Can International Funds Navigate Changing Global Investment Environments?

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Abstract

Our paper analyzes whether international equity funds can attain superior investment performance by actively changing, or "rotating," their country asset allocations. 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 greatest intensity have the highest value added. 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 returns. Overall, we find that active international funds have country rotation skills.

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1. Introduction

Much research and market wisdom affirm that investors should invest in low-cost, passive international funds to seek international diversification and growth in foreign markets.[1] But recent years have seen that global investment environments can 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. The Russian stock market dropped 30% in just one month with the onset of the war with Ukraine in 2022. Investing in an active international equity mutual fund that actively changes or rotates its country allocation may help investors navigate the unexpected shifts in 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.

Active international fund managers are tasked professionally to keep track of the global market conditions and change their country allocations accordingly. Funds' prospectuses and websites often provide extensive discussions and forecasts of country market conditions. Meanwhile, Paul A. Samuelson conjectures, often referred to as Samuelson's dictum, that financial markets have greater macro-inefficiency than micro-inefficiency.[2] Active international funds are

[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), De Santis and Gerard (1997), Stulz (1999), Errunza, Hogan, and Hung (1999), Dahlquist and Harvey (2001), Karolyi and Stulz (2003), among many others.

[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

uniquely equipped to exploit macro-inefficiency across national stock markets by rotating country asset allocations. However, languages, cultures, and political and economic environments differ drastically across countries. The home bias literature has documented severe information asymmetry arising from language and knowledge barriers in international investing.[3] Collecting and processing information on different countries and turning it into timely and profitable country allocation decisions are challenging. The information-based theory of home bias (Van Nieuwerburgh and Veldkamp, 2009) also suggests investors should focus on building their informational advantages on a few countries instead of rotating across countries. Actively moving assets across country borders also faces substantial transaction costs and potential capital controls.[4] It is an empirical question whether international equity funds can attain superior investment performance by actively changing, or "rotating," their country asset allocations.

We define and measure country rotation as 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

aggregate indexes of security prices below and above various definitions of fundamental values." Samuelson (1998) makes a similar statement. Several recent theory papers (Garleanu and Pedersen (2022), Glasserman and Mamaysky (2023)) have rationalized Samuelson's dictum of micro-efficiency and macro-inefficiency as an equilibrium outcome in financial markets.

[3] For example, see surveys by Karolyi and Stulz (2003), Lewis (2011), Cooper et al. (2013).

[4] For example, see Chiyachantana et al. (2004) and IMF's annual report on exchange arrangements and exchange restrictions.

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 or stock selection. We further link such skills once uncovered to characteristics of the funds, fund managers, and the ever-changing investment environments of the individual markets that constitute the global mandates.

If certain international fund managers are skilled in identifying time-varying investment risks and opportunities in different markets that comprise their investment mandate, then they would move their assets from countries with poorer investment prospects to those with better investment prospects 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 relation between the level of country rotation and subsequent fund performance.

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%. We find that funds with high levels of country rotation do have superior performance across funds and over time. For the same fund, a one-standard-deviation increase in the level of its country rotation activity is associated with an increase in annualized fund benchmark adjusted returns of 0.36%. The superior performance of an annualized 36 basis points is economically meaningful in that it is equivalent to a 59% increase relative to the average annualized international fund benchmark adjusted return

for the sample period we study. Cross-sectionally, a fund with a one-standard-deviation higher country rotation intensity has a 0.25% higher annualized fund benchmark adjusted returns.

Funds that change their country allocations the most also deliver a sizable value added. Value added is the amount of money that a mutual fund extracts from capital markets and is calculated as the product of the fund's gross alpha and size (Berk and van Binsbergen, 2015). The group of funds that churn country allocations most heavily has an average annualized value added of $32 million per fund.

Country rotation can arise simply from shifts in market valuations alone and not necessarily by means of strategic actions by fund managers. In a value-weighted world market index, if a country's market experiences 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 this valuation effect can predict fund returns. For each active fund in our sample, we identify its benchmark passive index funds and calculate what we call "passive country rotation." Even after controlling for the level of passive country rotation, we find that the country rotation of active international funds still reliably predicts fund performance.

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 fund. We first examine whether fund country weight changes in a country are associated with subsequent fund country holding returns and decompose the returns into stock-selection versus country market-timing components.

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 downside-market asymmetry further, we decompose the country holding returns into country market-timing versus stock-selection components. Much of the superior performance identified on the downside comes from country market timing skills and not stock selection skills. Funds are able to anticipate underperformance at the level of country market index returns, and they tactically 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.

To better understand the nature of country rotation skills, we study whether the characteristics of fund managers impact country market-timing and stock-picking abilities. Female managers are significantly better at anticipating subsequent poor country market returns and trimming their portfolio holdings in advance. Foreign managers perform better in timing bad market conditions and purchasing high-performing stocks in their home countries. Skilled managers, as evident from their superior performance in managing active domestic funds, are also good at timing bad market conditions. These findings suggest that country rotation skills closely

relate to fund managers' attitudes toward risks, general investment ability, and access to local information in different countries.

To offer some useful clinical evidence to support these overall findings, we use the recent Russia-Ukraine War as a clinical experiment to examine how international funds adjust their country portfolios. On February 24, 2022, Russia launched an invasion of Ukraine. For weeks before, Russia had been building up a military presence by the border. However, due to longstanding conflicts between the two countries and the persistent Russian denial of its intention to invade, investors seemed caught in a surprise. Immediate reactions among investment communities were big. Russia faced immediate financial and economic sanctions from the U.S. and many other developed countries. The MOEX Russia index, the leading ruble-denominated benchmark of the Russian stock market, dropped by 30% in February 2022, and 29% over the entire first quarter of 2022. Russia's Moscow stock exchange was shut on February 28 and reopened for limited trading on March 24. We investigate fund holdings in Russian stocks and find that funds with high country rotation disproportionally decreased their Russian holdings one quarter ahead in the last quarter of 2021 when a war was far from certain.

The final experiment in our study examines the relation between country rotation and fund flows. To the best of our knowledge, there has been no systematic measurement and reporting of country rotation strategies among international mutual funds, let alone whether country rotation intensity is associated with fund performance. Hence, it is an open empirical question as to whether investors pay enough attention to provide high country rotation funds with higher flows. We find that they do not. However, for the subset of funds with superior past performance, country rotation

does significantly attract incremental future fund inflows. Our results suggest that investors only consider high country rotation signals potentially better future performance among funds with superior track records.

Our research on country-rotation intensity contributes to several important research streams. First, the home bias literature has documented severe information asymmetry arising from language and knowledge barriers in international investing for U.S. investors. Van Nieuwerburgh and Veldkamp (2009) establish the importance of building up information endowment on a selected set of countries and show that a portfolio concentration on these countries will lead to higher performance. In a U.S. setting, Kacperczyk, Sialm, and Zheng (2005) find that U.S. domestic funds with industry concentration outperform other funds. Choi et al. (2017) further find that international funds with concentrated country and industry portfolios have higher performance. Schumacher (2018) documents that international equity funds with high foreign industry bias deliver positive risk-adjusted performance. Jagannathan, Jiao, and Karolyi (2022) find that international mutual fund managers overweight and outperform on their home-country stock holdings; by contrast, Busse, Goyal, and Wahal (2014) that finds active global mutual funds on average do not generate superior performance. We contribute to this important literature not by studying fund concentration on certain sets of countries or sectors, but rather by uncovering how international mutual funds change their country asset allocations over time and whether such

changing allocations result in overperformance. These phenomena we show to be distinctly different ones.[5]

There is mixed evidence on whether funds have market timing skills in a domestic setting. Henriksson and Merton (1981), Becker, Ferson, Myers, and Schill (1999), and Jiang (2003) find that fund managers do not have market timing ability. Chance and Hemler (2001), Bollen and Busse (2001), Jiang, Yao, and Yu (2007), Kacpercyzk, van Nieuwerburgh, and Veldkamp (2014), and Bodnaruk, Chokaev, and Simonov (2019) find positive market timing ability. All these studies focus on the ability to time a single market, the U.S. market. Our paper speaks to funds' ability to keep track of and time the market returns of a large number of countries, a more challenging task than only timing a single market, but also a setting that potentially provides more opportunities for funds to exploit any macro-inefficiency.[6]

Finally, we also contribute to the research on mutual fund flows. Early work in the fund flows literature mainly studies U.S. domestic equity funds and establishes that fund flows respond to past fund performance and other factors (e.g., Ippolito, 1992; Chevalier and Ellison, 1997; Sirri and Tufano, 1998; Christoffersen, Musto, and Wermers, 2014). There is limited research to date

[5] It is important to acknowledge several recent papers that examine how international mutual funds make decisions regarding their capital allocations, but based on motives that are not necessarily related to returns. Kempf et al. (2022) propose international fund managers invest based on political ideology. Cross-border collaboration of regulators over time affects international fund portfolio allocations and the capital flow of investors (Lang, Maffett, Omartian, and Silvers 2020; Silvers 2021). Other papers examine frictions, such as linguistic, ethnic, religious, geographical distance and common currency (e.g., Guiso, Sapienza, and Zingales 2009; Leblang 2010; Burchardi, Chaney, and Hassan 2019; Maggiori, Neiman, and Schreger 2020).

[6] One study is an exception. Glassman and Riddick (2006) use a sample of 9 global equity funds between 1985 and 1994 to study whether these funds can time the market returns of four markets, Japan, Germany, UK, and the U.S. They find that the funds only show country market timing ability in one market, Japan. In contrast, we show robust evidence of downside country market timing based on all the countries funds invest in (on average, the funds in our sample invest in more than 20 countries).

studying flows in international equity mutual funds. We confirm the positive flow-performance relationship in international funds and find that country rotation would attract flows among funds with superior past performance.

