Does Sub-Advising Abroad Improve the Performance of International Mutual Funds?

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Abstract

We investigate the impact of having a foreign presence in research and asset management on the performance of international equity funds sold in the U.S.. Adjusting for global risk factors, we show that obtaining sub-advisors located abroad does not improve fund performance, suggesting that they are unable to exploit local information, and/or that U.S.-based managers are not disadvantaged by being physically away. Further, funds that hire outsourced, as opposed to in-house, international sub-advisors underperform on a risk-adjusted basis by up to 122 bps annually, compared to funds that are not sub-advised. The underperformance can partly be explained by the international outsourced sub-advisors being less active in managing the assets, particularly in their local holdings.

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1 Introduction

Over the past decade, the U.S. mutual fund industry has seen an increase in demand from investors seeking international exposure. For example, net *outflows* from domestic equity mutual funds reached a total of $834 billion between 2006 and 2015, but global equity mutual funds experienced net *inflows* of $643 billion over the same period.[1] More importantly, the rise in global investment mandates has led to an increase in the hiring of fund managers located in foreign countries, from 11% of the funds in our sample in 1999, to 20% in 2014. In light of the large amount of household wealth flowing into global equity funds and the prior literature on the impact of proximity to investments on fund performance, the question of whether having a foreign presence is beneficial is of great interest to investors.

If a mutual fund manager wants to tap into local expertise aboard, he has two options. The first is to retain one or more in-house sub-advisors overseas (i.e., belonging to the same parent organization). For example, according to SEC N-SAR filings, Fidelity sub-advises a portion of its global equity funds to Fidelity research offices located around the world. The second is to obtain outsourced sub-advisors located abroad. For example, BBH International Equity currently sub-advises a portion of its global equity fund to unaffiliated investment advisors headquartered in the United Kingdom. If fund managers are able to exploit local information advantages, then funds that hire sub-advisors headquartered near the fund's foreign investments may outperform those that do not. Indeed, many asset management firms boast about having a foreign presence in marketing their global funds.[2]

In the empirical tests, we divide our sample of funds into global and international funds. In the asset management industry, global refers to investment mandates that include the U.S. market, and international refers to mandates that exclude it. The bulk of our empirical tests focus on international funds, because they represent the majority of the sample, and importantly, they offer a cleaner test of the local information advantage hypothesis. That said, as we will show later, by

[1] Investment Company Institute Factbook 2017.

[2] For example, see Q4 in http://wilmingtonlit.com/downloads/performance/Q&A/Wilmington_Multi-Manager_International_Fund_Q&A.pdf

contrasting the two types of funds we are able to provide useful insights into the sub-advisory performance relationship.

Identifying whether a fund possesses local expertise is not a simple task. Even if we could document all of the subsidiaries of an asset management firms worldwide, it is difficult to tell whether a location is a sales or research office. A firm could set up foreign offices for the sole purpose of selling their products to investors in the region and in this case, no local research expertise is present. In light of these issues, we believe that using the headquarter locations of fund sub-advisors is the best method for determining foreign presence. Mutual funds registered in the U.S. must report all fund advisors and sub-advisors, together with their headquarter locations (among other information) to the SEC on a semi-annual basis. By definition, a sub-advisor performs research and fund management duties. Thus, a fund sub-advisor is defined as having a foreign local presence if it is headquartered in a foreign country where the fund invests. To the best of our knowledge, there is currently no other way to generate a time-series of research office locations.

In regard to classifying funds as either in-house or outsourced, we closely follow prior literature (Chen, Hong, Jiang and Kubik (2013) and Chuprinin, Massa, Schumacher (2015)). First, we define a sub-advisor as outsourced if it is unaffiliated with the mutual fund company responsible for launching the fund (called the advisor). A fund is then classified as outsourced if at least one sub-advisor is outsourced. Prior evidence suggests that outsourced funds perform worse than in-house funds, due to excessive principal-agent problems.[3] However, if local managers are more informed about local stocks, then this problem may be less severe when outsourcing to sub-advisors headquartered near foreign investments. In addition, smaller asset management companies are unlikely to have affiliated sub-advisors overseas. In this case, the cost of setting up headquarters in a foreign country may be prohibitive, leaving outsourcing as the only option to gain local expertise.

