construction of this measure assumes that funds change equity holdings right at the end of each quarter. Table A9 of the internet appendix indicates our findings in Tables 7 and 8 are unlikely driven by passive valuation effects.

In our data, there are also cases of full withdrawal where funds reduce their portfolio weights in a country to zero at the quarter end. That is, funds move all their assets out of a country in a quarter. And we cannot calculate fund country holding returns for these cases. But we can still test whether the subsequent country market returns and currency valuation returns would drop after funds completely dump the holdings in a country. In Table A10 of the internet appendix, we find that when funds completely move their assets away from a country, that country's stock market would drop significantly in the subsequent period. In addition, we also examine the cases

where funds enter a country, namely, funds have zero exposure to a country in the previous quarter and invest in that country in the current quarter. In Table A10 of the internet appendix, we find that when funds enter a country, their country weight changes do not correctly predict subsequent fund country holding returns and local stock market returns but have some predictability on currency valuation returns.

Next, we examine whether carry trades drive our findings on funds' ability to time foreign currency valuations. In Table A11 of the internet appendix, we construct the forward premium variable comparing forward and spot exchange rates. $\text{FX\_forward}_{c\,t}$ is computed as $\frac{f_{c,t}}{S_{c,t}} - 1$, where $f_{c,t}$ is the 3-month forward exchange rate and $S_{c,t}$ is the spot exchange rate. Both forward and spot rates are in \$/foreign currency. In normal conditions, based on the covered interest rate parity, the forward premium implies the interest rate differences between foreign markets and the U.S. and hence related to currency carry trade. Table A11 shows the forward premium does not significantly impact funds' ability to anticipate foreign currency depreciation.

We also consider currency hedging instruments in Table A12 of the internet appendix. Sialm and Zhu (2022) find that 90% of international bond funds use currency forwards, and they hedge on average 18% of their currency exposure. We find much less currency hedging among international equity funds in our sample. In our sample, on average, only 4.15% of the funds in a quarter allocate at least 1% of their fund assets to currency forwards, future, option or swap contracts. We construct a dummy variable that equals 1 if a fund allocates at least 1% assets to these currency hedging instruments.[15] We find the use of currency hedging derivatives does not impact the relation between country weight changes and subsequent fund country holding returns.

[15] Morningstar's holding data do not report detailed information on which currency these hedging instruments are used for. Thus, we are not able to link each contract to country-specific holdings.

The use of currency hedging derivatives also does not affect the relation between country weight changes and subsequent local stock market returns and foreign currency movements.

Finally, we focus on U.S. holdings in Table A13 of the internet appendix. We find funds do not exhibit a positive relation between country weight changes and fund country holding returns on the upside or downside. And they cannot time the U.S. stock market. These findings indicate that country rotation benefits active international equity funds mainly from their country allocation changes across non-U.S. countries.

5.7 Characteristics of managers and funds.

In this subsection, we link the characteristics of fund managers and funds to country rotation skills. Fund manager characteristics include female fund managers, home-linked managers, and skilled managers who also manage active U.S. domestic equity funds. Prior studies have shown that females are more risk-averse in investing than males.[16] Thus, female fund managers may pay more attention to downside risks and better avoid subsequent poor country market returns and currency depreciations.

Jagannathan, Jiao, and Karolyi (2022) find that international fund managers have informational advantages on their home-country stock holdings. Following their approach, we collect managers' educational background information and associate the country where the manager received their undergraduate degree as their home country. For equity holdings in one country, we define home-linked managers as those managers from that same country. Home-linked managers' informational advantages could give them edges in stock-picking and market timing in their home countries. If skilled managers have better general investment ability, then those who are skilled in managing their domestic investments might also conduct country rotations well. We

[16] For example, Barsky et al. (1997); Jianakoplos and Bernasek (1998); Byrnes, Miller, and Schafer (1999); Barber and Odean (2001); Agnew, Balduzzi, and Sundén (2003); and Niessen-Ruenzi and Ruenzi (2019).

identify skilled managers as the ones with top 20% risk-adjusted returns in managing active U.S. domestic equity funds from 1991Q1 to 2022Q1.[17] Finally, we consider fund family size. Fund families often provide various country macroeconomic outlooks and allocation forecasts. Larger fund families could possess more resources and local connections to collect and process information worldwide.

Table A14 of the internet appendix shows that when funds increase country weights, home-linked managers are better at stock-picking. But this advantage is offset by their poor performance in timing local country market returns. On the downside, when funds decrease country weights, female managers and funds with large family size are better at avoiding foreign currency depreciation. Skilled managers are better at anticipating the local stock market downturns.

5.8 Asymmetric model specifications of performance.

In this subsection, we use an asymmetric model specification to study the relation between country weight changes and fund country holding returns. We add a term capturing the impact of the downward country weight changes to the equation (2) of Table 7. Specifically, we run the following regression:

$$R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c,t} + \beta_2 \times \Delta w^{-}_{i,c,t} + \varepsilon_{i,c,t+1}, \qquad (3)$$

where $\Delta w^{-}_{i,c,t}$ is Min $(\Delta w_{i,c,t}, 0)$. A positive coefficient on $\Delta w^{-}_{i,c,t}$ indicates subsequent fund country holding returns are more sensitive to downward country weight changes. Fixed effects are included in the specifications, but are not included in Eq. (3) above for brevity.[18]

[17] For each active U.S. domestic equity funds, we compute its risk-adjusted return by regressing fund raw returns on market, size, value, and momentum factors (Fama and French, 1993; Carhart, 1997). Each manager's risk-adjusted return is the average risk-adjusted returns of all the funds which the manager manages.

[18] This asymmetric model is inspired by the Henriksson-Merton model (Henriksson and Merton, 1981; Henriksson, 1984). They propose that successful market timing involves a portfolio's returns exhibiting a stronger sensitivity to the stock market return during the market upturn.

Column (1) of Panel A of Table A15 in the internet appendix shows a positive and significant coefficient on $\Delta w^{-}_{i,c,t}$. Compared to an increase in country weight, a reduction in country weight is more strongly associated with future fund country holding returns. In Column (2), we use future country market returns in local currency as the dependent variable and observe a positive and significant coefficient on $\Delta w^{-}_{i,c,t}$. A reduction in country weight change is also strongly associated with lower future country market returns. In Column (3), when we use the stock-picking component of fund country holding returns as the dependent variable, the coefficient on $\Delta w^{-}_{i,c,t}$ is negative and insignificant. This finding suggests that subsequent stock-picking component returns are not more sensitive to downward country weight changes. In Column (4), we use currency valuation returns as the dependent variable and observe a positive and significant coefficient on $\Delta w^{-}_{i,c,t}$. Thus, a reduction in country weight change is also strongly associated with foreign currency depreciation. On balance, the findings here support that funds are good at avoiding downside risks and can sell country holdings ahead of subsequent poor country returns and foreign currency depreciation. We further confirm this finding on asymmetric relation by examining a quadratic model specification in Panel B of Table A15.

5.9 Clinical evidence from the 2022 Russia-Ukraine War.

In this subsection, we propose a quasi-natural experiment to show funds change their country asset allocations in response to changing environments. The event we examine is the 2022 Russia-Ukraine war which started on February 24th, 2022. The MOEX Russia index, the leading ruble-denominated benchmark of the Russian stock market, dropped 29% in the first quarter of 2022 and 30% in February alone. Russia's Moscow stock exchange was shut down on February 28th. After shutting down for almost a month, the Russian stock market reopened for limited trading on March 24th. This geopolitical crisis had a severely adverse impact on investors in the

Russian stock markets. Here, we test whether certain active international funds effectively monitored the geopolitical tensions involving Russia, Ukraine, The North Atlantic Treaty Organization (NATO), and other related parties, and lowered their portfolio weights in Russia before this war.

In Figure A1, we first use bars with the solid color to present the average country weight changes in Russia by all the funds in our sample from 2020Q4 to 2022Q1. We also use bars with horizontal brick to represent the country weight changes in Russia by funds with top 5% country rotation. We find that funds substantially decreased their Russian holdings in the first quarter of 2022. Even more interestingly, we find that funds, especially those with high country rotation, decreased their Russian holdings one quarter ahead in the last quarter of 2021, when a war was far from certain, and the Russian market was out of the mind of many investors. These findings suggest that funds correctly anticipated this crisis and lowered their Russian exposure in advance.

In Table 11, we use regression analysis to test the patterns in Figure A1. We employ a difference-in-difference specification. We use the time period from 2020Q4 to 2021Q3 as the control period and use 2021Q4, the quarter before the war, as the event quarter. Brink of war is what we call a dummy variable, taking the value of one for 2021Q4 and zero for the time period from 2020Q4 to 2021Q3. Russia is a dummy variable, taking the value of one for country weight changes in Russia and zero for country weight changes in other countries. In Column (1), we find that funds increase their weights in Russia by an additional 0.01% of their total assets compared to their country weight changes in other countries during the control period. But, relative to country weight changes in other countries, the Russian portfolio weights of the funds were reduced by 0.2% (-0.0021+0.0001) of their total net assets in 2021Q4. Given the average portfolio weight in Russia in our sample period is about 1.2% of the typical fund's total assets, this is an economically large

shift. In Column (2), we focus on funds with top 5% country rotation and study whether funds with high country rotation can even better prepare for this crisis. We find that these funds with high country rotation reduced their Russian portfolio weights to a much larger extent by 1.5% of their total assets in 2021Q4.

On balance, this clinical experiment offers useful evidence that international funds also use the information on geopolitical conflicts to guide their country asset rotation and significantly lowered their Russian exposure in advance.

6. Country rotation and fund flows.

Previous studies (Chevalier and Ellison, 1997; Sirri and Tufano, 1998; Christoffersen, Musto, and Wermers, 2014, among others) document that fund flows are positively related to past fund performance. The literature has found that fund flows are characterized by high search frictions, as proxied by marketing expenses and other variables.[19] Active international equity funds showcase and market their country allocations on fund web pages, prospectuses, and other literature. Many funds report equity holdings by country and display country portfolio weights in SEC filings. Thus, changes in country asset allocations could attract investor attention and influence fund flows. However, until this study, no one has systemically documented that high country rotation is associated with fund managers' skills. There are also no commercially available indices for country rotation. The high search frictions documented in the mutual fund markets could also prevent investors from sampling more funds to identify the high country rotation funds. Thus, it is an empirical question whether country rotation impacts fund flows.

[19] Search frictions have been proxied by high marketing expenses (Barber, Odean, and Zheng, 2005; Christofferson, Evans, and Musto, 2013; Reuter and Zitzewitz, 2006; Roussanov, Ruan, and Wei, 2021), the need for brokerage channels (Bergstresser, Chalmers and Tufano, 2009), reliance on simplistic performance signals (Ben-David et al., 2022), reliance on stereotypes like fund managers' foreign-sounding names (Kumar, Niessen-Ruenzi, and Spalt, 2015), or trust on home-linked managers in international funds (Jagannathan, Jiao, and Karolyi, 2022)

6.1 Baseline fund flows results.

In Panel A of Table 12, we regress a fund's subsequent monthly fund flows on its country rotation.[20] We explore the time-series relation between country rotation and fund flows by including fund fixed effects and month fixed effects in Columns (1) to (3). To allow for correlations of regression residuals within the same category and month, we compute standard errors clustered by category times month. In Column (1), we find country rotation is not significantly related to future fund flows. In Column (2), we add fund alpha as the control variable. It is the cumulative fund monthly net of fee returns in the previous twelve months minus the cumulative monthly return of the category benchmark. Past fund performance is positively and significantly related to future fund flows in international equity mutual funds. After adding fund alpha as the control variable, we still observe country rotation is not significantly related to future fund flows. In Column (3), we add additional fund characteristics as controls. The controls include fund size, fund risk, expense ratio, turnover ratio, fund age, and number of managers. After adding these controls, we find country rotation is significantly negatively related to future fund flows.