2. Data and summary statistics

We obtain information on U.S. international equity mutual funds from Morningstar. 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.[7] We exclude fund-quarter observations with below $10 million total net assets and drop those with more than 75% of total net assets in U.S. stocks. Our sample period is from 1991Q1 to 2022Q1. International stock data are obtained 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). Morningstar assigns a benchmark index to each category.[8] We obtain the category benchmark index returns data from Datastream. All the returns data are denominated in U.S. dollars.

We also collect country level variables as follows. The sources of these data are explained in detail in the appendix. Data on cross-border portfolio equity inflows are obtained from the World

[7] 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.
[8] We list the benchmark index of each category in the appendix.

Bank. It measures the net equity inflows including shares, stocks, depository receipts (American or global), and direct purchases of shares in local stock markets by foreign investors. Our economic uncertainty measure is constructed by Ahir, Bloom, and Furceri (2022) based on quarterly indices of economic uncertainty for 143 countries using frequency counts of "uncertainty" (and its variants) in the quarterly Economist Intelligence Unit (EIU) country reports. The geopolitical risk measure is constructed by Caldara and Iacoviello (2022) based on a tally of newspaper articles.

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

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

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.[9] Country rotation ranges from 0% to 100% for long-only mutual funds that do not buy on margin.

[9] In Table A1 of the appendix, we present an example of calculating country rotation for the Morgan Stanley Active International Allocation Fund using the fund's reported country portfolio weights.

In Panel A of 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, and the median number of funds is 378. An average fund has approximately $2.3 billion assets under management. The average number of countries a fund invests in is 22, and the median is 21, suggesting funds in our sample indeed invest in a considerable number of countries. Country weight change is the percentage of total net assets that a fund moves to a specific country in a quarter. The average country weight change is 0.003%, and the standard deviation of country weight change is 1.05%. Fund benchmark adjusted raw return is fund monthly raw return minus the monthly returns of the corresponding category benchmark index. The average fund benchmark adjusted raw return is 0.05% per month. After considering fees, the average fund benchmark adjusted net of fee return is -0.05% per month. Fund flows are, on average, 0.3% per month. The average annual expense ratio is 1.2%, while the average annual turnover ratio is about 52%. Funds in our sample have an average fund age of 14 years, and each fund has, on average, three portfolio managers in the management team.

Active share (Cremers and Petajisto, 2009) represents how much a fund's equity holdings differ from the benchmark index holdings. The average active share is 80% in our sample. Industry concentration (Kacperczyk, Sialm, and Zheng, 2005) measures how much a fund's industry allocations deviate from the industry allocations of the world market portfolio. The average industry concentration is 4% in our sample. Country concentration measures how much a fund's

country allocations deviate from the country allocations of the world market portfolio. This measure is similar to the foreign concentration measure in Choi et al. (2017). On average, the country concentration in our sample is 54%.

Panel B of Table 1 reports the correlation matrix. Country rotation has a positive correlation of 0.52 with turnover, suggesting country rotation relates to funds' trading activities. Active share, industry concentration, and country concentration are measures of fund activeness proposed by prior studies. On balance, country rotation is not strongly correlated with country concentration, active share, or industry concentration. This suggests country rotation captures a new dimension of active management in international markets. The correlation between country rotation and country concentration is 0.1. The correlation between country rotation and active share is 0.11, while the correlation between country rotation and industry concentration is -0.01.

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. The group with the lowest country rotation only shows around 4% country rotation in our sample period. Meanwhile, we observe fluctuations in the level of country rotation over time. And the group with the highest country rotation clearly shows much higher fluctuations in the level of country rotation over time compared to other groups of funds. This figure indicates

considerable heterogeneity in the country rotation intensity levels across different funds. And funds actively change country allocations over time.

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. For the group with the highest country rotation, the average country rotation is 15.2% in the formation quarter, 12% in quarter -4, and 12 % in quarter +4. For the quintile with the lowest country rotation, the average country rotation is 3.1% in the formation quarter, 4.8% in quarter -4, and 4.6% in quarter +4. Even though we observe persistence in country rotation, funds in the group with the highest country rotation exhibit the largest changes in their country rotation levels from quarter 4 (-4) to the formation quarter. This finding suggests that funds with high country rotation are also more active in changing their country rotation levels.

3.2 Country rotation and fund characteristics

We relate country rotation of funds to fund characteristics in Table 2. We regress a fund's country rotation in a quarter on various fund characteristics that are measured at the same time period. The fund characteristics include fund size, expense ratio, turnover ratio, fund age, number of managers, active share, industry concentration, and country concentration. 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.

Funds with larger assets under management would incur higher transaction costs when they move assets across countries. Column (1) indicates that for the same fund, its country rotation decreases as its size and age grow. Columns (1) and (2) show that funds with higher levels of country rotation also charge investors higher fees. Funds need to trade assets in different countries to navigate the changing investment environments, and Table 2 confirms that turnover ratio is positively related to the levels of country rotation. We also find active share is positively and significantly related to the levels of country rotation. This finding suggests that funds with high country rotation would not merely move their assets across countries to follow countries' market portfolios. Instead, they also appear to pick stocks tactically in different markets. These results demonstrate that the fund characteristic of country rotation intensity, new to this paper, is distinctly different from that of industry concentration and that of country concentration.

4. Country rotation strategies and international fund performance

In this section, we examine the performance implications of country rotation. In particular, we seek to understand whether funds actively change their country allocations to navigate the time-varying investment risks and opportunities in different markets. If a fund has the ability to navigate the changing global investment environments, then it should generate better performance after changing its country allocation with greater intensity. We first examine whether there is a positive relation between a fund's country rotation and subsequent fund performance.

4.1 Baseline results

We run the following regression:

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

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. Thus, 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*. 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.

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 return 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 Column (4), 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. 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).

We also estimate the relation between country rotation and fund performance with control variables. The controls include fund size, 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.

Our control variables have been documented in prior studies to have impacted mutual fund performance. 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. Pástor, Stambaugh, and Taylor (2015) show that performance deteriorates over a typical fund's lifetime. Bär, Kempf, and Ruenzi (2011) find single managers are much more likely to achieve extreme (good or bad) performance outcomes.

Three measures on fund portfolio composition have been found in the literature to affect performance. These include active share, industry concentration, and country concentration.

Cremers and Petajisto (2009) and Petajisto (2013) construct the active share measure, which represents how much a fund's equity holdings differ from the benchmark holdings and show that funds with holdings much differing from benchmarks deliver superior performance. Kacperczyk, Sialm, and Zheng (2005) propose the industry concentration measure, which captures how much a fund's industry allocations deviate from the industry allocations of the market portfolio and find that funds with more industry concentration perform better. There is also a debate about whether the benefits of international diversification come largely from the diversity of industrial structures across countries. Examples include the work of Roll (1992), Heston and Rouwenhorst (1994), and Griffin and Karolyi (1998), among many others. We control the fund's industry concentration, which alleviates the concern that funds with higher country rotation intensity perform better simply because they hold more industrially-diversified portfolios.

Country concentration measures how much a fund's country allocations deviate from its benchmark's country allocations. Choi et al. (2017) find funds with concentrated country portfolios have higher performance. Controlling for 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, and fund age is positively related to fund performance in the time-series regressions. In Columns (5) and (6) of Panel A, we show the number of managers is negatively related to fund performance in the cross-sectional 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 control for these control variables.[10] 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), Panel A.

In Panel B, we conduct similar analyses as in Panel A using net of fee fund returns. 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 return as the dependent variable. In Panel B, we observe similar relation between country rotation and fund performance as documented in Panel A after we take into account fees. Overall, in this subsection, we show that the relation between country rotation and fund performance is reliably positive and economically significant in the time series and the cross section of funds.

4.2 Country rotation-performance link for funds with different characteristics

Next, we conduct additional analyses to assess whether the positive country rotation-performance relation is due to different funds' abilities to navigate the changing investment

[10] To alleviate the concern that the positive country rotation-performance relation is driven by the exposures to global 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 factors (Lustig, Roussanov, and Verdelhan, 2011). The coefficients on country rotation remain positive and significant after controlling for exposures to global risk factors. The results are shown in Table A2 of the appendix.

environments. 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 Pastor, 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 4. 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 4 confirms that the country rotation-performance relation is stronger among smaller funds and funds with higher expenses and turnover.

4.3 Country rotation-performance relations for regional funds and index funds

In Table 5, 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 similar to 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 5 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 5. 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, and 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.

4.4 Country rotation-performance relations beyond valuation-induced country rotation

Throughout the paper, we measure country rotation using the country weight changes. However, even for active international equity funds, part of the country weight changes could be simply driven by market 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. In Table A3 of the appendix, for each active global fund in our sample, we match up the passive index funds in the same fund category. We then compute passive country rotation using these index funds' country allocation changes and add passive country rotation as a control variable. We find that passive country rotation 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. These results indicate that the positive relation between country rotation and performance is driven by funds actively responding to changing risks and opportunities in different markets.

4.5 Country rotation intensity or fund turnover?

Next, we look deeper into whether country-rotation intensity is just another manifestation of fund turnover. Pastor, Stambaugh, and Taylor (2017) propose fund turnover to measure domestic funds' exploitation of profit opportunities in the US. 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 Table A4 of the 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 Pastor, 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. Together, these findings give us additional confidence it is a country-rotation strategy of active international funds that are a primary source of superior investment 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 6, we run the following regression:

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

where $R_{i,c,t+1}$ is the fund *i*'s equity holding return 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*. We include fund fixed effects, country fixed effects, and month fixed effects. 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 6, 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 6, 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 those in Columns (1) to (3).