Our primary tests focus on a) determining how sub-advising a portion (or all) of the fund to an international portfolio manager impacts fund performance, and b) pinning down the precise chan-

[3]For example, Chen, Hong, Jiang and Kubik (2013) and Chuprinin, Massa, Schumacher (2015) both find that in-house funds outperform outsourced funds.

nels through which over- or underperformance arise. In other words, we test whether there is any value in sub-advising fund management duties to managers with a potential information advantage.

With these definitions in hand, we show empirically that funds with internationally-based sub-advisors are unable to exploit local information in a way that boosts their overall performance. That is, obtaining a foreign presence through sub-advisory agreements (either in-house or outsourced) does not significantly improve fund performance. Moreover, within the sub-sample of international funds (ex. U.S. benchmark), we find that internationally outsourced funds significantly underperform relative to non-sub-advised funds and in-house funds. To measure risk-adjusted performance for our sample of global/international equity funds, we use country-level factors provided by AQR and weigh each country by each funds actual country weight based on the most recently reported holdings. The underperformance is large, 122 basis points (bps) per year using the 3-factor alpha, and significant at the one percent significance level. Similar results are also obtained for CAPM and 4-factor alphas, as well as for benchmark-adjusted return. Internationally outsourced global funds (including the U.S.), however, suffer no apparent underperformance. Thus, the impact of outsourcing on performance is largely dependent upon investment mandate.

We explore a variety of potential channels for the under-performance. First, we examine differences in fund activeness using active share (Cremers and Petajisto (2009)), tracking error, and fund turnover. In our sample of funds, active share and turnover both positively predict future performance and funds who outsource to international-based sub-advisors have relatively low active share and turnover. These preliminary tests are suggestive of international outsourced funds underperforming due to a lack of activeness.

In order to address concerns that tests on the full portfolio are too broad to identify any local information advantage, we also examine performance and activeness within a fund's regional sub-portfolios. We define three mutually exclusive sub-portfolios: Foreign Local, Foreign Non-Local and U.S. (only for global funds). The Foreign Local sub-portfolio contains foreign stocks that are headquartered in the same region as the fund's sub-advisor, Foreign Non-Local contains the remaining foreign stocks. We find that funds' foreign local sub-portfolios underperform on a risk-adjusted ba-

sis by as much as 122 bps per year. This underperformance in local investments, combined with the large weight invested in the local sub-portfolio (66 percent on average), is large enough to explain the fund-level underperformance of international outsourced funds. We further show that the local sub-portfolio underperformance is related to significantly lower sub-portfolio activeness (as measured by active share, turnover and tracking error). Finally, we reconcile the seemingly conflicting evidence of U.S. outsourced sub-advisors outperforming in global funds, but underperforming in international funds. We attribute the outperformance of global mutual funds that are managed by U.S. outsourced sub-advisors to the superior performance, and high activeness, in their local (U.S.) sub-portfolios.

The documented underperformance of international outsourced funds contributes to the literature that finds that outsourced funds underperform relative to in-house funds, where agency problems are a commonly offered explanation (see, for example, Chen, Hong, Jiang and Kubik (2013) and Chuprinin, Massa, Schumacher (2015)). Our paper departs from this literature in that we examine outsourced sub-advisors who may possess local information advantage. We are therefore examining the trade-off between agency problems and local information advantage. Our tests classify sub-advisory relationships on two levels: 1) whether a fund outsources research and fund management to at least one sub-advisor, and 2) whether a fund has at least one sub-advisor that is headquartered in the same geographical region as the fund's foreign holdings (i.e., proximity to the investments). Thus, we also contribute to the well-established literature on home-bias and local informational advantages.