In Columns (4) to (6), we explore the cross-sectional relation between country rotation and fund flows by including month fixed effects. We find that country rotation is negatively related to funds flows in all three model specifications. On balance, the results suggest that investors, on average, do not provide high country rotation funds with inflows.

6.2 Past fund performance and Morningstar ratings.

In this subsection, we examine whether high country rotation funds with superior past fund performance attract more flows. When investors observe a fund with high country rotation also earning substantial returns in recent periods, they may be convinced that the fund manager is

[20] We link country rotation at a quarter end to three monthly flows starting from the third month after the quarter end. This helps ensure country rotation information is available to investors.

skilled in country rotation and can deliver additional returns through country rotation in the future. The superior past performance also lowers investors' search costs, and investors are likely to focus on screening funds with superior past performance. We also consider funds with high Morningstar ratings. Morningstar ratings reflect a fund's risk-adjusted past performance relative to similar funds. Ben-David et al. (2022) show that Morningstar ratings are the strongest independent determinant of flows in the cross-section and star ratings are seen by investors as a simple way to identify funds with high past performance.

In Columns (1) and (3) of Table 12, Panel B, we construct a dummy variable, High Alpha, indicating funds with top 20% alpha in each month. Alpha is the cumulative fund monthly net of fee returns in the previous twelve months minus the cumulative monthly return of the category benchmark. We then interact country rotation with this dummy. The results suggest that country rotation attracts fund flows among funds with superior past performance. In Columns (2) and (4) of Table 12, Panel B, we construct a dummy variable, High Morningstar rating, indicating funds with a five-star rating.[21] Country rotation attracts fund flows among funds with a five-star rating.

We also conduct two robustness checks. First, we examine flows for retail and institutional-oriented funds separately and observe similar findings as those in Panel B of Table 12. We report those results in Table A16 of the internet appendix.[22] Second, we use continuous variables of alpha and Morningstar ratings, instead of dummy variables, and confirm the message in Panel B of Table 12. We report the results in Table A17 of the internet appendix. Overall, these findings suggest that superior past performance and high Morningstar ratings lower investors' search costs to

[21] Since Morningstar does not assign ratings to funds with less than 3-year track records, we have fewer observations when using the Morningstar rating dummy variable.

[22] A fund is classified as an institutional-oriented (retail-oriented) fund if more than 80% (less than 20%) of fund assets are owned through the institutional share class. We acknowledge that this classification may be a noisy way to capture actual institutional ownership, but it is the best proxy we are aware of, given available data.

identify high country rotation funds and help convince investors about fund managers' skills in country rotation.

7. Conclusions.

Our paper investigates whether active international equity mutual funds have skills in changing their country allocations to exploit opportunities and avoid losses in different countries. We document a reliable positive relation between a fund's country rotation intensity and its subsequent performance across funds and over time. We find that funds sell country holdings ahead of subsequent poor country market returns and currency depreciations. Investors in general do not provide high country rotation funds with inflows. High country rotation funds attract inflows only when they have shown superior past performance or earned high Morningstar ratings.

Our paper brings new evidence to the international finance literature. Current papers on international fund skills focus on fund managers having superior information endowments with respect to specific countries and either holding concentrated portfolios or having home ties to such countries (e.g., Choi et al., 2017; Schumacher, 2018; Jagannathan, Jiao, and Karolyi, 2022). Our findings uncover a new source of skill - namely, fund managers' abilities to allocate assets across different countries around the world over time. Our measure of country rotation intensity is an intuitive new metric that can help investors in their search for international fund managers with skills. This measure should be disclosed proactively by funds and tracked by fund investors.

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Figure 1: Country Rotation Over Time

The figure below shows the average level of country rotation over time. Country rotation is computed as $\frac{1}{2}\sum_{c=1}^{C}|w_{c,q} - w_{c,q-1}|$, where $w_{c,q}$ is the percentage of total assets a fund allocates to country c at the end of quarter q. We categorize funds into five groups based on their average country rotation in a year. We equally weight each fund's country rotation in a group. The sample includes active U.S. international equity funds with global investment mandates between 1991Q1 and 2022Q1.

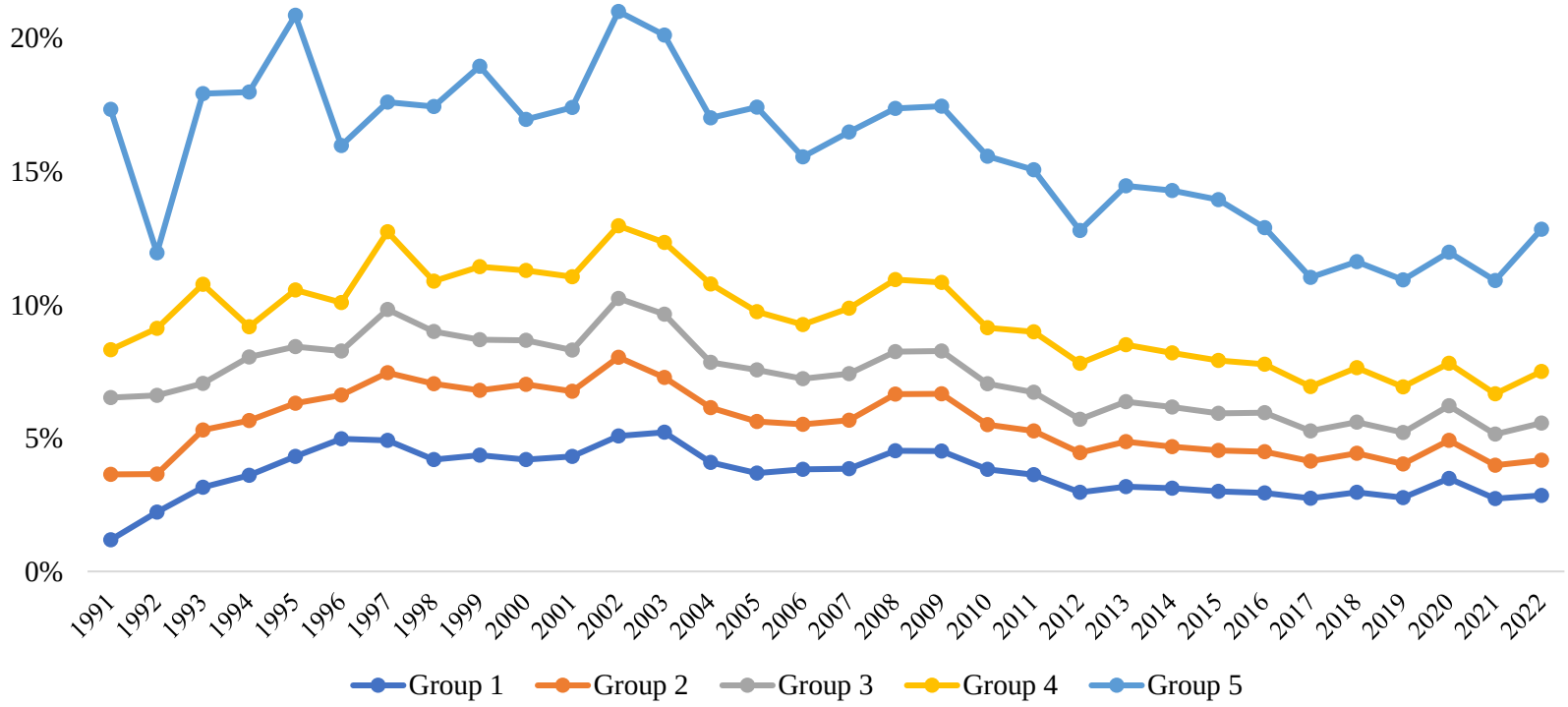

Figure 2: Persistence of Country Rotation

The figures below present the persistence of country rotation. The sample includes active U.S. international equity funds with global investment mandates between 1991Q1 and 2022Q1. We categorize funds into five groups based on their country rotation in quarter 0. We present the average country rotation of the five groups four quarters before and four quarters after quarter 0.

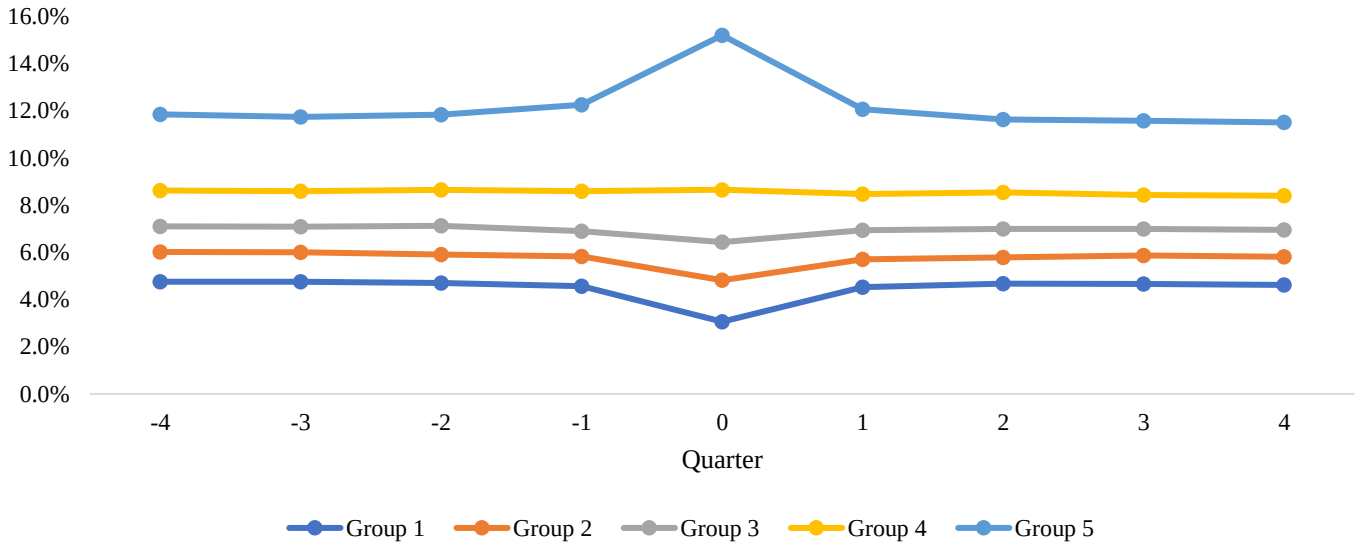

Figure 3: Dollar Country Rotation and Out-of-sample Value Added

Each figure displays the average out-of-sample value added (in millions of Y2000 dollars/month) of funds sorted into five groups on the dollar country rotation (horizontal axes), over the future horizon indicated by the figure title. Group 5 indicates the group of funds with the highest dollar country rotation. The solid line indicates the average out-of-sample value added of each fund group, and the dashed lines indicate the two standard deviation bounds.