5.3 Country market timing vs. stock picking

One natural question is whether funds have country market timing or stock picking skills when they change their country holding weights. In Table 7, we decompose fund country holding returns into a country-market-timing component (i.e., country market returns) and a stock-picking component (i.e., fund's country holding returns minus country market returns). 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 Thomson Reuters Datastream International datasets. To minimize potential biases arising from small and illiquid stocks, we remove those stocks in the bottom 10% market cap in each country. We use the CRSP value-weighted market returns as the U.S. monthly returns. We regress these two components on country weight changes, respectively.

In Panel A of Table 7, we find that country weight changes are positively related to country market returns but statistically insignificant. Country weight changes are positively and significantly related to the stock-picking component, suggesting funds exhibit stock-picking ability. To examine the asymmetry between the upside and downside fund country weight changes, 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, $\Delta w_{i,c,t} < 0$). Panel B of Table 7 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. Thus, overall, country weight changes are not significantly related to fund country holding returns when funds increase the weights in a country.

In Panel C of Table 7, we find that when funds decrease their weights in a country, that country's stock market would significantly drop in the subsequent period. Namely, funds exhibit country market timing ability, but only on timing the bad market conditions. And funds do not

show stock-picking ability when reducing their country weights in a country. In addition, we also test whether funds can correctly time country market performance when the markets experience a substantial drop. In Table A5 of the appendix, we limit our sample to cases when a country's stock market drops by more than 15% in a month. When we rerun the regression of returns on country weight change, we find that the coefficient is approximately three times bigger. Our results suggest that funds significantly drop their portfolio weights in a country before the country crash.

In our sample, there are also cases that 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 would drop after funds completely dump the holdings in a country. In Column (1) of Table A6 of the appendix, we find that when funds completely move their assets away from a country, that country's stock market index would drop significantly in the subsequent periods. In addition, we also examine the cases that 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 A6 of the appendix, we find that when funds enter a country, their country weight changes do not correctly predict subsequent fund country holding returns.

We also separate funds equity holdings into U.S. holdings and non-U.S. holdings to examine the relation between fund country weight changes and fund country holding returns. In Table A7 of the appendix, we find the relations documented in Tables 6 and 7 hold in non-U.S. holdings but not in U.S. holdings. These findings indicate country rotation benefits active international equity funds mainly from their country allocation changes across non-U.S. countries.

Part of the country weight changes can be simply from market valuation effects. We use the country weight changes by the benchmark index funds as the proxy for the country valuation effects. In Table A8 of the appendix, we control for country weight changes by index funds and find the same patterns as observed in Tables 6 and 7. These results suggest that valuation effects do not drive the relation between fund country weight changes and fund country holding returns.

5.4 Non-linear models

Next, 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 6. Specifically, we run the following regression:

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

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. This asymmetric model is specified in the spirit of the Henriksson-Merton model (Henriksson and Merton, 1981; and 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 A9 in the 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 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 marginally significant. This finding suggests that subsequent stock-picking component returns are less sensitive to downward country weight changes. On balance, the findings here also support that funds are good at avoiding downside risks and can sell country holdings ahead of subsequent negative country returns. We further confirm this finding on asymmetric relation by examining a quadratic model specification in Panel B of Table A9 and Figure A1 of the appendix.

5.5 Characteristics of managers, countries, and funds

In this subsection, we further investigate the nature of country rotation skills. We study whether the characteristics of fund managers, countries, and funds impact country market-timing and stock-picking abilities. In previous subsections, we show funds have country market timing ability when they decrease their weights in a country. When funds increase their weights in a country, they earn returns from picking stocks. In Table 8, we focus on these two aspects.

Fund manager characteristics include female fund managers, home-linked managers, and skilled managers that also manage active U.S. domestic equity funds. Prior studies have shown that females are more risk-averse and trade less aggressively than males.[12] Table 8 shows that

[12] 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).

female managers are better at protecting investors from downside risks by trimming their portfolio holdings in a country before the subsequent bad country market returns.

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. We find that home-linked managers are better at timing bad country market conditions and picking stocks when they increase country weights.

If we think fund managers who generate alphas have better general investment ability, then those who are skilled in managing their domestic investments might also conduct country rotations well. We identify skilled managers as the ones with top 20% risk-adjusted returns in managing active U.S. domestic equity funds from 1991Q1 to 2022Q1.[13] Our results in Table 8 show that such skilled managers with superior track record are also skilled at timing bad country market conditions.

In addition, we also interact country weight change with emerging market and English-speaking country dummies.[14] The high information asymmetry in emerging markets may hinder managers' ability to collect information from those markets. In Table 8, however, we find that

[13] 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; and Carhart, 1997). Each manager's risk-adjusted return is the average risk-adjusted returns of all the funds which the manager manages.

[14] Emerging market dummy is based on International Monetary Fund (IMF)'s classification on advanced economies and emerging economies. English-speaking country dummy is based on the classification of the UK government.

funds' ability to time country markets and stock picking is the same in emerging and developed markets. We also show language barriers have no significant impact. Funds do not exhibit better country market timing or stock picking in English-speaking countries.

Finally, we consider two fund characteristics, funds focusing on small/mid-cap stocks and fund family size. Certain funds in our sample mainly invest in small/mid-cap stocks of each country.[15] Investing in small/mid-cap foreign stocks may present unique opportunities because of the high likelihood of mispricing, but it also involves high risks and information asymmetry. Our results in Table 8 show that funds that mainly invest in small/mid-cap stocks are much better at picking stocks when they increase weights in a country. 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. Thus, we also test whether funds in larger families are better at rotating assets across countries. But our results suggest that fund family size is not significantly related to country market timing or stock-picking abilities.

On balance, these findings suggest that a fund's country rotation skills are closely related to its fund managers' risk attitude, general investment ability, and access to local information in different countries.

5.6 Country-level proxies for the changing investment environment

[15] These funds mainly invest in small/mid-cap stocks include funds in the following Morningstar categories: Foreign Small/Mid Blend, Foreign Small/Mid Growth, Foreign Small/Mid Value, and World Small/Mid Stock.

In this subsection, we exploit country-level proxies for the changing investment environments in different countries: cross-border equity inflow, volatility, economic uncertainty, and geopolitical risk. If fund managers use their processed information in different countries to rotate assets, then they should adjust fund country weights in response to the changes in these country-level proxies for the changing environments.

Cross-border equity inflow is the cross-border capital inflows to equity securities in a country. Higher portfolio equity inflows indicate foreign investors collectively perceive higher profit opportunities in one country's market. Volatility is the cross-sectional standard deviation of individual stock monthly returns for all stocks in a country. The higher the cross-sectional volatility of individual stock returns, the higher the potential for profit opportunities and mispricing in the country market. Pastor, Stambaugh, and Taylor (2017) also use the cross-sectional volatility as the proxy for profit opportunities and argue that higher volatility corresponds to greater uncertainty about future values and thus greater potential for investors to err in assessing those values. Economic uncertainty is based on the world uncertainty index constructed by Ahir, Bloom, and Furceri (2022), who show that the index is negatively associated with GDP growth and output. Geopolitical risk is based on the geopolitical risk index constructed by Caldara and Iacoviello (2022), who show that the index is associated with a decline in real activity and stock returns.

In Table 9, we regress country weight changes on the four country-level variables. We find that funds increase their portfolio weights in countries with higher portfolio equity inflows and higher volatility. And funds lower their portfolio weights in countries with higher economic uncertainty and higher geopolitical risk. These results provide further evidence of how fund

managers adjust their portfolio weights based on the changing investment environments in different countries.

5.7 Clinical evidence from the 2022 Russia-Ukraine War

In this subsection, we propose a quasi-natural experiment to shed additional light on whether funds change their country asset allocations in response to changing environments in different markets. 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 active international funds had lowered their portfolio weights in Russia before this war.

In Figure 3, 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 funds correctly anticipated this crisis and lowered their Russian exposure in advance.

In Table 10, we use regression analysis to test the patterns in Figure 3. 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, these findings suggest that active international funds anticipated this geopolitical crisis and significantly lowered their Russian exposure in advance.

6. Dollar country rotation and value added

Berk and van Binsbergen (2015) propose value added as a measure of mutual fund skill. Value added is the amount of money that a mutual fund extracts from capital markets and is calculated as the product of the fund's gross alpha and size. In this section, we examine whether

funds that rotate more assets across countries have higher value added. 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 assets. Similarly, if funds with high country rotation can protect investors from downside risks, such as lowering their exposure to Russia before the war, then 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 AUM that moved 1% of its assets out of Russia before the Ukrainian war would add more value than a fund with $1 million AUM that moved 10% of its assets out of Russia. Therefore, we study the relation between dollar country rotation and value added in this section. We calculate 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 adjust all fund size numbers by inflation by expressing all numbers in January 1, 2000 dollars. We then 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. For each fund, we calculate its average dollar country rotation in the sample and rank funds into five groups based on their average dollar country rotation. We then report the cross-sectional mean value added for funds in each of the five groups.[16]

In Table 11, 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

[16] Pastor, 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.

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 4, 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 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 4 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.