While it is reasonably well documented that local bias exists in domestic equity portfolios for both professionals[4] and individual investors,[5] whether local investors, and in particular local mutual fund managers, are actually better informed is less clear. There is both evidence in favor of local information advantages[6] as well as evidence that locals have no superior information.[7] While prior

[4]Examples include: Pool, Stoffman and Yonker (2012); Coval and Moskowitz (1999), Coval and Moskowitz (2001) and Jagannathan, Jiao and Karolyi (2018).

[5]For example: Baik et al. (2010); Seasholes and Zhu (2010); Ivkovic and Weisbenner (2005); Grinblatt and Keloharju (2001).

[6]Examples include: Coval and Moskowitz (1999, 2001); Hau (2001); Ivkovic and Weisbenner (2005); Teo (2009); and Gao, Wong, Xia and Yu (2013).

[7]Examples include: Seasholes and Zhu (2010) and Pool, Stoffman and Yonker (2012).

literature on local informational advantage tends to focus on a particular region or country, we provide a more comprehensive picture in that we use a sample of global equity funds sold in the US. This allows us to examine multiple regions while holding the target audience constant.

To summarize, we find that funds with a foreign presence do not exploit local information to improve fund performance, contradicting theories suggesting local investors are privy to information unavailable to non-locals. Focusing on funds with an international benchmark, we show that the negative effect of outsourcing dominates any potential informational advantages from outsourcing abroad, thereby highlighting the importance of controlling for outsourcing when studying the effects of sub-advisor location. Moreover, we find that these funds significantly underperform in their foreign local holdings. In regard to an explanation, we show that international outsourced funds are less active, and particularly in foreign regions where they have a sub-advisor presence. Next, we rule out the reverse causality explanation; that is, the notion that poorly performing funds try to boost performance by tapping into outside, foreign expertise. Finally, we also rule out the possibility that the negative effect of foreign outsourcing on fund performance is simply a proxy for the relatively poor performance of broker-sold funds. Thus, it appears that the most probable channel for underperformance is a relative lack of active management.

The rest of the paper is organized as follows. In section 2, we review the related literature. Section 3 describes the data set. We introduce our performance measures and methodology in section 4. Our empirical results are provided in section 5. In section 6 we discuss alternative explanations and conclude in section 7.

2 Hypothesis development

Mutual fund companies are responsible for launching and marketing their own funds, and they typically act as the fund's advisor as well. However it is not uncommon for them to hire sub-advisors to manage part, or all, of a fund's assets. A sub-advisory may be "in-house", i.e., a subsidiary of the mutual fund company, or of its parent. It may also be "outsourced," in that it is unaffiliated to the

mutual fund company. Sub-advisors are hired, and can be replaced, by the board of directors. Furthermore, the rise in global exposure among U.S. mutual funds has led to the hiring of sub-advisory firms located abroad - presumably to take advantage of local information. Our study is the first to differentiate between, and to study the implications of, sub-advisory firms that are headquartered in the U.S. and those that are headquartered overseas.

2.1 Prior literature

Existing research on sub-advising duties suggest that funds that outsource sub-advising duties tend to underperform relative to funds that are managed by in-house sub-advisors. Chen, Hong, Jiang and Kubik (2013) examine a broad sample of U.S. equity mutual funds and show that funds that are managed by outsourced sub-advisors underperform in-house funds. In addition, they find that outsourced funds are more likely to be closed following poor performance, or excessive risk taking. In a related study, Chuprinin, Massa, Schumacher (2015) examine how outsourcing impacts performance using a sample of asset management firms that manage both in-house and outsourced funds. They find that in-house funds outperform outsourced funds by over half the expense ratio, which corresponds to 85 basis points (bps) on average per year.

Agency problems are given as the explanation. Kuhnen (2014) suggests that close ties between the Board of Directors and the fund managers lead to inefficient favoritism. Chen, Hong, Jiang and Kubik (2013) attributes the finding to opaque investment strategies (e.g., window dressing) or contractual externalities in the outsourcing market. Chuprinin, Massa, Schumacher (2015) suggest preferential treatment as another possible reason. In particular, they find that asset management companies allocate more IPOs to their in-house funds, and that in-house funds are more likely to buy stocks before they appreciate. Debaere and Evans (2017) argue that the underperformance of outsourced funds is endogenous to the decision to outsource. More specifically, after controlling for the lack of internal expertise, the underperformance is no longer evident.