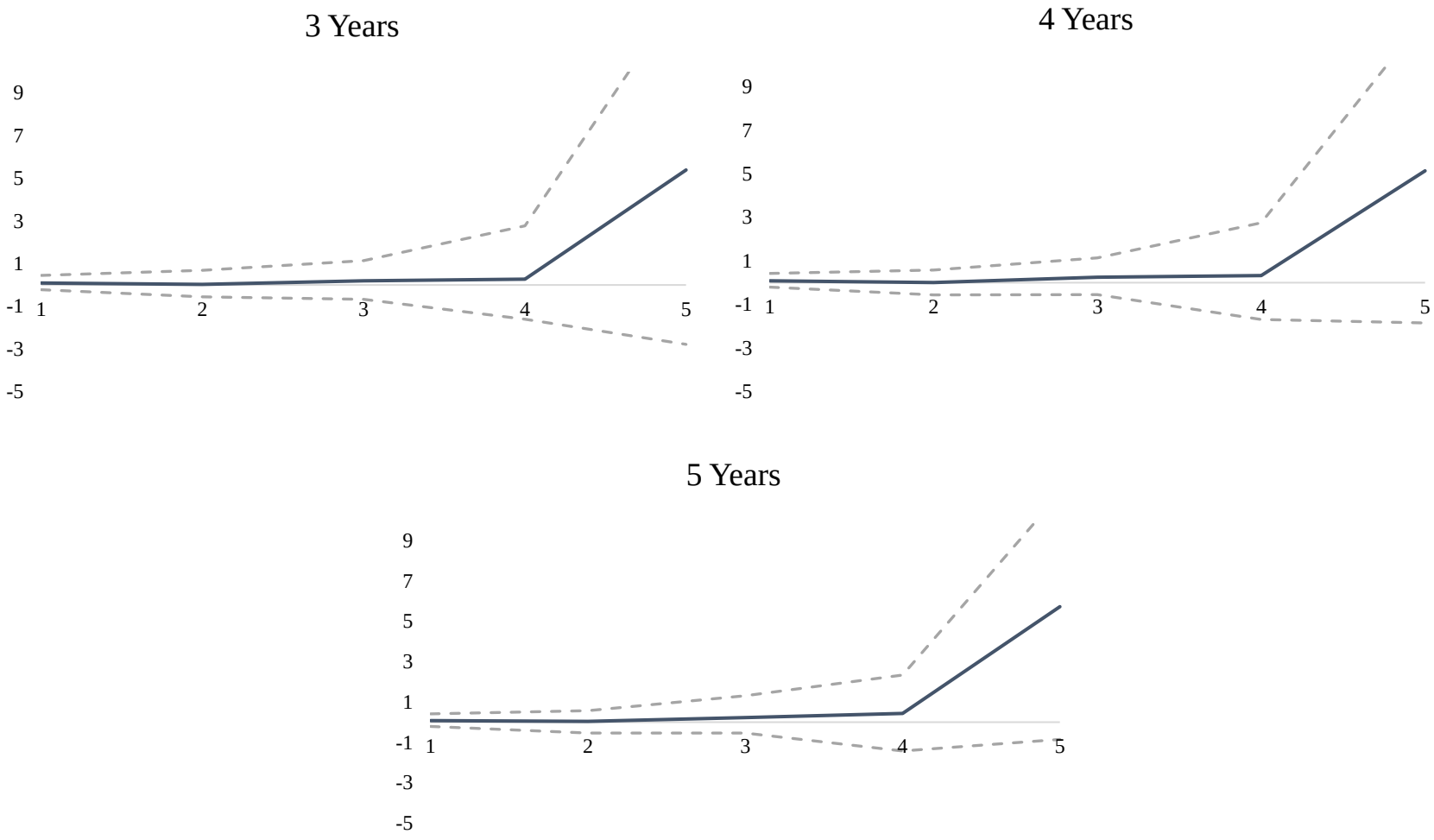

Table 1: Summary Statistics

The table below summarizes the characteristics of active U.S. international equity mutual funds with global investment mandates between 1991Q1 and 2022Q1. Country rotation is computed as $\frac{1}{2}\sum_{c=1}^{C}\left|w_{c,q} - w_{c,q-1}\right|$, where $w_{c,q}$ is the percentage of total net assets a fund allocates to country c at the end of quarter q. Country weight change is $w_{c,q} - w_{c,q-1}$. Definitions of other variables are in the Appendix I.

	Mean	Median	SD	5th	95th
Country rotation	7.7%	6.3%	5.3%	2.4%	17.4%
No. of funds	335	378	206	16	623
Fund size ($ millions)	2,254	349	8,697	22	9,186
No. of countries	22	21	8	10	38
Number of stock holdings per country	9	3	41	1	29
Country weight change	0.003%	0.00%	1.05%	-1.68%	1.70%
Fund benchmark-adjusted raw return (monthly)	0.05%	0.03%	1.7%	-2.4%	2.6%
Fund flows (monthly)	0.3%	-0.2%	4.7%	-4.9%	7.3%
Expense ratio (annual)	1.2%	1.2%	0.4%	0.5%	2.0%
Turnover (annual)	62%	47%	49%	10%	160%
Fund age	14	12	10	3	31
No. of managers	3	2	3	1	9
Active share	80%	82%	10%	6%	94%
Industry concentration	4%	3%	5%	0.6%	12%
Country concentration	54%	57%	13%	28%	71%

Table 2: Country Rotation and Fund Characteristics

In this table, we first sort funds into five groups based on country rotation in Panel A. We report the mean values of fund characteristics for each group. In Panel B, we regress country rotation on various fund characteristics. All fund characteristics are at the same time period as country rotation. Fund size, Fund age, and No. of managers are taken the natural logarithm in Panel B. Variable definitions are in the Appendix I. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered at the fund level. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Sort on country rotation

Country rotation group	1 (lowest)	2	3	4	5 (highest)
Fund size ($ millions)	3595	3518	2135	1264	781
Expense ratio	1.1%	1.1%	1.2%	1.2%	1.3%
Turnover	34.5%	44.5%	55.4%	69.7%	101.2%
Fund age	14	15	14	13	13
No. of managers	4	4	3	3	3
Active share	77%	79%	80%	82%	83%
Industry concentration	5%	4%	4%	4%	4%
Country concentration	51%	52%	54%	55%	56%

Panel B: Panel regressions

	(1)	(2)
Fund size	-0.0020***	-0.0009
	(-3.43)	(-1.45)
Expense ratio	0.5134**	0.4449*
	(2.25)	(1.83)
Turnover	0.0446***	0.0512***
	(29.44)	(28.51)
Fund age	-0.0056***	-0.0006
	(-3.44)	(-0.59)
No. of managers	-0.0008	-0.0020**
	(-0.86)	(-2.50)
Active share	0.1022***	0.0801***
	(11.02)	(10.34)
Industry concentration	0.0333*	-0.0328**
	(1.74)	(-2.21)
Country concentration	-0.0290***	0.0432***
	(-3.26)	(9.86)
Fund FE	Y	
Quarter FE	Y	Y
Adjusted R^2	0.5273	0.3485
Observations	32,176	32,176

Table 3: Country Rotation and Fund Performance

This table presents the effects of country rotation on fund performance. We run the following regressions: $R_{i,t+1} = \alpha + \beta \times country\ rotation_{i,t} + \varepsilon_{i,t+1}$, where $R_{i,t+1}$ is fund *i*'s raw return minus category benchmark return denominated in U.S. dollars in month *t+1* and $country\ rotation_{i,t}$ is fund *i*'s lagged country rotation. Panel A presents the baseline results. Fund size, Fund age, and No. of managers are taken the natural logarithm. Panel B includes additional variables to adjust for valuation effects. Country rotation_market = $\frac{1}{2}\sum_{c=1}^{C}\left|\frac{w_{c,q-1}(1+R_{c,q})}{\sum_{c=1}^{C} w_{c,q-1}(1+R_{c,q})} - w_{c,q-1}\right|$, where $w_{c,q-1}$ is the percentage of total net assets a fund allocates to country *c* at the end of quarter *q-1* and $R_{c,q}$ is country *c*'s market return denominated in U.S. dollars in quarter *q*. Country rotation_index= $\frac{1}{2}\sum_{c=1}^{C}|w_{index\ fund,c,q} - w_{index\ fund,c,q-1}|$, where $w_{index\ fund,c,q}$ is the percentage of total assets that the index funds in the same Morningstar category as fund *i* allocate to country *c* at the end of quarter *q*. Country rotation_active=$\frac{1}{2}\sum_{c=1}^{C}\left|w_{c,q} - \frac{w_{c,q-1}(1+R^{E}_{c,q})}{\sum_{c=1}^{C} w_{c,q-1}(1+R^{E}_{c,q})}\right|$, where $R^{E}_{c,q}$ is the fund's equity holding returns in country *c* during quarter *q* computed based on holdings at the end of quarter *q-1* and is denominated in U.S. dollars. For brevity, we do not report the coefficients on control variables in Panel B. Fixed effects are included where indicated. T-statistics are reported in parentheses. Standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Baseline results

	Time-series			Cross-sectional		
	(1)	(2)	(3)	(4)	(5)	(6)
Country rotation	0.0056***	0.0056***	0.0053***	0.0039**	0.0041**	0.0040**
	(3.57)	(3.13)	(2.92)	(2.56)	(2.53)	(2.43)
Fund size		-0.0013***	-0.0012***		0.0001	0.0001
		(-12.57)	(-12.07)		(1.14)	(1.42)
Fund risk		0.0079	0.0063		0.0198	0.0149
		(0.36)	(0.29)		(0.89)	(0.67)
Expense ratio		0.0056	0.0043		0.0395*	0.0204
		(0.17)	(0.13)		(1.74)	(0.90)
Turnover		0.0000	0.0000		-0.0002	-0.0000
		(0.06)	(0.16)		(-0.95)	(-0.28)
Fund age		0.0007*	0.0008**		-0.0002**	-0.0002*
		(1.87)	(2.13)		(-2.09)	(-1.84)
No. of managers		-0.0001	-0.0000		-0.0002*	-0.0001
		(-0.43)	(-0.11)		(-1.95)	(-1.28)
Active share			0.0019			0.0017*
			(1.16)			(1.95)
Industry concentration			0.0049			0.0053*
			(1.05)			(1.73)
Country concentration			0.0006			-0.0011
			(0.33)			(-1.19)
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1401	0.1423	0.1420	0.1336	0.1335	0.1336
Observations	100,178	86,930	86,840	100,178	86,930	86,840

Table 3: Country Rotation and Fund Performance (continued)

Panel B: Controlling for valuation effects

	Time-series			Cross-sectional		
	(1)	(2)	(3)	(4)	(5)	(6)
Country rotation	0.0062***	0.0056***	0.0057***	0.0048***	0.0052***	0.0052***
	(3.75)	(2.99)	(3.02)	(2.97)	(2.87)	(2.89)
Country rotation_market	-0.0027	-0.0019	-0.0021	-0.0033**	-0.0030*	-0.0034**
	(-1.27)	(-0.79)	(-0.87)	(-2.41)	(-1.95)	(-2.28)
Controls		Y	Y		Y	Y
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1401	0.1419	0.1420	0.1337	0.1336	0.1337
Observations	100,178	86,930	86,840	100,178	86,930	86,840