7. Country rotation and fund flows

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. These allocations could attract invest attention and influence fund flows. However, as there has been (to now) no systematic measurement and reporting of country rotation intensity for each fund let alone whether country rotation is associated with positive fund performance, it is not clear that investors would know that funds with higher country rotation tend to have better performance. Furthermore, as we saw earlier, the country rotation-performance relation is most prominent among high-expense and high-turnover funds,

something that investors may not reward with higher inflows. Ultimately, it is an empirical question whether country rotation is associated with higher flows. In this section, we examine the relation between country rotation and fund flows.

In Table 12, we regress a fund's subsequent monthly fund flows on its country rotation.[17] We include fund fixed effects and month fixed effects. 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. Apparently, investors do not seem to pay enough attention to funds' country rotation to provide funds with high country rotation with higher inflows. 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. Previous studies (among others, Chevalier and Ellison, 1997; Sirri and Tufano, 1998; and, Christoffersen, Musto, and Wermers, 2014) document that fund flows are positively related to recent fund performance. We confirm that 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.

Investors might pay more attention to funds' country rotation if these funds also have really good or really bad past performance. For example, they may consider high-performing fund managers with high country rotation as being particularly skillful. And high country rotation

[17] 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.

potentially signals better future fund performance beyond what's implied by past fund returns. To investigate this conjecture, we separate funds into three groups (High, Medium, and Low) based on their alphas and run separate regressions.

Column (3) shows the result for funds with high alpha. We find indeed investors reward high-performing funds that have high country rotation with significant inflows. The coefficient 0.0579 implies that a one-standard-deviation increase in a fund's country rotation translates into an increase in monthly flows of 0.31% (= 0.0579 × 0.053). This number is substantial in that it is about a 100% increase relative to the average monthly fund flows, which equals 0.3%.

Columns (4) and (5) show the results for funds with medium or low alpha. The coefficients on country rotation are comparable across these two fund groups, and the absolute magnitudes are substantially smaller than that for funds with high alpha. For example, the coefficient on country rotation for funds with medium alpha is -0.0140. This coefficient implies that a one-standard-deviation increase in a fund's country rotation translates into an increase in monthly flows of only -0.07% (= -0.0140 × 0.053). The results suggest that investors generally dislike funds with high country rotation. Without superior performance, funds with high country rotation tend to have more outflows. In Column (6), we include additional control variables to the model specifications. We control for fund size, fund risk, expense ratio, turnover, number of managers, and fund age, following previous literature. We show fund size, fund risk, fund age, and number of managers

are negatively related to future fund flows in our sample. Overall, flows are negatively associated with country rotation, a result that is driven by funds with medium or low alphas.[18]

So far, our result suggests that fund flows is related to country rotation, but such a relationship is sensitive to previous fund performance. To investigate this further, we interact country rotation with fund alpha in Columns (7) and (8). The coefficient on the interaction term in Column (7) is positive and significant. This finding confirms that country rotation would attract fund flows among funds with superior past performance. It also implies that funds with poor past performance and high-country rotation intensity is associated with outflows. In Column (8), we add additional control variables and again find a positive and significant coefficient on the interaction term.

8. Conclusions

With the reduction of investment barriers and the interest of investors to diversify globally, the size of the U.S. international mutual fund industry has grown to a staggering $3.5 trillion in 2021. Despite the growing popularity of passive investing, 80% of these international funds are actively managed, which involves allocating capital across countries. Our paper investigates whether active fund managers have skills in changing their country allocations to exploit opportunities and avoid losses in different countries. We document that active funds with higher country rotation have better performance. We find that active fund managers who are more skilled

[18] In unreported results, we use Column (6) model specification to check the results for funds with high, medium, or low fund alphas. We still find that country rotation coefficients to be positive for funds with high alpha and the coefficients to be negative and with smaller absolute magnitude for funds with medium or low alpha.

in assessing international country investment opportunities should do more country rotation to exploit the opportunities and avoid losses.

We dig deeper into the source of skills through a more granular level of data analysis and find that a fund's change of holding in a country is positively associated with the future returns in the country holdings. Interestingly, we find this relation is asymmetric – it mainly comes from the downside when funds sell country holdings ahead of subsequent poor country market returns. Using the 2022 Russia-Ukraine War as a clinical experiment, we show funds with high country rotation disproportionally decreased their Russian holdings one quarter ahead of the outbreak of war.

Our paper brings new evidence to the international finance literature. Current papers on international fund skills focus on fund managers having information endowment on 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 managers with skills. We also propose that it should be disclosed proactively by funds.

To allocate capital across countries successfully, international fund managers need to keep track of different countries' developments and adjust country allocations appropriately. Fund families often provide various country macroeconomic outlooks and allocation forecasts. Future

research can evaluate these forecasts to see whether they are informative, especially in detecting downturns, and whether fund managers follow such forecasts.

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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 $\frac{1}{2}\sum_{c=1}^{C}\left|w_{c,q} - w_{c,q-1}\right|$, where $w_{c,q}$ is the percentage of total assets a fund allocates to country c at the end of quarter q. 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.

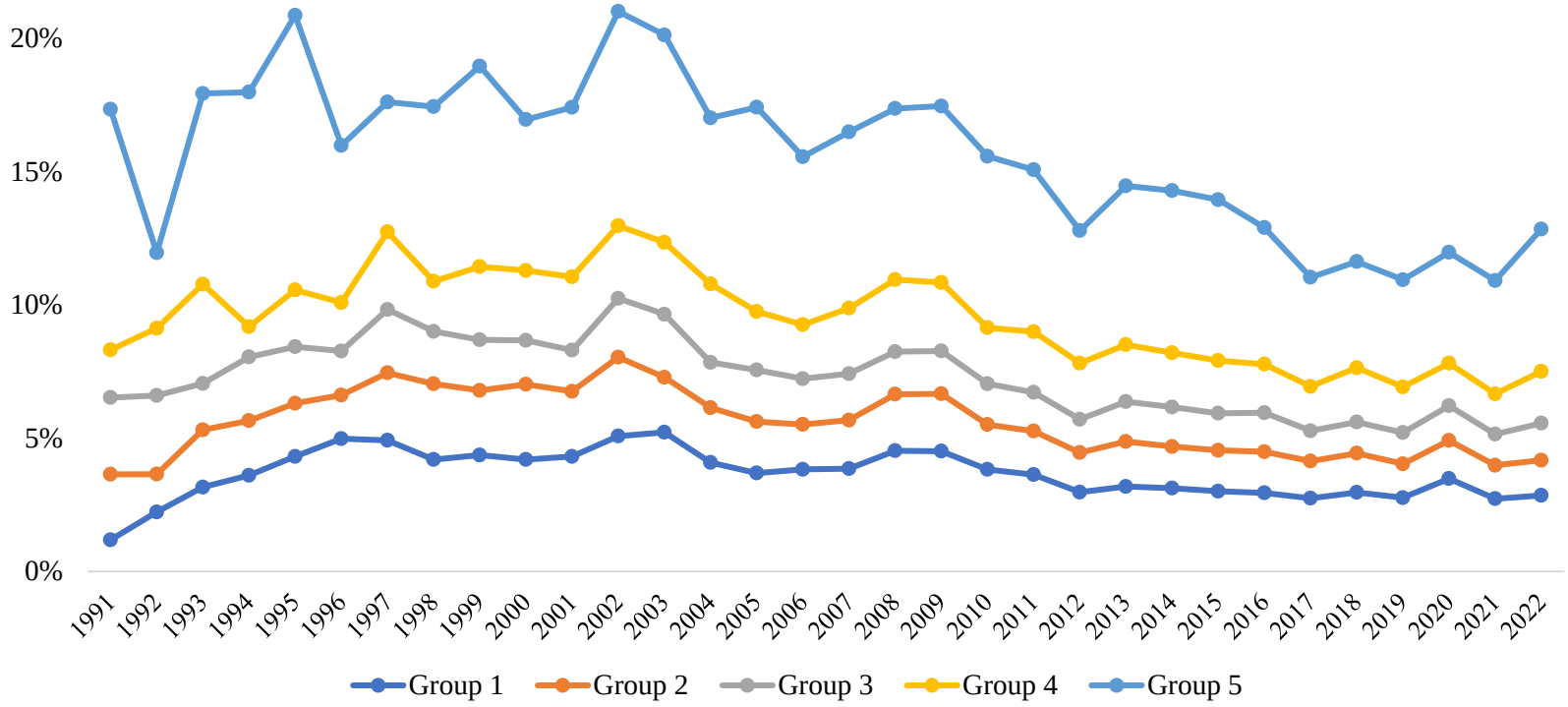


Figure 2: Persistence of Country Rotation

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.