	Time-series			Cross-sectional		
	(1)	(2)	(3)	(4)	(5)	(6)
Country rotation	0.0054***	0.0050***	0.0050***	0.0036**	0.0035**	0.0033**
	(3.40)	(2.75)	(2.75)	(2.32)	(2.16)	(2.01)
Country rotation_index	0.0004	0.0010	0.0010	0.0010	0.0013	0.0017*
	(0.45)	(1.05)	(1.04)	(1.15)	(1.44)	(1.76)
Controls		Y	Y		Y	Y
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1349	0.1377	0.1378	0.1283	0.1288	0.1296
Observations	100,178	86,930	86,840	100,178	86,930	86,840

	Time-series			Cross-sectional		
	(1)	(2)	(3)	(4)	(5)	(6)
Country rotation_active	0.0055***	0.0053***	0.0049***	0.0036**	0.0038**	0.0035**
	(3.50)	(2.97)	(2.76)	(2.42)	(2.41)	(2.22)
Controls		Y	Y		Y	Y
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1402	0.1424	0.1420	0.1335	0.1336	0.1336
Observations	100,178	86,930	86,840	100,178	86,930	86,840

Table 4: Country Rotation, Fund Performance, and Value Added

This table presents the relation between country rotation and fund performance. In Panel A, at the end of each quarter, we sort funds into five groups based on their country rotation intensity. Within each group, we equally weigh each fund's performance. Fund performance is monthly fund return minus category benchmark return denominated in U.S. dollars. To compute the net of fee category benchmark return, we use the average expense ratio of index funds in the same category. Panel B presents the relation between dollar country rotation and value added. Value added is calculated as monthly fund benchmark-adjusted raw return multiplied by fund size in the previous month. Following the approach in Berk and van Binsbergen (2015), we first calculate the average value added for each fund in the sample and report the cross-sectional mean value added. We categorize funds into five groups based on their average dollar country rotation in the sample. Dollar country rotation is country rotation multiplied by fund size at quarter end. T-statistics are reported in parentheses. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Country rotation and fund benchmark-adjusted returns

Country rotation group	(1) (lowest)	(2)	(3)	(4)	(5) (highest)	(5) – (1)
	Fund return – benchmark return (raw)					
	0.0005	0.0008**	0.0008*	0.0016***	0.0019***	0.0014**
	(0.96)	(2.03)	(1.96)	(3.19)	(2.97)	(2.35)
	Fund return – benchmark return (net of fee)					
	-0.0000	0.0003	0.0003	0.0010**	0.0013**	0.0013**
	(-0.04)	(0.85)	(0.63)	(2.09)	(2.08)	(2.19)

Panel B: Dollar country rotation and value added

Dollar country rotation group	(1) (lowest)	(2)	(3)	(4)	(5) (highest)	(5) – (1)
Value added ($million)	-0.0287**	-0.0586**	-0.1397***	-0.1414	2.6615***	2.6903***
	(-2.40)	(-1.99)	(-3.19)	(-0.94)	(3.99)	(4.03)

Table 5: Country Rotation and Fund Performance, Differences across Funds

This table presents the effects of country rotation on fund performance across different funds. The dependent variable is fund monthly raw return minus category benchmark return. We interact country rotation with turnover, fund size, and expense ratio, respectively. We include the same control variables as in Table 3, column (3). For brevity, we do not report the coefficients on control variables. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	Time-series			Cross-sectional		
	(1)	(2)	(3)	(4)	(5)	(6)
Country rotation	0.0000	0.0558***	-0.0092	-0.0010	0.0395**	-0.0068
	(0.01)	(2.88)	(-1.61)	(-0.38)	(2.54)	(-1.47)
Country rotation × Turnover	0.0063**			0.0060**		
	(2.37)			(2.44)		
Country rotation × Fund size		-0.0026***			-0.0018**	
		(-2.63)			(-2.29)	
Country rotation × Expense ratio			1.0538***			0.8100**
			(2.70)			(2.46)
Controls	Y	Y	Y	Y	Y	Y
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1420	0.1420	0.1421	0.1337	0.1336	0.1337
Observations	86,840	86,840	86,840	86,840	86,840	86,840

Table 6: Country Rotation and Fund Performance: Active Regional and Index Funds

This table presents the effects of country rotation on fund performance among active regional funds and index funds with global mandates. The dependent variable is fund monthly raw return minus category benchmark return. We include the same control variables as in Table 3, column (2) for index funds, and the same control variables as in Table 3, column (3) for active regional funds. For brevity, we do not report the coefficients on control variables. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	Active Regional Fund		Index Fund	
	Time-series	Cross-sectional	Time-series	Cross-sectional
Country rotation	0.0016	-0.0041	0.0023	0.0009
	(0.38)	(-1.05)	(0.99)	(0.57)
Controls	Y	Y	Y	Y
Fund FE	Y		Y	
Month FE	Y	Y	Y	Y
Adjusted R^2	0.1621	0.1531	0.3786	0.3763
Observations	37,341	37,341	4,971	4,971

Table 7: Country Weight Change and Fund Country Holding Performance

This table presents the effects of country weight change on fund country holding performance. In columns (1) to (3), we run the regressions: $R_{i,c,t+1} = \alpha + \beta \times \Delta w_{i,c,t} + \varepsilon_{i,c,t+1}$, where $R_{i,c,t+1}$ is the fund i's equity holding return in country c in month $t+1$ and $\Delta w_{i,c,t}$ is fund i's lagged country weight change in country c. In columns (4) to (6), the dependent variable is fund country holding return minus category benchmark return. In columns (7) to (9), the dependent variable is fund country holding return minus fund return. Fund return is fund monthly raw return. Benchmark return is the monthly returns of the category benchmark index. All returns are denominated in U.S. dollars. We also report the results for observations with $\Delta w>0$ and $\Delta w<0$, respectively. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Fund country holding return			Fund country holding return net of benchmark return			Fund country holding return net of fund return		
	All	Δw>0	Δw<0	All	Δw>0	Δw<0	All	Δw>0	Δw<0
Δw	0.0219**	-0.0193	0.0438***	0.0210**	-0.0205	0.0386***	0.0200**	-0.0330***	0.0481***
	(2.21)	(-1.45)	(3.18)	(2.12)	(-1.55)	(2.81)	(2.03)	(-2.62)	(3.47)
Fund FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.3881	0.3858	0.3960	0.0226	0.0245	0.0300	0.0259	0.0256	0.0355
Observations	1,947,451	1,020,152	927,299	1,947,451	1,020,152	927,299	1,947,451	1,020,152	927,299

Table 8: Country Market Returns, Stock Picking, and Currency Returns

This table presents the effects of country weight change on fund country holding performance. In column (1), we run the regressions: $R_{i,c,t+1} = \alpha + \beta \times \Delta w_{i,c,t} + \varepsilon_{i,c,t+1}$, where $R_{i,c,t+1}$ is the fund *i*'s equity holding return in country *c* in month *t+1* denominated in U.S. dollars and $\Delta w_{i,c,t}$ is fund *i*'s lagged country weight change in country *c*. In column (2), the dependent variable is the country market return denominated in local currency, $R_{c,local,t+1}$. In column (3), the dependent variable is fund country holding return denominated in local currency minus country market return in local currency, $R_{i,c,local,t+1} - R_{c,local,t+1}$. In column (4), the dependent variable is the return in U.S. dollars from foreign currency valuation change, $R_{currency,c,t+1}$ computed as $\frac{S_{c,t+1}}{S_{c,t}} - 1$, where $S_{c,t}$=$/foreign currency. Column (4) focuses on non-U.S. holdings. In Panels A and B, we report the results for observations with Δw>0 and Δw<0. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Δw>0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	-0.0193	-0.0417***	0.0193*	-0.0025
	(-1.45)	(-3.90)	(1.80)	(-0.43)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3858	0.5249	0.0123	0.5115
Observations	1,020,152	1,020,152	1,020,152	964,060

Panel B: Δw<0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0438***	0.0358***	-0.0074	0.0233***
	(3.18)	(3.66)	(-0.63)	(4.07)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3960	0.5430	0.0119	0.5218
Observations	927,299	927,299	927,299	884,392

Table 9: Country Market Returns, Stock Picking, and Currency Returns: Developed vs. Emerging Markets

This table presents the effects of country weight change on fund country holding performance. This table follows the settings in Table 8, and we report the results for developed and emerging markets, respectively. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Δw>0

Developed markets

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	-0.0002	-0.0146	0.0148	-0.0028
	(-0.01)	(-1.44)	(1.41)	(-0.45)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.4263	0.5803	0.0138	0.6245
Observations	831,771	831,771	831,771	780,602

Emerging markets

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	-0.1022**	-0.1955***	0.0747*	0.0121
	(-2.32)	(-5.34)	(1.72)	(0.82)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3360	0.4588	0.0380	0.3599
Observations	188,381	188,381	188,381	183,458

Panel B: Δw<0

Developed markets

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0283**	0.0232**	-0.0125	0.0221***
	(2.19)	(2.46)	(-1.15)	(4.10)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.4358	0.6004	0.0127	0.6393
Observations	767,770	767,770	767,770	727,320

Emerging markets

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0665	0.0496	0.0114	0.0301*
	(1.10)	(1.45)	(0.22)	(1.67)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3453	0.4678	0.0419	0.3537
Observations	159,529	159,529	159,529	157,072

Table 10: Predictable Financial Crisis

This table presents the effects of country weight change on fund country holding performance. In column (1), we run the regressions: $R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c\,t} + \beta_2 \times \Delta w_{i,c\,t} \times R - zone_{c\,t} + \beta_3 \times R - zone_{c\,t} + \varepsilon_{i,c,t+1}$, where $R_{i,c,t+1}$ is the fund *i*'s equity holding return in country *c* in month *t+1* denominated in U.S. dollars and $\Delta w_{i,c,t}$ is fund *i*'s lagged country weight change in country *c*. R-zone_Bus (R-zone_HH) is taken from Greenwood et al. (2022) and is a dummy variable, taking the value of 1 for country-years with nonfinancial business (household) credit growth over the recent three years in the top quintile and stock market returns (house price growth) over the same window are in the top tercile. Dependent variables in columns (2) to (4) follow the settings in Table 8. In Panels A and B, we report the results for observations with Δw>0 and Δw<0. Fixed effects (FE) are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Δw>0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0095	-0.0247	0.0259*	-0.0008
	(0.51)	(-1.63)	(1.75)	(-0.08)
Δw×R-zone_Bus	0.0114	-0.0118	0.0127	0.0078
	(0.17)	(-0.28)	(0.24)	(0.37)
R-zone_Bus	0.0050***	0.0043***	0.0011	-0.0007
	(3.74)	(3.27)	(1.26)	(-1.56)
Δw×R-zone_HH	-0.0285	0.0007	-0.0191	0.0063
	(-0.81)	(0.03)	(-0.70)	(0.33)
R-zone_HH	0.0007	-0.0002	0.0005	0.0005
	(0.83)	(-0.29)	(0.97)	(0.97)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.4360	0.5506	0.0155	0.6090
Observations	542,309	542,309	542,309	512,419

Panel B: Δw<0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0287	0.0265*	-0.0212	0.0291***
	(1.53)	(1.91)	(-1.39)	(3.80)
Δw×R-zone_Bus	0.2219***	0.2536***	0.0004	-0.0147
	(2.84)	(4.63)	(0.01)	(-0.49)
R-zone_Bus	0.0038**	0.0062***	-0.0016*	-0.0011**
	(2.57)	(4.67)	(-1.71)	(-1.96)
Δw×R-zone_HH	-0.0015	-0.0035	-0.0088	0.0060
	(-0.04)	(-0.13)	(-0.31)	(0.33)
R-zone_HH	-0.0004	0.0001	-0.0006	0.0003
	(-0.50)	(0.18)	(-1.16)	(0.61)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.4433	0.5762	0.0127	0.6295
Observations	502,234	502,234	502,234	479,293

Table 11: The 2022 Russia-Ukraine War and Country Weight Change

We analyze country weight changes before the 2022 Russia-Ukraine war. We run the regressions: $\Delta w_{i,c\,q} = \alpha + \beta_1 \times Russia + \beta_2 \times Russia * brink\ of\ war + \beta_3 \times brink\ of\ war + \varepsilon_{i,c,q}$, where $\Delta w_{i,c,q}$ is fund i's country weight change in country c in quarter q, *Russia* is a dummy variable taking the value of 1 when *c=Russia*, and *brink of war* is a dummy variable taking the value of 1 when q is 2021Q4 and 0 when q is between 2020Q4 and 2021Q3. We include all the funds in column (1) and use only funds with high country rotation in column (2). Funds with high country rotation are funds with top 5% country rotation in each quarter. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Country weight change ($\Delta w_{i,c\,q}$)	
	All funds included	Only funds with high country rotation included
Russia	0.0001**	-0.0007
	(2.06)	(-0.78)
Russia × Brink of War	-0.0021***	-0.0150**
	(-3.29)	(-2.67)
Brink of War	0.0005**	0.0019
	(2.46)	(0.95)
Fund FE	Y	Y
Adjusted R^2	-0.0038	0.0166
Observations	66,092	3,371

Table 12: Country Rotation and Fund Flows

This table presents the estimates of monthly fund flows regressed on country rotation. In Panel A, we run the regressions: $Flow_{i,t+1} = \alpha + \beta \times country\ rotation_{i,t} + \varepsilon_{i,t+1}$, where $Flow_{i,t+1}$ is fund *i*'s flows in month *t+1*, and $country\ rotation_{i,t}$ is fund *i*'s lagged country rotation. The dependent variable is monthly fund flows. Alpha is the cumulative fund monthly net of fee returns in the previous twelve months minus the cumulative monthly return of the category benchmark. Variable definitions are in the Appendix I. Fund size, Fund age, and No. of managers are taken the natural logarithm. In Panel B, we interact country rotation with two dummy variables. High Alpha is a dummy variable taking the value of 1 for funds with top 20% Alpha in a month. High Morningstar rating is a dummy taking the value of 1 for funds with Morningstar rating as 5 stars and 0 for those with 1 to 4 stars. For brevity, we do not report the coefficients on control variables in Panel B. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Baseline results

	Time-series			Cross-sectional		
	(1)	(2)	(3)	(4)	(5)	(6)
Country rotation	0.0024	0.0005	-0.0146***	-0.0062*	-0.0093***	-0.0137***
	(0.55)	(0.12)	(-3.32)	(-1.74)	(-2.67)	(-3.58)
Alpha		0.0984***	0.0946***		0.1072***	0.1061***
		(29.87)	(29.12)		(30.27)	(30.70)
Fund size			-0.0023***			0.0002**
			(-7.97)			(2.00)
Fund risk			-0.3292***			-0.3068***
			(-13.09)			(-14.37)
Expense ratio			0.3223***			-0.1316***
			(2.91)			(-2.85)
Turnover			0.0001			-0.0010**
			(0.15)			(-2.41)
Fund age			-0.0229***			-0.0119***
			(-23.42)			(-42.85)
No. of managers			-0.0014***			-0.0015***
			(-3.93)			(-6.85)
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1175	0.1392	0.1584	0.0289	0.0583	0.0931
Observations	97,858	96,489	86,831	97,858	96,489	86,831

Table 12: Country Rotation and Fund Flows (continued)

Panel B: Additional results

	Time-series		Cross-sectional	
	(1)	(2)	(3)	(4)
Country rotation	-0.0253***	-0.0258***	-0.0252***	-0.0247***
	(-5.53)	(-5.53)	(-6.14)	(-6.05)
Country rotation × High Alpha	0.0558***		0.0560***	
	(6.29)		(6.09)	
High Alpha	0.0018**		0.0031***	
	(2.17)		(3.70)	
Country rotation × High Morningstar rating		0.1055***		0.1090***
		(6.13)		(6.28)
High Morningstar rating		0.0114***		0.0126***
		(8.65)		(9.53)
Controls	Y	Y	Y	Y
Fund FE	Y	Y		
Month FE	Y	Y	Y	Y
Adjusted R^2	0.1605	0.1644	0.0961	0.0991
Observations	86,831	76,889	86,831	76,889

Appendix I
Variable Definitions

Variable	Definition
No. of funds	The number of funds in a year
Fund size	The total net assets of a fund in million dollars
No. of countries	The number of countries in which a fund invests
Country rotation	$\frac{1}{2}\sum_{c=1}^{C}\left\|w_{c,q} - w_{c,q-1}\right\|$, where $w_{c,q}$ is the percentage of total assets a fund allocates to country c at the end of quarter q
Number of stock holdings per country	The number of stocks held by a fund in a country
Country weight change	The change in country portfolio weight during a quarter, $w_{c,q} - w_{c,q-1}$
Fund benchmark-adjusted raw return	The monthly fund raw return minus category benchmark return
Fund flow	The net inflow into a fund in a month
Expense ratio	The annual expense ratio
Turnover	The annual turnover ratio
Fund age	A fund's age in years since its inception
Fund risk	The past 12-month monthly fund return volatility
Alpha	The cumulative fund monthly net of fee returns in the previous twelve months minus the cumulative monthly return of the category benchmark
No. of managers	The number of managers in a fund
No. of female managers	The natural logarithm of one plus the number of female managers in a fund
No. of home-linked managers	The natural logarithm of one plus the number of managers from the home country of a specific fund country holding portfolio
No. of skilled managers	The natural logarithm of one plus the number of skilled managers. We define skilled managers as those fund managers with top 20% risk-adjusted returns in managing active U.S. domestic equity funds from 1991Q1 to 2022Q1.
Fund family size	The total assets of all U.S. international equity funds in a fund family
Active share	$\frac{1}{2}\sum_{i=1}^{I}\left\|w_{i,q} - w_{benchmark,i,q}\right\|$, where $w_{i,q}$ is the fund portfolio weight of stock i at the end of quarter q and $w_{benchmark,i,q}$ is the portfolio weight of stock i in the fund's Morningstar category benchmark index at the end of quarter q. It is based on Cremers and Petajisto (2009).

Appendix I
Variable Definitions (continued)

Industry concentration	$\sum_{j=1}^{10}(w_{j,q} - w_{world,j,q})^2$, where $w_{j,q}$ is the weight of the fund holdings in industry *j* at the end of quarter q and $w_{world,j,q}$ is the weight of the world stock market in industry *j* at the end of quarter q. It is based on Kacperczyk, Sialm, and Zheng (2005).
Country concentration	$\frac{1}{2}\sum_{c=1}^{C}\left\|w_{c,q} - w_{world,c,q}\right\|$, where $w_{c,q}$ is the percentage of total assets a fund allocates to country *c* at the end of quarter q and $w_{world,c,q}$ is the weight of the world stock market in country *c* at the end of quarter q. This measure is similar to the foreign concentration measure in Choi et al. (2017).
Dollar factor	The dollar factor is constructed by Lustig, Roussanov, and Verdelhan (2011). It is the monthly average change in the exchange rate between the U.S. dollar and all other currencies.
Carry factor	The carry factor is constructed by Lustig, Roussanov, and Verdelhan (2011). It is the monthly change in exchange rates between baskets of high and low interest rate currencies.
High Morningstar rating	A dummy variable taking the value of 1 for funds with Morningstar rating as 5 stars and 0 for those with 1 to 4 stars.

Internet Appendix

Can International Funds Navigate Changing Global Investment Environments?

Figure A1: Country Weight Change in Russia around the 2022 Russia-Ukraine War

The figure below shows the average country weight change in Russian equity holdings between 2020Q4 and 2022Q1. The sample includes active U.S. international equity funds with global investment mandates. The bars with a solid color fill present the average country weight change in Russian equity holdings. The bars with horizontal brick show the average country weight change in Russian by funds with the top 5% country rotation each quarter.

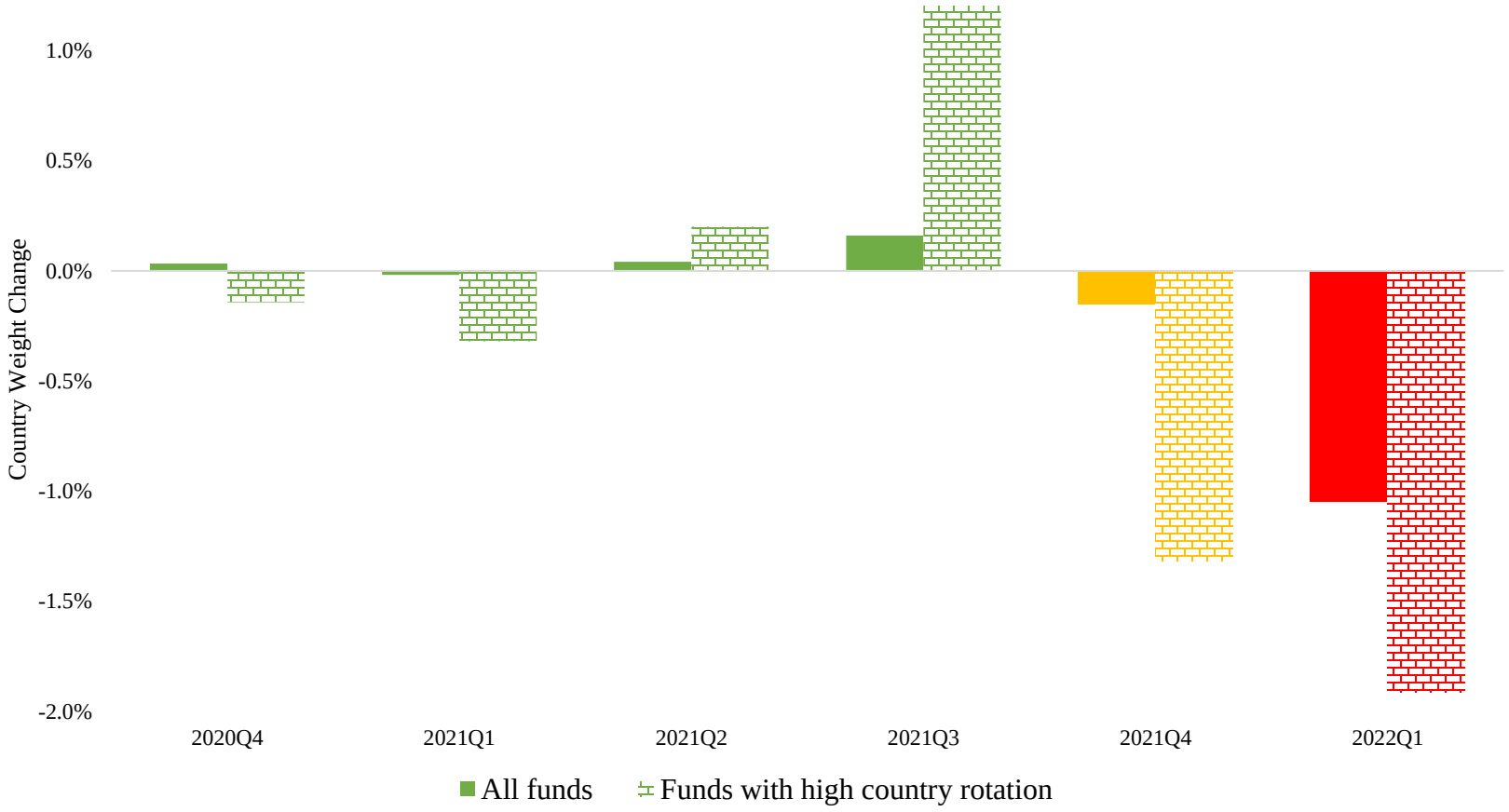

Table A1: Category Benchmark Indices

This table presents the benchmark index of each Morningstar category.