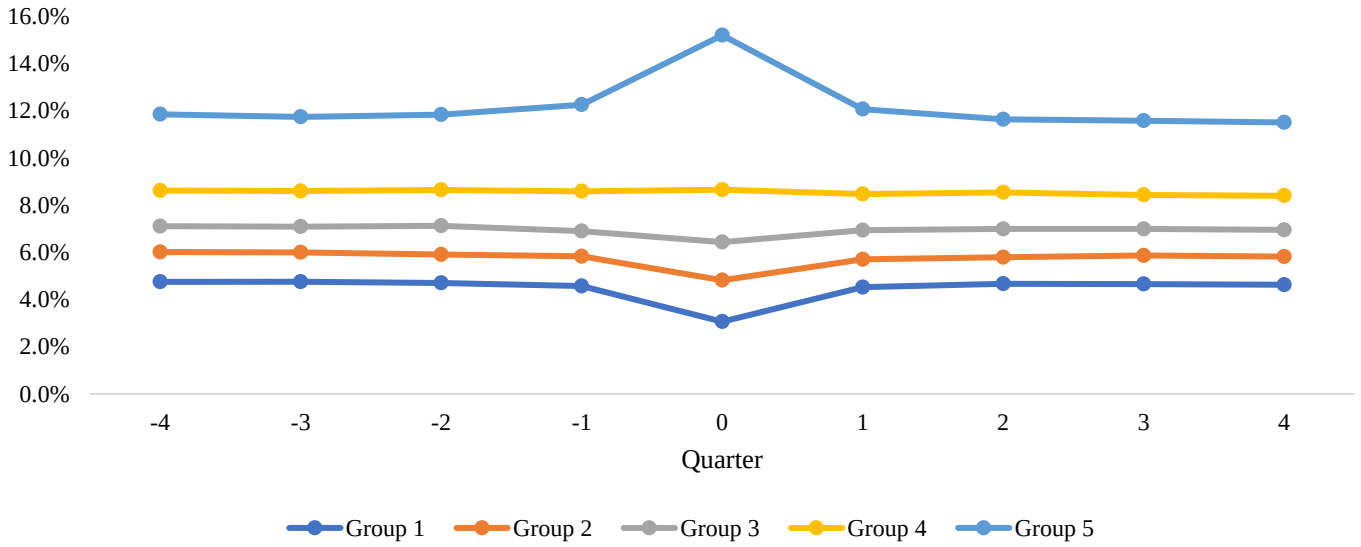


Figure 3: Country Weight Change in Russia around the 2022 Russia-Ukraine War

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.

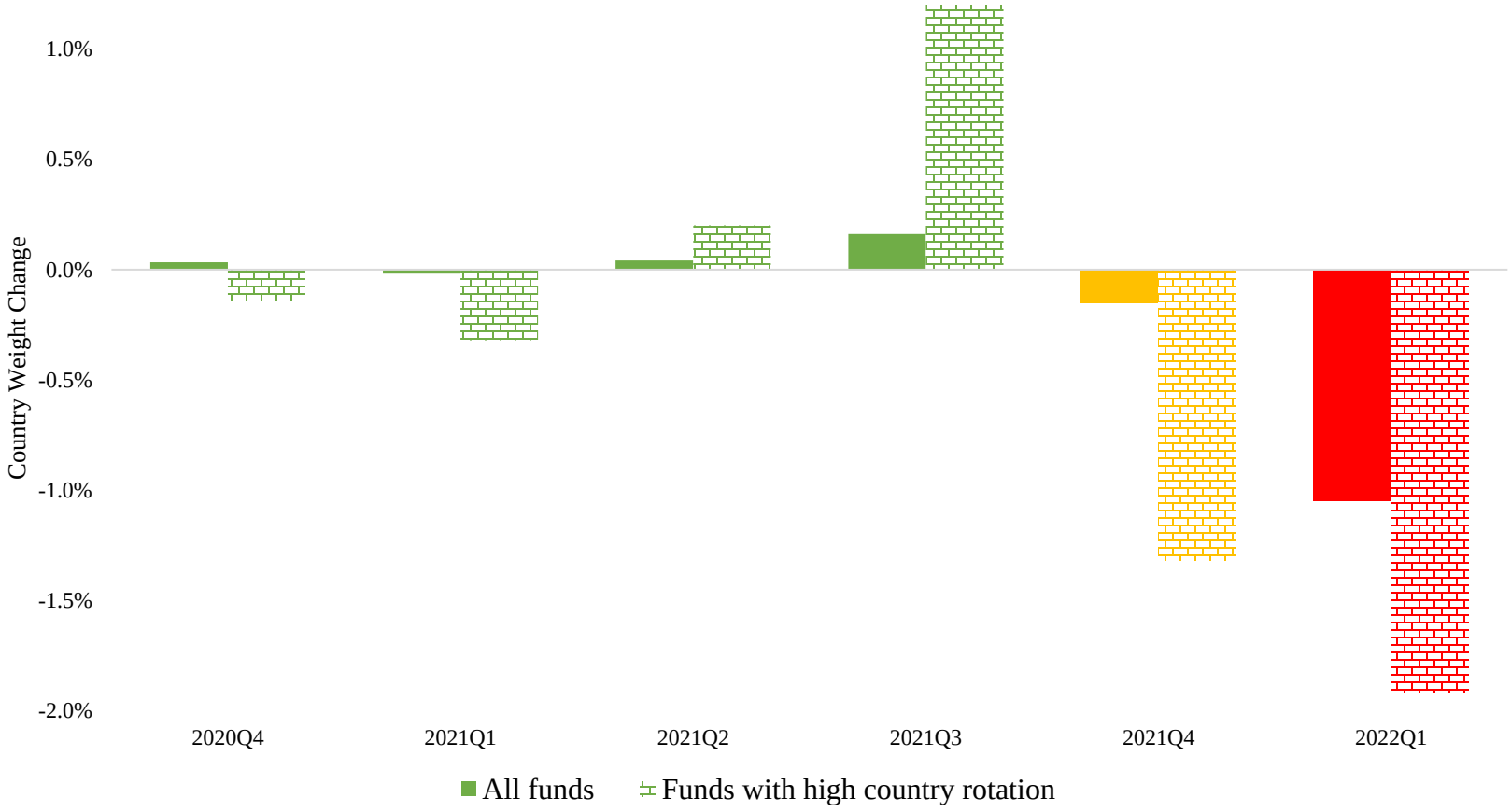


Figure 4: Dollar Country Rotation and Out-of-sample Value Added

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.

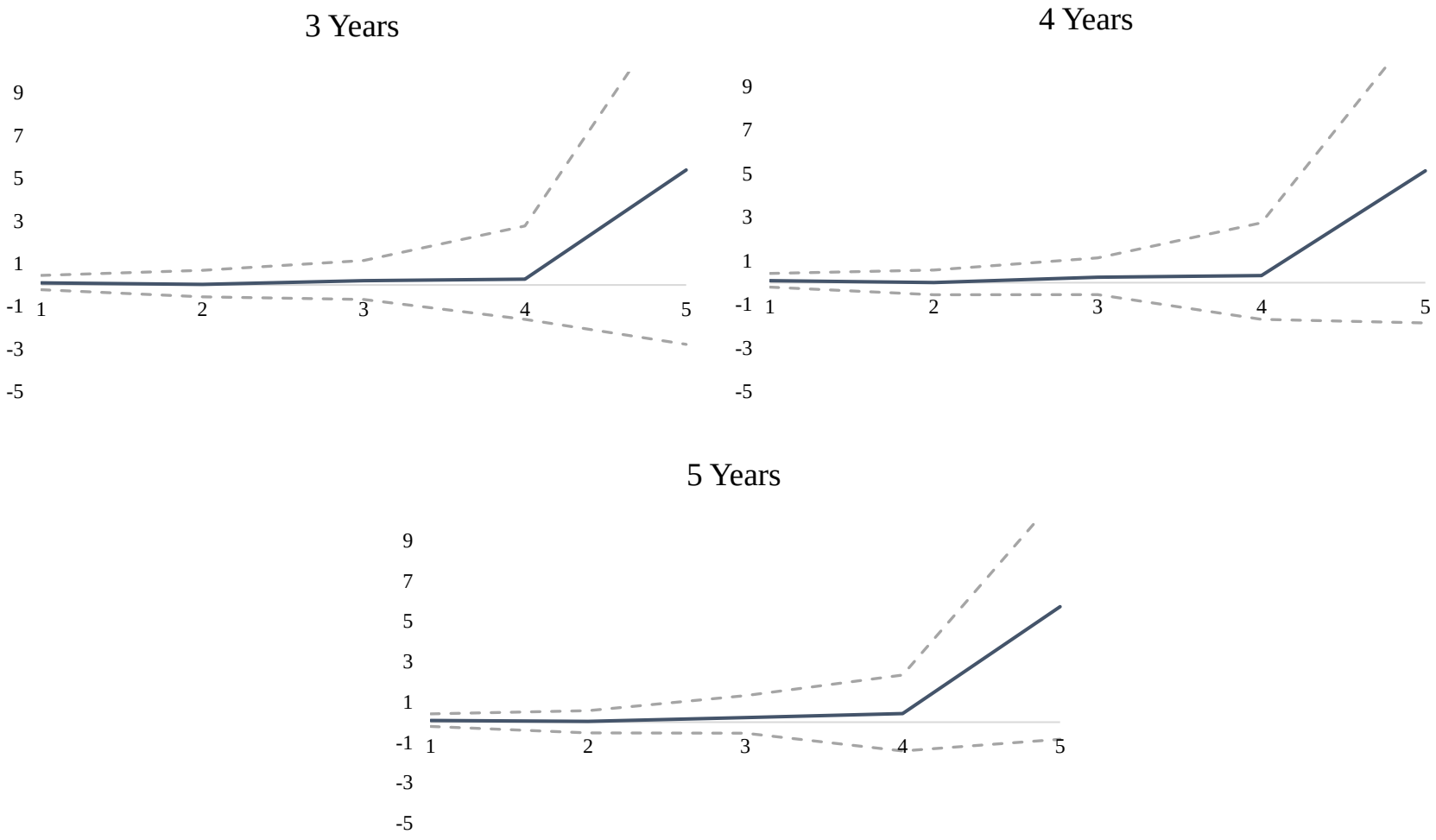


Table 1: Summary Statistics

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. In Panel A, we present the summary statistics. In Panel B, we report the correlation matrix.

Panel A: Summary statistics

	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
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 benchmark adjusted net of fee return (monthly)	-0.05%	-0.07%	1.7%	-2.6%	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%

Panel B: Correlation matrix

Correlation	Country rotation	Turnover	Active share	Industry concentration	Country concentration
Country rotation	1				
Turnover	0.52	1			
Active share	0.11	-0.04	1		
Industry concentration	-0.01	-0.09	0.39	1	
Country concentration	0.10	-0.02	-0.03	-0.03	1

Table 2: Explaining Country Rotation

In this table, we regress country rotation on various fund characteristics. All independent variables are at the same time period as country rotation. Fund size, Fund age, and No. of managers are taken the natural logarithm. Variable definitions are in the appendix. 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.

	(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 return minus category benchmark return in month *t+1* and $country\ rotation_{i,t}$ is fund *i*'s lagged country rotation. In Panel A, the dependent variable is fund monthly raw return minus category benchmark return. In Panel B, the dependent variable is fund monthly net of fee return minus category benchmark return. Fund size, Fund age, and No. of managers are taken the natural logarithm. Variable definitions are in the appendix. 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: Fund raw return – category benchmark return

	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: Fund net of fee return – category benchmark return

	Time-series			Cross-sectional		
	(1)	(2)	(3)	(4)	(5)	(6)
Country rotation	0.0054***	0.0055***	0.0051***	0.0027*	0.0042***	0.0041**
	(3.42)	(3.10)	(2.88)	(1.77)	(2.62)	(2.53)
Fund size		-0.0012***	-0.0012***		0.0001*	0.0001**
		(-12.13)	(-11.59)		(1.86)	(2.08)
Fund risk		0.0096	0.0078		0.0218	0.0169
		(0.43)	(0.35)		(0.97)	(0.76)
Expense ratio		-0.0504	-0.0512		-0.0351	-0.0544**
		(-1.54)	(-1.56)		(-1.58)	(-2.45)
Turnover		-0.0000	0.0000		-0.0002	-0.0001
		(-0.01)	(0.10)		(-1.11)	(-0.44)
Fund age		0.0006*	0.0007**		-0.0003**	-0.0002**
		(1.71)	(1.98)		(-2.44)	(-2.17)
No. of managers		-0.0001	-0.0000		-0.0002**	-0.0001
		(-0.50)	(-0.15)		(-2.10)	(-1.43)
Active share			0.0021			0.0017*
			(1.25)			(1.93)
Industry concentration			0.0057			0.0054*
			(1.24)			(1.76)
Country concentration			0.0006			-0.0011
			(0.38)			(-1.29)
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1407	0.1425	0.1422	0.1335	0.1336	0.1336
Observations	102,014	88,196	88,106	102,014	88,196	88,106

Table 4: 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 5: 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	0.0032	-0.0030	0.0023	0.0009
	(0.74)	(-0.76)	(0.99)	(0.57)
Controls	Y	Y	Y	Y
Fund FE	Y		Y	
Month FE	Y	Y	Y	Y
Adjusted R^2	0.1448	0.1397	0.3786	0.3763
Observations	38,310	38,310	4,971	4,971

Table 6: Country Weight Change and Fund Country Holding Performance

This table presents the effects of country weight change on fund country holding performance. 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*. Fund country holding return is the monthly return of a fund's equity holdings in a country. In columns (4) to (6), the dependent variable is fund country holding return minus 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. We also report the results for observations with Δw>0 and Δw<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 7: Decomposing Fund Country Holding Performance

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* 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 monthly return, $R_{c,t+1}$. In column (3), the dependent variable is fund country holding return minus country market return, $R_{i,c,t+1} - R_{c,t+1}$. In Panel A, we present results for all sample. In Panel B and C, 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: All sample

	(1) Fund country holding return	(2) Country market return	(3) Fund country holding return – country market return
Δw	0.0219**	0.0092	0.0123**
	(2.21)	(1.15)	(2.01)
Fund FE	Y	Y	Y
Country FE	Y	Y	Y
Month FE	Y	Y	Y
Adjusted R^2	0.3881	0.6029	0.0096
Observations	1,947,451	1,947,451	1,947,451

Panel B: Δw>0

	(1) Fund country holding return	(2) Country market return	(3) Fund country holding return – country market return
Δw	-0.0193	-0.0387***	0.0194*
	(-1.45)	(-3.30)	(1.83)
Fund FE	Y	Y	Y
Country FE	Y	Y	Y
Month FE	Y	Y	Y
Adjusted R^2	0.3858	0.5942	0.0118
Observations	1,020,152	1,020,152	1,020,152

Panel C: Δw<0

	(1) Fund country holding return	(2) Country market return	(3) Fund country holding return – country market return
Δw	0.0438***	0.0553***	-0.0107
	(3.18)	(5.20)	(-0.93)
Fund FE	Y	Y	Y
Country FE	Y	Y	Y
Month FE	Y	Y	Y
Adjusted R^2	0.3960	0.6162	0.0116
Observations	927,299	927,299	927,299

Table 8: Fund Country Holding Performance and Characteristics of Managers, Countries and Funds

This table presents the effects of country weight change on fund country holding performance. In Column (1), we run the regression: $R_{c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c\,t} + \beta_2 \times \Delta w_{i,c\,t} \times X + \beta_3 \times X + \varepsilon_{i,c,t+1}$, where $R_{c,t+1}$ is the country market monthly return, $\Delta w_{i,c,t}$ is fund *i*'s lagged country weight change in country *c*, *X* stands for those characteristics of managers, countries, and funds. In Column (2), the dependent variable is fund country holding return minus country market return, $R_{i,c,t+1} - R_{c,t+1}$. 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. Emerging market is a dummy, taking the value of 1 for emerging market countries. English-speaking country is a dummy, taking the value of 1 for English-speaking countries. Small/mid-cap is a dummy, taking the value of 1 for funds focusing on small/mid cap stocks. 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, countries, and funds. 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) Country market return	(2) Fund country holding return – country market return
	Δw<0	Δw>0
Δw	0.0984	-0.0097
	(1.27)	(-0.12)
Δw × No. of female managers	0.0397**	0.0196
	(2.32)	(0.96)
Δw × No. of home-linked managers	0.0639**	0.1121***
	(2.39)	(3.01)
Δw × No. of skilled managers	0.0812***	0.0627*
	(2.59)	(1.72)
Δw × Emerging market	0.0661	0.0481
	(1.26)	(1.07)
Δw × English-speaking country	-0.0419**	-0.0072
	(-2.06)	(-0.35)
Δw × Small/mid-cap	0.0107	0.0716**
	(0.39)	(2.56)
Δw × Fund family size	-0.0028	-0.0005
	(-0.83)	(-0.14)
Controls	Y	Y
Fund FE	Y	Y
Country FE	Y	Y
Month FE	Y	Y
Adjusted R^2	0.6171	0.0119
Observations	927,299	1,020,152

Table 9: Country Weight Changes and Changing Investment Environments

This table presents the estimates of country weight changes regressed on country-level variables. We run the regressions: $\Delta w_{i,c,q} = \alpha + \beta \times X_{i,c,q} + \varepsilon_{i,c,q}$, where $\Delta w_{i,c\,q}$ is fund *i*'s country weight change in country *c* in quarter *q* and $X_{i,c\,q}$ represents country-level variables in the same quarter. Country-level variables include cross-border equity inflow, volatility, economic uncertainty, and geopolitical risk. Portfolio equity inflow is the cross-border capital inflows to equity securities in a country in $trillion. Volatility is the cross-sectional standard deviation of individual stock monthly returns for all stocks in a country. Economic uncertainty is based on the index constructed by Ahir, Bloom, and Furceri (2022). Geopolitical risk is based on the index constructed by Caldara and Iacoviello (2022). For country-level variables, we add one and then take the natural logarithm. 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)
	Country weight change			
Cross-border equity inflow	0.0026**			
	(2.24)			
Volatility		0.0054***		
		(6.05)		
Economic uncertainty			-0.0025***	
			(-2.72)	
Geopolitical risk				-0.0010**
				(-2.00)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y
Adjusted R^2	0.0032	0.0032	0.0030	0.0030
Observations	703,987	782,679	778,404	690,458

Table 10: 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	
	All	Funds with high country rotation
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 11: Dollar Country Rotation and Value Added

This table presents the relation between dollar country rotation and value added. Value added is calculated as fund benchmark adjusted raw return multiplied by fund size in the previous month. 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. We first calculate the average value added for each fund in the sample and report the cross-sectional mean value added for each group. *, **, ***, represent significance at the 10%, 5%, and 1% levels, respectively.

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 12: Country Rotation and Fund Flows

This table presents the estimates of monthly fund flows regressed on country rotation. 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. High (low) alpha indicates funds with top (bottom) 20% alpha in a month. Fund size, Fund age, and No. of managers are taken the natural logarithm. 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)
			High alpha	Medium alpha	Low alpha			
Country rotation	0.0024	0.0005	0.0579***	-0.0140**	-0.0164**	-0.0146***	0.0028	-0.0120***
	(0.55)	(0.12)	(5.32)	(-2.47)	(-1.97)	(-3.32)	(0.64)	(-2.67)
Country rotation × Alpha							0.2548***	0.2214***
							(5.07)	(4.39)
Alpha		0.0984***	0.0979***	0.1184***	0.0568***	0.0946***	0.0749***	0.0742***
		(29.87)	(9.97)	(16.21)	(6.04)	(29.12)	(15.42)	(15.25)
Fund size						-0.0023***		-0.0023***
						(-7.97)		(-7.96)
Fund risk						-0.3292***		-0.3422***
						(-13.09)		(-13.69)
Expense ratio						0.3223***		0.3141***
						(2.91)		(2.84)
Turnover						0.0001		-0.0000
						(0.15)		(-0.07)
Fund age						-0.0229***		-0.0228***
						(-23.42)		(-23.25)
No. of managers						-0.0014***		-0.0014***
						(-3.93)		(-4.03)
Fund FE	Y	Y	Y	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1175	0.1392	0.2037	0.1219	0.1656	0.1584	0.1399	0.1589
Observations	97,858	96,489	19,442	57,605	19,442	86,831	96,489	86,831

Internet Appendix

Can International Funds Navigate Changing Global Investment Environments?