Morningstar category	Category benchmark index
Foreign Large Blend	MSCI ACWI Ex USA USD
Foreign Large Growth	MSCI ACWI Ex USA Growth USD
Foreign Large Value	MSCI ACWI Ex USA Value USD
Foreign Small/Mid Blend	MSCI World Ex USA SMID USD
Foreign Small/Mid Growth	MSCI World Ex USA SMID Growth USD
Foreign Small/Mid Value	MSCI World Ex USA SMID Value USD
World Large-Stock Blend	MSCI ACWI USD
World Large-Stock Growth	MSCI ACWI Growth USD
World Large-Stock Value	MSCI ACWI Value USD
World Small/Mid Stock	MSCI ACWI SMID USD
China Region	MSCI China USD
Diversified Emerging Mkts	MSCI EM USD
Diversified Pacific/Asia	MSCI Pacific USD
Europe Stock	MSCI Europe USD
India Equity	MSCI India USD
Japan Stock	MSCI Japan USD
Latin America Stock	MSCI EM Latin America USD
Pacific/Asia ex-Japan Stk	MSCI AC Far East Ex Japan USD

Table A2: An Example of Calculating Country Rotation

This table shows the calculation of country rotation for the Morgan Stanley Active International Allocation fund in 2022Q1. We present the country portfolio weights reported on 03/31/2022 ($w_{c,q}$) and on 12/31/2021 ($w_{c,q-1}$). Country rotation is computed as $\frac{1}{2}\sum_{c=1}^{C}\left|w_{c,q}-w_{c,q-1}\right|$, where $w_{c,q}$ is the percentage of total net assets a fund allocates to country *c* at the end of quarter *q*.

Country	$w_{c,q}$	$w_{c,q-1}$	$\left\|w_{c,q}-w_{c,q-1}\right\|$	$\frac{1}{2}\sum_{c=1}^{C}\left\|w_{c,q}-w_{c,q-1}\right\|$
Brazil	3.1%	0.6%	2.5%	
Canada	9.1%	6.0%	3.1%	
China	7.5%	7.7%	0.2%	
Denmark	1.8%	1.8%	0.0%	
France	8.4%	8.0%	0.4%	
Germany	9.8%	8.0%	1.8%	
India	3.2%	3.9%	0.7%	
Japan	8.9%	10.3%	1.4%	
South Korea	2.6%	2.9%	0.3%	
Netherland	5.9%	7.2%	1.3%	
Norway	0.5%	0.8%	0.3%	
Singapore	3.4%	6.4%	3.0%	
South Africa	0.9%	0.7%	0.2%	
Spain	0.7%	0.7%	0.0%	
Sweden	0.1%	0.2%	0.1%	
Switzerland	1.8%	1.4%	0.4%	
Taiwan, China	3.4%	3.8%	0.4%	
UK	16.8%	12.4%	4.4%	
U.S.	11.3%	13.3%	2.0%	
				11.3%

Table A3: Country Rotation and Net of Fee Fund Performance

This table presents the effects of country rotation on fund performance. We run the following regressions: $R_{i,t+1} = \alpha + \beta \times country\ rotation_{i,t} + \varepsilon_{i,t+1}$, where $R_{i,t+1}$ is fund i's net of fee return minus category benchmark net of fee return in month $t+1$ and $country\ rotation_{i,t}$ is fund i's lagged country rotation. To compute the net of fee category benchmark return, we use the average expense ratio of index funds in the same category. Fund size, Fund age, and No. of managers are taken the natural logarithm. Variable definitions are in the Appendix I. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	Time-series			Cross-sectional		
	(1)	(2)	(3)	(4)	(5)	(6)
Country rotation	0.0054***	0.0056***	0.0052***	0.0034**	0.0044***	0.0039**
	(3.44)	(3.15)	(2.90)	(2.23)	(2.73)	(2.38)
Fund size		-0.0012***	-0.0012***		0.0001**	0.0001***
		(-12.15)	(-11.57)		(2.21)	(2.65)
Fund risk		0.0098	0.0079		0.0304	0.0242
		(0.44)	(0.36)		(1.36)	(1.09)
Expense ratio		-0.0481	-0.0487		-0.0104	-0.0357
		(-1.47)	(-1.48)		(-0.46)	(-1.61)
Turnover		-0.0000	0.0000		-0.0002	-0.0000
		(-0.04)	(0.08)		(-1.20)	(-0.23)
Fund age		0.0006*	0.0007**		-0.0003***	-0.0003***
		(1.72)	(2.02)		(-3.03)	(-2.73)
No. of managers		-0.0001	-0.0000		-0.0002**	-0.0001
		(-0.52)	(-0.12)		(-2.40)	(-1.45)
Active share			0.0023			0.0029***
			(1.42)			(3.32)
Industry concentration			0.0058			0.0057*
			(1.25)			(1.86)
Country concentration			0.0006			-0.0009
			(0.36)			(-1.02)
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1413	0.1431	0.1429	0.1321	0.1324	0.1328
Observations	101,877	88,115	88,027	101,877	88,115	88,027

Table A4: Country Rotation and Fund Performance, Global Risk Factors

This table presents the effects of country rotation on fund performance. The dependent variable is fund monthly raw return minus category benchmark return. We add estimated loadings on Fama-French developed market and dollar and carry factors as additional controls. Factor loadings are estimated using 36-month rolling windows. In Columns (1) and (3), we include country rotation and loadings on risk factors. In Columns (2) and (4), we also include the same control variables as in Table 3, column (3). For brevity, we do not report the coefficients on control variables. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	Time-series		Cross-sectional	
	(1)	(2)	(3)	(4)
Country rotation	0.0069***	0.0053***	0.0038**	0.0039**
	(4.11)	(2.81)	(2.58)	(2.29)
Mktrf_loading	0.0009	0.0005	0.0023**	0.0021*
	(0.81)	(0.32)	(2.25)	(1.65)
SMB_loading	-0.0030***	-0.0032***	-0.0009	-0.0016***
	(-4.91)	(-4.87)	(-1.61)	(-2.85)
HML_loading	0.0004	0.0008	-0.0002	0.0000
	(0.60)	(1.16)	(-0.32)	(0.08)
MOM_loading	-0.0025**	-0.0024**	-0.0017**	-0.0016*
	(-2.53)	(-2.17)	(-2.12)	(-1.88)
RMW_loading	0.0014***	0.0018***	0.0008*	0.0014***
	(2.90)	(3.36)	(1.82)	(3.15)
CMA_loading	0.0002	0.0000	-0.0007*	-0.0007
	(0.43)	(0.01)	(-1.65)	(-1.46)
Dollar_loading	-0.0002	-0.0002	0.0002	0.0001
	(-0.38)	(-0.24)	(0.32)	(0.09)
Carry_loading	-0.0018**	-0.0025***	-0.0008	-0.0019**
	(-2.35)	(-2.99)	(-1.16)	(-2.41)
Controls		Y		Y
Fund FE	Y	Y		
Month FE	Y	Y	Y	Y
Adjusted R^2	0.1397	0.1418	0.1340	0.1349
Observations	90,059	80,756	90,059	80,756

Table A5: Active Country Rotation and Fund Performance

This table presents the relation between country rotation and fund performance. At the end of each quarter, we sort funds into five groups based on their country rotation_active. Country rotation_active$=\frac{1}{2}\sum_{c=1}^{C}\left|w_{c,q}-\frac{w_{c,q-1}(1+R_{c,q}^{E})}{\sum_{c=1}^{C}w_{c,q-1}(1+R_{c,q}^{E})}\right|$, where $w_{c,q}$ is the percentage of total net assets a fund allocates to country c at the end of quarter q and $R_{c,q}^{E}$ is the fund's equity holding returns in country c denominated in U.S. dollars in quarter q. Within each group, we equally weigh each fund's performance. Fund performance is monthly fund return minus category benchmark return denominated in U.S. dollars. To compute the net of fee category benchmark return, we use the average expense ratio of index funds in the same category. T-statistics are reported in parentheses. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Country rotation_active group	(1) (lowest)	(2)	(3)	(4)	(5) (highest)	(5) – (1)
	Fund return – benchmark return (raw)					
	0.0006	0.0008**	0.0007*	0.0017***	0.0017***	0.0012**
	(1.28)	(2.03)	(1.72)	(3.57)	(2.77)	(2.10)
	Fund return – benchmark return (net of fee)					
	0.0001	0.0004	0.0002	0.0012**	0.0012*	0.0010*
	(0.29)	(0.95)	(0.48)	(2.46)	(1.86)	(1.84)

Table A6: Country Rotation, Turnover, Industry Rotation, and Fund Performance

This table presents the effects of country rotation, turnover, and industry rotation on fund performance. The dependent variable is fund monthly raw return minus category benchmark return. In Panel A, we focus on turnover ratio and country rotation. Country rotation_4 quarter is computed as $\frac{1}{2}\sum_{c=1}^{C}\left|w_{c,q} - w_{c,q-4}\right|$, where $w_{c,q}$ is the percentage of total assets a fund allocates to country *c* at the end of quarter *q*. In Panel B, we focus on industry rotation and country rotation. Industry rotation is computed as $\frac{1}{2}\sum_{j=1}^{J}\left|w_{j,q} - w_{j,q-1}\right|$, where $w_{j,q}$ is the percentage of total net assets a fund allocates to industry *j* at the end of quarter *q*. Industry classification follows Kacperczyk, Sialm, and Zheng (2005). Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Turnover, country rotation, and fund performance

	Time-series				
	(1)	(2)	(3)	(4)	(5)
Turnover	0.0006***			0.0002	0.0002
	(3.62)			(1.14)	(1.00)
Country rotation		0.0056***		0.0060***	
		(3.57)		(3.66)	
Country rotation_4 quarter			0.0054***		0.0051***
			(4.64)		(4.19)
Fund FE	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y
Adjusted R-squared	0.1669	0.1401	0.1449	0.1399	0.1450
Observations	134,257	100,178	97,087	97,149	95,382

	Cross-sectional				
	(1)	(2)	(3)	(4)	(5)
Turnover	0.0004**			0.0000	-0.0000
	(2.52)			(0.04)	(-0.07)
Country rotation		0.0039**		0.0039***	
		(2.56)		(2.61)	
Country rotation_4 quarter			0.0027***		0.0027***
			(2.75)		(2.63)
Fund FE					
Month FE	Y	Y	Y	Y	Y
Adjusted R-squared	0.1608	0.1336	0.1399	0.1334	0.1402
Observations	134,257	100,178	97,087	97,149	95,382

Panel B: Industry rotation, country rotation, and fund performance

	Time-series		Cross-sectional	
	(1)	(2)	(3)	(4)
Industry rotation	0.0002	-0.0045*	-0.0006	-0.0056**
	(0.12)	(-1.82)	(-0.32)	(-2.32)
Country rotation		0.0076***		0.0065***
		(4.03)		(3.72)
Fund FE	Y	Y		
Month FE	Y	Y	Y	Y
Adjusted R-squared	0.1423	0.1401	0.1360	0.1336
Observations	104,507	100,160	104,507	100,160

Table A7: Decomposing Fund Country Holding Performance, Log Return

This table presents the effects of country weight change on fund country holding performance. We decompose the log return of fund country holdings as: $ln(1+R_{i,c,t+1}) = ln(1+R_{c,local,t+1}) + (ln(1+R_{i,c,local,t+1}) - ln(1+R_{c,local,t+1})) + ln(1+R_{currency,c,t+1})$, where $R_{i,c,t+1}$ is the fund i's equity holding return denominated in U.S. dollars in country c in month $t+1$, $R_{c,local,t+1}$ is the country market return denominated in local currency, $R_{i,c,local,t+1}$ is the fund country holding return denominated in local currency, and $R_{currency,c,t+1}$ is the return in U.S. dollars from foreign currency valuation changes. $R_{currency,c,t+1}$ is computed as $\frac{S_{c,t+1}}{S_{c,t}} - 1$, where $S_{c,t}$=$/foreign currency. $ln(1+R_{c,local,t+1})$ represents the country market timing component, $ln(1+R_{i,c,local,t+1}) - ln(1+R_{c,local,t+1})$ shows the stock-picking component, and $ln(1+R_{currency,c,t+1})$ is the currency valuation timing component. We regress these three components on lagged country weight changes. Column (4) focuses on non-U.S. holdings. In Panels A and B, we report the results for observations with Δw>0 and Δw<0. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Δw>0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0108	-0.0385***	0.0450***	-0.0014
	(0.78)	(-2.88)	(3.54)	(-0.24)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3957	0.4968	0.0156	0.4956
Observations	1,020,152	1,020,152	1,020,152	964,060

Panel B: Δw<0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0322**	0.0341***	-0.0204	0.0235***
	(2.31)	(3.13)	(-1.61)	(4.06)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.4028	0.5217	0.0151	0.5144
Observations	927,299	927,299	927,299	884,392

Table A8: Number of Stock Holdings in Each Country

This table presents the summary statistics for the number of stocks in each country held by a fund in a quarter.

	Percentile											Mean	SD
	5th	10th	20th	30th	40th	50th	60th	70th	80th	90th	95th		
All countries	1	1	1	1	2	3	4	5	8	16	29	9	41
Developed markets	1	1	1	2	2	3	4	6	10	19	34	10	44
Emerging markets	1	1	1	1	1	2	2	3	4	7	12	4	21

Table A9: Country Weight Change and Fund Country Holding Performance, Controlling for Valuation Effects

This table presents the effects of country weight change on fund country holding performance. The regressions follow the settings in Table 8. We add additional variables to adjust for valuation effects. $\Delta w_{market} = \frac{w_{c,q-1}(1+R_{c,q})}{\sum_{c=1}^{C} w_{c,q-1}(1+R_{c,q})} - w_{c,q-1}$, where $w_{c,q-1}$ is the percentage of total net assets a fund allocates to country *c* at the end of quarter *q-1* and $R_{c,q}$ is country *c*'s market return in quarter *q*. $\Delta w_{index} = w_{index\ fund,c,q} - w_{index\ fund,c,q-1}$, where $w_{index\ fund,c,q}$ is the percentage of total assets that the index funds in the same Morningstar category as fund *i* allocate to country *c* at the end of quarter *q*. $\Delta w_{active} = w_{c,q} - \frac{w_{c,q-1}(1+R^{E}_{c,q})}{\sum_{c=1}^{C} w_{c,q-1}(1+R^{E}_{c,q})}$, where $R^{E}_{c,q}$ is the fund's equity holding returns in country *c* during quarter *q* computed based on holdings at the end of quarter *q-1* and is denominated in U.S. dollars. In Panels B and C, we report the results for observations with $\Delta w>0$ and $\Delta w<0$. When using Δw_{active}, we report the results for observations with $\Delta w_{active}>0$ and $\Delta w_{active}<0$. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: All sample

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0263***	-0.0050	0.0221***	0.0076*
	(2.91)	(-0.83)	(3.42)	(1.93)
Δw_{market}	-0.0610**	0.0409	-0.1115***	0.0073
	(-2.56)	(1.58)	(-5.66)	(0.46)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3924	0.5352	0.0101	0.5220
Observations	1,947,451	1,947,451	1,947,451	1,848,452

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0239**	0.0019	0.0141**	0.0047
	(2.53)	(0.30)	(2.26)	(1.12)
Δw_{index}	-0.0148	-0.0512***	0.0041	0.0354***
	(-0.67)	(-2.78)	(0.29)	(3.02)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3898	0.5337	0.0100	0.5158
Observations	1,947,451	1,947,451	1,947,451	1,848,452

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw_{active}	0.0271***	0.0110**	0.0142***	0.0026
	(4.17)	(2.30)	(2.66)	(0.89)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3873	0.5347	0.0101	0.5153
Observations	1,947,451	1,947,451	1,947,451	1,848,452

Table A9: Country Weight Change and Fund Country Holding Performance, Controlling for Valuation Effects (continued)

Panel B: Δw>0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	-0.0063	-0.0494***	0.0398***	-0.0010
	(-0.52)	(-4.93)	(3.61)	(-0.21)
Δw_{market}	-0.0858***	0.0530*	-0.1339***	-0.0156
	(-3.46)	(1.88)	(-5.84)	(-0.88)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3908	0.5259	0.0125	0.5196
Observations	1,020,152	1,020,152	1,020,152	964,060

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	-0.0175	-0.0388***	0.0192*	-0.0037
	(-1.33)	(-3.64)	(1.79)	(-0.66)
Δw_{index}	-0.0269	-0.0552***	-0.0003	0.0283**
	(-1.15)	(-2.89)	(-0.02)	(2.36)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3877	0.5268	0.0123	0.5137
Observations	1,020,152	1,020,152	1,020,152	964,060

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw_{active}	-0.0025	-0.0342***	0.0285**	0.0009
	(-0.19)	(-3.55)	(2.48)	(0.20)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3877	0.5269	0.0121	0.5107
Observations	1,020,152	1,020,152	1,020,152	964,060

Table A9: Country Weight Change and Fund Country Holding Performance, Controlling for Valuation Effects (continued)

Panel C: $\Delta w<0$

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0436***	0.0355***	-0.0089	0.0231***
	(3.17)	(3.61)	(-0.77)	(4.10)
Δw_{market}	-0.0189	0.0467*	-0.0911***	0.0321*
	(-0.72)	(1.71)	(-4.23)	(1.93)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3994	0.5493	0.0120	0.5299
Observations	927,299	927,299	927,299	884,392

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0435***	0.0391***	-0.0080	0.0197***
	(3.17)	(4.05)	(-0.68)	(3.52)
Δw_{index}	0.0006	-0.0437**	0.0081	0.0426***
	(0.03)	(-2.26)	(0.53)	(3.35)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3976	0.5451	0.0119	0.5234
Observations	927,299	927,299	927,299	884,392

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw_{active}	0.0327**	0.0410***	-0.0074	0.0061
	(2.52)	(4.52)	(-0.62)	(1.25)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3881	0.5450	0.0092	0.5218
Observations	927,299	927,299	927,299	884,392

Table A10: Country Weight Change and Fund Country Holding Performance, Leaving and Entering a Country

This table presents the effects of country weight change on fund country holding performance. In columns (1) and (2), we focus on the cases that funds reduce the portfolio weight in a country to zero at the quarter end. In columns (3) to (6), we focus on the cases that funds have zero exposure to a country in the previous quarter and start to invest in the country in the current quarter. The regressions follow the settings in Table 8. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	Completely move away from a country		Enter a country			
	(1) Country market return (local currency)	(2) FX return	(3) Fund country holding return	(4) Country market return (local currency)	(5) Fund country holding return – country market return (local currency)	(6) FX return
Δw	0.0763**	-0.0011	-0.1244**	-0.1046***	-0.0597	0.0367***
	(2.27)	(-0.08)	(-2.44)	(-3.44)	(-1.16)	(2.68)
Fund FE	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.4128	0.4448	0.3038	0.4535	0.0285	0.4792
Observations	101,145	97,794	91,801	91,801	91,801	85,114

Table A11: Country Market Returns, Stock Picking, and Currency Returns: Currency Forward Rates

This table presents the effects of country weight change on fund country holding performance. In column (1), we run the regressions: $R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c\,t} + \beta_2 \times \Delta w_{i,c\,t} \times \text{FX\_forward}_{c,t} + \beta_3 \times \text{FX\_forward}_{c,t} + \varepsilon_{i,c,t+1}$, where $R_{i,c,t+1}$ is the fund *i*'s equity holding return denominated in U.S. dollars in country *c* in month *t+1* and $\Delta w_{i,c,t}$ is fund *i*'s lagged country weight change in country *c*. $\text{FX\_forward}_{c,t}$ is computed as $\frac{f_{c,t}}{S_{c,t}} - 1$, where $f_{c,t}$ is the 3-month forward exchange rate and $S_{c,t}$ is the spot exchange rate. Both forward and spot rates are in $/foreign currency. Dependent variables in columns (2) to (4) follow the settings in Table 8. In Panels A and B, we report the results for observations with Δw>0 and Δw<0. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Δw>0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	-0.0272**	-0.0378***	0.0205**	-0.0099*
	(-2.04)	(-3.93)	(1.97)	(-1.72)
Δw×FX_forward	10.3047***	-3.0279	10.7505***	3.1142*
	(3.17)	(-1.15)	(4.54)	(1.80)
FX_forward	-0.1004	-0.1046	-0.0142	0.0369
	(-1.04)	(-1.24)	(-0.23)	(0.68)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.4141	0.5737	0.0112	0.5617
Observations	890,216	890,216	890,216	890,216

Panel B: Δw<0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0553***	0.0357***	-0.0015	0.0247***
	(3.74)	(3.57)	(-0.12)	(4.38)
Δw×FX_forward	0.4019	9.1157***	-7.9308***	-1.2473
	(0.10)	(3.57)	(-3.36)	(-0.65)
FX_forward	-0.0732	-0.1582**	0.0492	0.0524
	(-0.71)	(-1.99)	(0.80)	(0.89)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.4174	0.5897	0.0114	0.5683
Observations	825,403	825,403	825,403	825,403

Table A12: Country Market Returns, Stock Picking, and Currency Returns: Currency Hedging Instruments

This table presents the effects of country weight change on fund country holding performance. FX_hedge is a dummy variable, taking the value of 1 for funds with at least 1% assets allocated to currency hedging instruments. Currency hedging instruments include currency forward, future, option and swap. The regressions follow the settings in Table 8. In Panels A and B, we report the results for observations with $\Delta w>0$ and $\Delta w<0$. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: $\Delta w>0$