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*
Fund benchmark adjusted raw return	The monthly fund raw return minus category benchmark return
Fund benchmark adjusted return	The monthly fund net of fee 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
Emerging market	A dummy variable taking the value of 1 for emerging markets
English-speaking country	A dummy variable taking the value of 1 for English-speaking countries
Small/mid-cap	A dummy variable taking the value of 1 for funds focusing on small/mid cap stocks
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

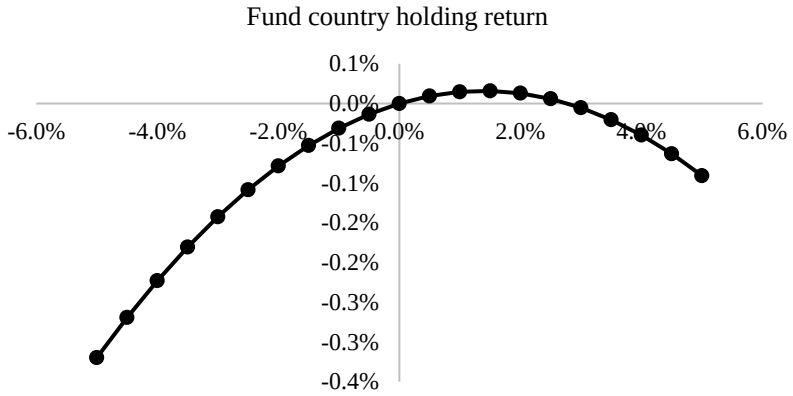
	(2009).
Industry concentration	$\sum_{j=1}^{10}(w_{j,q} - w_{world,j,q})^2$, where $w_{j,q}$ is the weight of the fund holdings in industry *j* at the end of quarter q and $w_{world,j,q}$ is the weight of the world stock market in industry *j* at the end of quarter *q*. It is based on Kacperczyk, Sialm, 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*.
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.
Cross-border equity inflow	The cross-border capital inflows to equity securities in a country in $trillion. It measures the net equity inflows including shares, stocks, depository receipts (American or global), and direct purchases of shares in local stock markets by foreign investors.
Volatility	The cross-sectional standard deviation of individual stock monthly returns for all stocks in a country
Economic uncertainty	Economic uncertainty is based on the world uncertainty index constructed by Ahir, Bloom, and Furceri (2022). The authors construct quarterly indices of economic uncertainty for 143 countries using frequency counts of "uncertainty" (and its variants) in the quarterly Economist Intelligence Unit (EIU) country reports. The EIU reports discuss major political and economic developments in each country, along with analysis and forecasts of political, policy, and economic conditions.
Geopolitical risk	The geopolitical risk index is constructed by Caldara and Iacoviello (2022). It is a measure of adverse geopolitical events and associated risks based on a tally of newspaper articles covering geopolitical tensions and examines its evolution and economic effects since 1900.

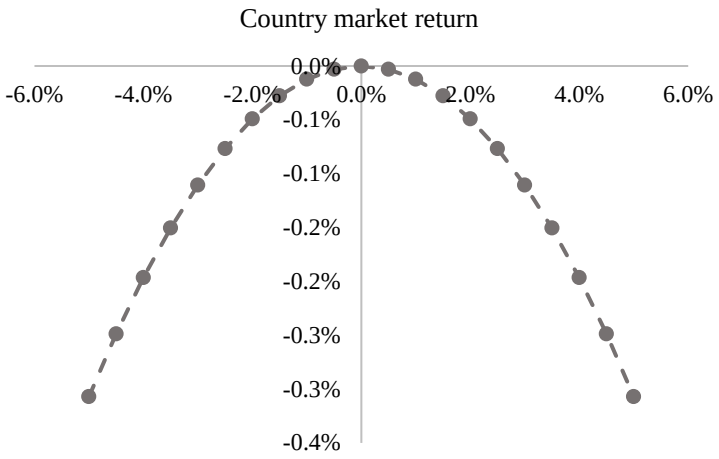
Category Benchmark Indices

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

Figure A1: Country Weight Change and Fund Country Holding Performance

The following figures paint the effects of country weight change on fund country holding performance based on regression coefficients. We run the regression : $R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c,t} + \beta_2 \times \Delta w_{i,c,t}^2 + \varepsilon_{i,c,t+1}$, where $R_{i,c,t+1}$ is the monthly returns of fund *i*'s equity holdings in country *c* during month *t+1*, $\Delta w_{i,c,t}$ is fund *i*'s lagged portfolio weight change in country *c*. We also run two other regressions using country market monthly return, $R_{c,t+1}$ or fund country holding return minus country market return, $R_{i,c,t+1} - R_{c,t+1}$, as dependent variables. The horizontal axis shows $\Delta w_{i,c,t}$, and the vertical axis shows the difference in the dependent variable value between a certain $\Delta w_{i,c,t}$ and $\Delta w_{i,c,t} = 0$.




Country market return
0.0%
-0.1%
-0.1%
-0.2%
-0.2%
-0.3%
-0.3%
-0.4%
-6.0%
-4.0%
-2.0%
0.0%
2.0%
4.0%
6.0%

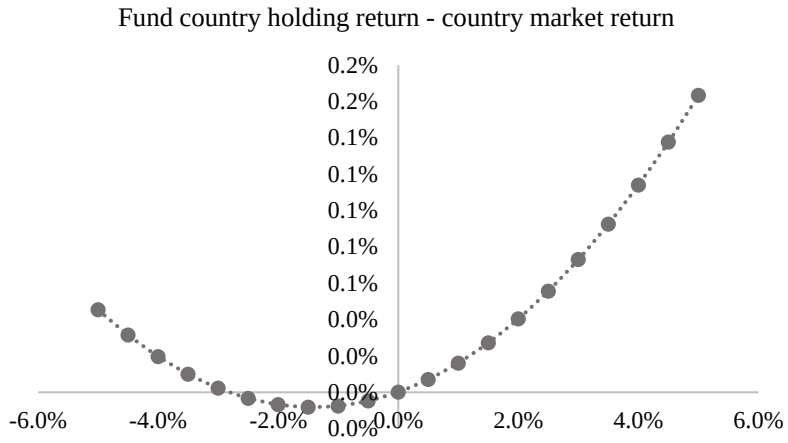

Fund country holding return - country market return
0.2%
0.2%
0.1%
0.1%
0.1%
0.1%
0.1%
0.0%
0.0%
0.0%
0.0%
-6.0%
-4.0%
-2.0%
0.0%
2.0%
4.0%
6.0%

Table A1: 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 $\frac{1}{2}\sum_{c=1}^{C}|w_{c,q} - w_{c,q-1}|$, where $w_{c,q}$ is the percentage of total net assets a fund allocates to country *c* at the end of quarter *q*.

Country	$w_{c,q}$	$w_{c,q-1}$	$\lvert w_{c,q} - w_{c,q-1}\rvert$	$\frac{1}{2}\sum_{c=1}^{C}\lvert w_{c,q} - w_{c,q-1}\rvert$
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 A2: 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. 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
Country rotation	0.0053***	0.0039**
	(2.81)	(2.29)
Mktrf_loading	0.0005	0.0021*
	(0.32)	(1.65)
SMB_loading	-0.0032***	-0.0016***
	(-4.87)	(-2.85)
HML_loading	0.0008	0.0000
	(1.16)	(0.08)
MOM_loading	-0.0024**	-0.0016*
	(-2.17)	(-1.88)
RMW_loading	0.0018***	0.0014***
	(3.36)	(3.15)
CMA_loading	0.0000	-0.0007
	(0.01)	(-1.46)
Dollar_loading	-0.0002	0.0001
	(-0.24)	(0.09)
Carry_loading	-0.0025***	-0.0019**
	(-2.99)	(-2.41)
Controls	Y	Y
Fund FE	Y	
Month FE	Y	Y
Adjusted R^2	0.0298	0.0366
Observations	86,840	80,936

Table A3: Passive Country Rotation and Fund Performance

This table presents the effects of excess country rotation on fund performance. The dependent variable is fund monthly raw return minus category benchmark return. $\text{passive country rotation} = \frac{1}{2}\sum_{c=1}^{C}\left|(w_{index\ fund,c,q} - w_{index\ fund,c,q-1})\right|$, where $w_{index\ fund,c,q}$ is the percentage of total assets that index funds in the same Morningstar category allocate to country *c* at the end of quarter *q*. Fund size, Fund age, and No. of managers are taken the natural logarithm. Variable definitions are in the appendix. 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***	0.0054***	0.0050***	0.0036**	0.0035**	0.0033**
	(3.40)	(2.96)	(2.75)	(2.32)	(2.16)	(2.01)
Passive country rotation	0.0004	0.0010	0.0010	0.0010	0.0013	0.0017*
	(0.45)	(1.02)	(1.04)	(1.15)	(1.44)	(1.76)
Fund size		-0.0013***	-0.0013***		0.0000	0.0000
		(-12.62)	(-12.15)		(0.76)	(0.98)
Fund risk		0.0115	0.0106		0.0240	0.0207
		(0.52)	(0.48)		(1.07)	(0.92)
Expense ratio		0.0046	0.0045		0.0371	0.0148
		(0.14)	(0.13)		(1.63)	(0.65)
Turnover		0.0000	0.0001		-0.0001	-0.0000
		(0.18)	(0.23)		(-0.84)	(-0.11)
Fund age		0.0009**	0.0009**		-0.0002*	-0.0002
		(2.31)	(2.48)		(-1.85)	(-1.60)
No. of managers		-0.0001	-0.0000		-0.0002**	-0.0001
		(-0.42)	(-0.04)		(-1.97)	(-1.20)
Active share			0.0022			0.0018**
			(1.31)			(2.06)
Industry concentration			0.0055			0.0066**
			(1.17)			(2.14)
Country concentration			0.0004			-0.0012
			(0.24)			(-1.34)
Fund FE	Y	Y	Y			
Month FE	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.1349	0.1375	0.1378	0.1283	0.1288	0.1296
Observations	99,070	86,026	85,999	99,070	86,026	85,999

Table A4: Country Rotation, Turnover, and Fund Performance

This table presents the effects of annual country rotation and turnover on fund performance. The dependent variable is fund monthly raw return minus category benchmark return. 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. 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				
	(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

Table A5: Country Weight Change, Fund Country Holding Performance, and Country Market Drawdowns

This table presents the effects of country weight change on fund country holding performance. We focus on observations associated with countries experiencing an over 15% drop in stock market return in a month. 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* 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 monthly return, $R_{c,t+1}$. In column (3), the dependent variable is fund country holding return minus country market return, $R_{i,c,t+1} - R_{c,t+1}$. 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) Fund country holding return	(2) Country market return	(3) Fund country holding return – country market return
Δw	0.2220***	0.1520**	0.0700
	(2.64)	(2.10)	(0.58)
Fund FE	Y	Y	Y
Country FE	Y	Y	Y
Month FE	Y	Y	Y
Adjusted R^2	0.3684	0.6125	0.3938
Observations	35,695	35,695	35,695

Table A6: 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 (3), we run the regressions: $R_{c,t+1} = \alpha + \beta \times \Delta w_{i,c\,t} + \varepsilon_{i,c,t+1}$, where $R_{c,t+1}$ is the country *c*'s market return in month *t+1* and $\Delta w_{i,c,t}$ is fund *i*'s lagged country weight change in country *c*. In column (2), the dependent variable is $R_{i,c,t+1}$, the fund *i*'s equity holding return in country *c* in month *t+1*. In column (4), the dependent variable is fund country holding return minus country market return, $R_{i,c,t+1} - R_{c,t+1}$. In column (1), we focus on the cases that funds reduce the portfolio weight in a country to zero at the quarter end. In columns (2) to (4), 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. 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	(2) Fund country holding return	(3) Country market return	(4) Fund country holding return – country market return
Δw	0.0823**	-0.1280**	-0.0580*	-0.0679
	(2.35)	(-2.52)	(-1.84)	(-1.34)
Fund FE	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Adjusted R^2	0.5178	0.3038	0.5304	0.0274
Observations	102,007	91,897	91,897	91,897

Table A7: Decomposing Fund Country Holding Performance, U.S. vs. Non-U.S. Holdings

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 the country market monthly return, $R_{c,t+1}$. In columns (7) to (9), the dependent variable is fund country holding return minus country market return, $R_{i,c,t+1} - R_{c,t+1}$. We also report the results for observations with Δw>0 and Δw<0, respectively. In Panel A, we present results on non-U.S. holdings. In Panel B, we report the results for U.S. holdings. 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: non-U.S. holdings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Fund country holding return			Country market return			Fund country holding return – country market return		
	All	Δw>0	Δw<0	All	Δw>0	Δw<0	All	Δw>0	Δw<0
Δw	0.0229**	-0.0223	0.0591***	0.0131	-0.0443***	0.0656***	0.0093	0.0221**	-0.0056
	(2.13)	(-1.61)	(4.02)	(1.53)	(-3.99)	(5.94)	(1.46)	(2.11)	(-0.49)
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	0.3892	0.3873	0.3969	0.6187	0.6121	0.6299	0.0090	0.0108	0.0114
Observations	1,872,525	978,802	893,723	1,872,525	978,802	893,723	1,872,525	978,802	893,723

Panel B: U.S. holdings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Fund country holding return			Country market return			Fund country holding return – country market return		
	All	Δw>0	Δw<0	All	Δw>0	Δw<0	All	Δw>0	Δw<0
Δw	-0.0357	-0.0507	-0.0859	-0.0768***	-0.2035***	0.0508	0.0410**	0.1528***	-0.1366***
	(-1.33)	(-1.03)	(-1.34)	(-2.87)	(-3.68)	(0.87)	(2.21)	(3.08)	(-3.09)
Fund FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adjusted R^2	0.0028	0.0042	0.0160	0.0396	0.0394	0.0439	0.4824	0.5119	0.4579
Observations	74,926	41,350	33,576	74,926	41,350	33,576	74,926	41,350	33,576

Table A8: Country Weight Change and Fund Country Holding Performance, Controlling for Passive Country Weight Change

This table presents the effects of country weight change on fund country holding performance. We run the regression : $R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c\,t} + \beta_2 \times \Delta w_{passive\,,c\,t} + \varepsilon_{i,c,t+1}$, where $R_{i,c,t+1}$ is the fund i's equity holding return in country c in month $t+1$, $\Delta w_{i,c,t}$ is fund i's lagged country weight change in country c, and $\Delta w_{passive\,,c\,t}$ represents the lagged country weight change in country c by index funds in the same category. In column (2), the dependent variable is fund country holding return minus benchmark return. In column (3), 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. In column (4), the dependent variable is the country market monthly return, $R_{c,t+1}$. In column (5), the dependent variable is fund country holding return minus country market return, $R_{i,c,t+1} - R_{c,t+1}$. In Panel A, we present results for all sample. In Panel B and C, 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: All sample

	(1)	(2)	(3)	(4)	(5)
	Fund country holding return	Fund country holding return – benchmark return	Fund country holding return – fund return	Country market return	Fund country holding return – country market return
Δw	0.0239**	0.0247***	0.0240**	0.0109	0.0127**
	(2.53)	(2.60)	(2.55)	(1.44)	(2.05)
Δw_passive	-0.0148	-0.0317*	-0.0343*	-0.0182	0.0038
	(-0.67)	(-1.68)	(-1.79)	(-0.89)	(0.28)
Fund FE	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y
Adjusted R^2	0.3898	0.0222	0.0260	0.6054	0.0096
Observations	1,930,417	1,930,417	1,930,417	1,930,417	1,930,417

Table A8: Country Weight Change and Fund Country Holding Performance, Controlling for Passive Country Weight Change (continued)

Panel B: Δw>0

	(1)	(2)	(3)	(4)	(5)
	Fund country holding return	Fund country holding return – benchmark return	Fund country holding return – fund return	Country market return	Fund country holding return – country market return
Δw	-0.0175	-0.0175	-0.0296**	-0.0364***	0.0191*
	(-1.33)	(-1.33)	(-2.38)	(-3.14)	(1.79)
Δw_passive	-0.0269	-0.0444**	-0.0455**	-0.0270	-0.0004
	(-1.15)	(-2.18)	(-2.26)	(-1.28)	(-0.03)
Fund FE	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y
Adjusted R^2	0.3877	0.0240	0.0257	0.5966	0.0118
Observations	1,010,910	1,010,910	1,010,910	1,010,910	1,010,910

Panel C: Δw<0

	(1)	(2)	(3)	(4)	(5)
	Fund country holding return	Fund country holding return – benchmark return	Fund country holding return – fund return	Country market return	Fund country holding return – country market return
Δw	0.0435***	0.0393***	0.0491***	0.0557***	-0.0116
	(3.17)	(2.87)	(3.56)	(5.32)	(-1.00)
Δw_passive	0.0006	-0.0162	-0.0206	-0.0056	0.0078
	(0.03)	(-0.82)	(-0.99)	(-0.26)	(0.51)
Fund FE	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y
Adjusted R^2	0.3877	0.0240	0.0257	0.5966	0.0118
Observations	919,507	919,507	919,507	919,507	919,507

Table A9: 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*, $\Delta w_{i,c,t}$ 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: $R_{i,c,t+1} = \alpha + \beta_1 \times \Delta w_{i,c,t} + \beta_2 \times \Delta w^{2}_{i,c,t} + \varepsilon_{i,c,t+1}$. 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	Fund country holding return – country market return
Δw	-0.0082	-0.0361***	0.0267***
	(-0.58)	(-2.98)	(2.65)
Δw⁻	0.0630***	0.0945***	-0.0302*
	(3.13)	(5.55)	(-1.81)
Fund FE	Y	Y	Y
Country FE	Y	Y	Y
Month FE	Y	Y	Y
Adjusted R^2	0.3881	0.6030	0.0096
Observations	1,947,451	1,947,451	1,947,451

Panel B: Quadratic model

	(1)	(2)	(3)
	Fund country holding return	Country market return	Fund country holding return – country market return
Δw	0.0229**	0.0107	0.0118*
	(2.32)	(1.34)	(1.93)
Δw^2	-0.8212***	-1.2282***	0.4173*
	(-3.05)	(-5.28)	(1.89)
Fund FE	Y	Y	Y
Country FE	Y	Y	Y
Month FE	Y	Y	Y
Adjusted R^2	0.3881	0.6030	0.0096
Observations	1,947,451	1,947,451	1,947,451