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	-0.0211	-0.0421***	0.0173	-0.0027
	(-1.57)	(-3.91)	(1.58)	(-0.47)
$\Delta w \times$ FX_hedge	0.0361	0.0073	0.0379	0.0037
	(1.10)	(0.35)	(1.31)	(0.28)
FX_hedge	-0.0006	-0.0003	-0.0003	-0.0000
	(-1.24)	(-1.21)	(-0.57)	(-0.18)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3858	0.5249	0.0123	0.5115
Observations	1,020,152	1,020,152	1,020,152	964,060

Panel B: $\Delta w<0$

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0432***	0.0370***	-0.0092	0.0231***
	(3.10)	(3.77)	(-0.77)	(4.00)
$\Delta w \times$ FX_hedge	0.0103	-0.0231	0.0353	0.0035
	(0.28)	(-1.12)	(1.08)	(0.28)
FX_hedge	-0.0000	-0.0002	0.0003	-0.0001
	(-0.07)	(-0.75)	(0.55)	(-0.66)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3960	0.5430	0.0119	0.5218
Observations	927,299	927,299	927,299	884,392

Table A13: Country Market Returns, Stock Picking, and Currency Returns: U.S. Holdings

This table presents the effects of country weight change on fund country holding performance. We focus on funds' U.S. stock holdings. The regressions follow the settings in Table 8. In Panels A and B, we report the results for observations with $\Delta w>0$ and $\Delta w<0$. Fixed effects are included where indicated. Since we focus on one country in this table, the month fixed effect would absorb the effect of country market return. We do not include the month fixed effect. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: $\Delta w>0$

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)
Δw	-0.0507	-0.2035***	0.1528***
	(-1.03)	(-3.68)	(3.08)
Fund FE	Y	Y	Y
Country FE	Y	Y	Y
Adjusted R^2	0.0042	0.0394	0.0327
Observations	41,350	41,350	41,350

Panel B: $\Delta w<0$

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)
Δw	-0.0859	0.0508	-0.1366***
	(-1.34)	(0.87)	(-3.09)
Fund FE	Y	Y	Y
Country FE	Y	Y	Y
Adjusted R^2	0.0160	0.0439	0.0334
Observations	33,576	33,576	33,576

Table A14: Country Market Returns, Stock Picking, and Currency Returns: Manager and Fund Characteristics

This table presents the effects of country weight change on fund country holding performance. This table presents the effects of country weight change on fund country holding performance. In Column (1), we run the regression: $R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c\,t} + \beta_2 \times \Delta w_{i,c\,t} \times X + \beta_3 \times X + \varepsilon_{i,c,t+1}$, where $R_{i,c,t+1}$ is the fund *i*'s equity holding return in country *c* in month *t+1* and as the dependent variable in column (1), $\Delta w_{i,c,t}$ is fund *i*'s lagged country weight change in country *c*, and *X* stands for those characteristics of managers and funds. Dependent variables in columns (2) to (4) follow the settings in Table 8. No. of female managers is the natural logarithm of one plus the number of female managers in a fund. No. of home-linked manager is the natural logarithm of one plus the number of managers from country *c* in fund *i*. No. of skilled managers is the natural logarithm of one plus the number of skilled managers. We define skilled managers as those fund managers with top 20% risk-adjusted returns in managing active U.S. domestic equity funds from 1991Q1 to 2022Q1. Fund family size is the total assets of all U.S. international equity funds in a fund family and is taken the natural logarithm. For brevity, we do not report the coefficients on characteristics of managers and funds. In Panels A and B, we report the results for observations with Δw>0 and Δw<0. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Δw>0

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0745	0.0699	-0.0106	0.0170
	(0.81)	(1.08)	(-0.13)	(0.46)
Δw × No. of female managers	-0.0008	-0.0258	0.0172	-0.0002
	(-0.03)	(-1.54)	(0.84)	(-0.02)
Δw × No. of home-linked managers	0.0182	-0.0763**	0.0973***	0.0249
	(0.64)	(-2.37)	(2.66)	(1.41)
Δw × No. of skilled managers	-0.0165	-0.0866***	0.0615*	0.0033
	(-0.50)	(-3.14)	(1.67)	(0.27)
Δw × Fund family size	-0.0045	-0.0042	0.0004	-0.0009
	(-1.07)	(-1.46)	(0.10)	(-0.57)
Controls	Y	Y	Y	Y
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3860	0.5251	0.0125	0.5115
Observations	1,020,152	1,020,152	1,020,152	964,060

Table A14: Country Market Returns, Stock Picking, and Currency Returns: Manager and Fund Characteristics (continued)

Panel B: $\Delta w<0$

	(1) Fund country holding return	(2) Country market return (local currency)	(3) Fund country holding return – country market return (local currency)	(4) FX return
Δw	0.0982	0.1294*	0.0017	-0.0569
	(0.91)	(1.96)	(0.02)	(-1.49)
$\Delta w \times$ No. of female managers	-0.0069	0.0223	-0.0405*	0.0270***
	(-0.26)	(1.36)	(-1.81)	(2.67)
$\Delta w \times$ No. of home-linked managers	-0.0319	0.0306	-0.0665**	-0.0274
	(-1.18)	(1.22)	(-2.17)	(-1.06)
$\Delta w \times$ No. of skilled managers	0.0716*	0.0741***	0.0027	0.0035
	(1.82)	(2.64)	(0.07)	(0.24)
$\Delta w \times$ Fund family size	-0.0026	-0.0050*	0.0003	0.0035**
	(-0.53)	(-1.68)	(0.07)	(1.99)
Controls	Y	Y	Y	Y
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3961	0.5437	0.0120	0.5217
Observations	927,299	927,299	927,299	884,392

Table A15: Country Weight Change and Fund Country Holding Performance, Alternative Models

This table presents the effects of country weight change on fund country holding performance. In Panel A, we run the regression: $R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c,t} + \beta_2 \times \Delta w^{-}_{i,c,t} + \varepsilon_{i,c,t+1}$, where $R_{i,c,t+1}$ is the fund *i*'s equity holding return in country *c* in month *t+1* and as the dependent variable in column (1), $\Delta w_{i,c,t}$ is fund *i*'s lagged country weight change in country *c*, and $\Delta w^{-}_{i,c,t}$ is Min ($\Delta w_{i,c,t}$, 0). In Panel B, we run the regression: $R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c,t} + \beta_2 \times \Delta w^{2}_{i,c,t} + \varepsilon_{i,c,t+1}$. Dependent variables in columns (2) to (4) follow the settings in Table 8. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Model with $\Delta w^{-}_{i,c,t}$

	(1)	(2)	(3)	
	Fund country holding return	Country market return (local currency)	Fund country holding return – country market return (local currency)	FX return
Δw	-0.0082	-0.0400***	0.0266***	-0.0043
	(-0.58)	(-3.79)	(2.61)	(-0.72)
Δw⁻	0.0630***	0.0782***	-0.0268	0.0262***
	(3.13)	(4.89)	(-1.59)	(3.23)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3881	0.5317	0.0100	0.5139
Observations	1,947,451	1,947,451	1,947,451	1,848,452

Panel B: Quadratic model

	(1)	(2)	(3)	
	Fund country holding return	Country market return (local currency)	Fund country holding return – country market return (local currency)	FX return
Δw	0.0229**	-0.0013	0.0133**	0.0085*
	(2.32)	(-0.19)	(2.15)	(1.83)
Δw^2	-0.8212***	-1.0352***	0.3682*	-0.2797**
	(-3.05)	(-4.77)	(1.65)	(-2.25)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.3881	0.5317	0.0100	0.5139
Observations	1,947,451	1,947,451	1,947,451	1,848,452

Table A16: Country Rotation and Fund Flows, Retail- and Institutional-oriented Funds

This table presents the estimates of monthly fund flows regressed on country rotation among institutional and retail-oriented funds. A fund is classified as an institutional-oriented (retail-oriented) fund if more than 80% (less than 20%) of fund assets are owned through the institutional share class. The dependent variable is monthly fund flows. we interact country rotation with two dummy variables. High Alpha is a dummy variable taking the value of 1 for funds with top 20% Alpha in a month. High Morningstar rating is a dummy taking the value of 1 for funds with Morningstar rating as 5 stars and 0 for those with 1 to 4 stars. We include the same control variables as in Table 12, column (3). For brevity, we do not report the coefficients on control variables. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	Retail-oriented funds			
	Time-series		Cross-sectional	
	(1)	(2)	(3)	(4)
Country rotation	-0.0190***	-0.0243***	-0.0185***	-0.0221***
	(-3.22)	(-4.07)	(-3.50)	(-4.23)
Country rotation × High Alpha	0.0428***		0.0440***	
	(3.71)		(3.66)	
High Alpha	0.0017		0.0030***	
	(1.59)		(2.69)	
Country rotation × High Morningstar rating		0.1045***		0.1525***
		(4.22)		(6.25)
High Morningstar rating		0.0119***		0.0096***
		(6.49)		(5.42)
Controls	Y	Y	Y	Y
Fund FE	Y	Y		
Month FE	Y	Y	Y	Y
Adjusted R^2	0.1793	0.1771	0.1037	0.1058
Observations	43,652	38,138	43,652	38,138

Table A16: Country Rotation and Fund Flows, Retail- and Institutional-oriented Funds (continued)

	Institutional-oriented funds			
	Time-series		Cross-sectional	
	(1)	(2)	(3)	(4)
Country rotation	-0.0018	0.0075	-0.0127	-0.0034
	(-0.15)	(0.60)	(-1.43)	(-0.35)
Country rotation × High Alpha	0.0550***		0.0636***	
	(2.61)		(3.03)	
High Alpha	-0.0001		0.0011	
	(-0.05)		(0.60)	
Country rotation × High Morningstar rating		-0.0257		-0.0167
		(-0.84)		(-0.47)
High Morningstar rating		0.0162***		0.0209***
		(6.15)		(7.42)
Controls	Y	Y	Y	Y
Fund FE	Y	Y		
Month FE	Y	Y	Y	Y
Adjusted R^2	0.1691	0.1752	0.0730	0.0728
Observations	20,597	17,624	20,597	17,624

Table A17: Country Rotation and Fund Flows, Additional Results

This table presents the estimates of monthly fund flows regressed on country rotation. The dependent variable is monthly fund flows. We interact country rotation with Alpha and Morningstar rating, respectively. Alpha is the cumulative fund monthly net of fee returns in the previous twelve months minus the cumulative monthly return of the category benchmark. We include the same control variables as in Table 12, column (3). For brevity, we do not report the coefficients on control variables. Fixed effects are included where indicated. T-statistics are reported in parentheses. The standard errors are clustered by category × month. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

	Time-series		Cross-sectional	
	(1)	(2)	(3)	(4)
Country rotation	-0.0120***	-0.0532***	-0.0114***	-0.0496***
	(-2.67)	(-5.67)	(-2.91)	(-5.51)
Country rotation × Alpha	0.2214***		0.1814***	
	(4.39)		(3.38)	
Country rotation × Morningstar rating		0.0150***		0.0154***
		(4.57)		(4.71)
Morningstar rating		0.0073***		0.0076***
		(23.88)		(25.85)
Controls	Y	Y	Y	Y
Fund FE	Y	Y		
Month FE	Y	Y	Y	Y
Adjusted R^2	0.1589	0.1804	0.0934	0.1214
Observations	86,831	76,889	86,831	76,889