Many international mutual funds are managed by sub-advisors that are located in a foreign country.

Van Nieuwerburgh and Veldkamp (2009) provide a theoretical justification for why local investors may have a small information advantage in local markets. In their model, information asymmetry persists not because investors cannot learn what locals know, nor because such information is expensive, but because investors choose not to learn. In this case, it is more profitable to specialize.

Several recent studies also confirm that some local investors have a local information advantage. Coval and Moskowitz (2001) find evidence that mutual fund managers are able to generate abnormal returns in their local holdings. Local stocks are defined as those that are within 100 kilometers of the funds headquarters. Similarly, Ivkovic and Weisbenner (2005) provide evidence that U.S. investors are able to generate abnormal returns in their local stock picks. Their evidence is, however, restricted to smaller and less well-known stocks that are outside the S&P 500.Teo (2009) provides evidence in favour of local information advantages among Asian-focused hedge funds. In a similar study, Gao, Wong, Xia and Yu (2013) report that China-focused mutual funds sold in China outperform mutual funds sold abroad.

While prior literature has focused on local advantages in a particular country or region, our study incorporates investments across many different countries, including both emerging and developed markets. Furthermore, we study a set of international funds that are issued and marketed to a common pool of investors: funds domiciled in the U.S..

2.2 Hypotheses

As mentioned in the prior sub-section, existing literature suggests that local investors may be more informed compared to non-locals. This line of reasoning leads to our first hypothesis:

Hypothesis 1: International equity mutual funds that have sub-advisors located in a foreign country outperform funds that do not.

This is our primary hypothesis and it is premised on the evidence that fund managers outperform

in their local holdings due to information advantages. However, as discussed above, there are two types of sub-advising arrangements, and the existing literature suggests that outsourced sub-advisors underperform in-house sub-advisors. If the outsourcing effect is dominant, then mutual funds that outsource to foreign-based sub-advisors should underperform funds that hire in-house foreign sub-advisors. In contrast, if the local information advantage effect dominates, then funds that are managed by outsourced U.S. sub-advisors should underperform funds that are managed by outsourced foreign-based sub-advisors. These arguments are used to formulate the next two related hypotheses:

Hypothesis 2a: Agency costs associated with outsourcing sub-advisory duties dominate local information advantages, in which case international outsourced sub-advised funds underperform in-house foreign sub-advised funds.

Hypothesis 2b: The information advantage associated with having a local presence dominates the agency costs from outsourcing, in which case international outsourced sub-advised funds outperform funds with US outsourced sub-advisors.

3 Data

Our sample consists of equity mutual funds with an international or global investment mandate that are sold in the U.S. from January 2000 to December 2014. In asset management industry, international refers to funds that exclude the U.S., whereas global refers to funds that include the U.S.. We start by restricting the sample to funds that Morningstar Direct classifies as having an international or global benchmark, and are registered for sale in the United States. More specifically, we include funds that belong to one of the following Morningstar categories: Foreign large-value, foreign large-blend, foreign large-growth and world stock. Funds in the foreign small-/mid-cap categories are eliminated, since we do not have benchmark holdings for these funds (they represent 11 percent of the raw sample). We further screen for and delete sector funds, balanced funds, long-short funds, funds-of-funds and funds that primarily use ETFs/futures.

We collect data on fund returns and characteristics from Morningstar Direct and the CRSP Survivor-Bias-Free U.S. Mutual Fund database (henceforth CRSP MFDB). We link the two databases by CUSIP and TICKER. To verify the accuracy of the matches, we compare fund names and inception dates (and liquidation dates, if applicable) between the two databases. Following Berk and Van Binsbergen (2014) and Pastor, Stambaugh and Taylor (2015), we reconcile return data between Morningstar Direct and CRSP MFDB in cases where the returns differ by more than 10 bps per month.[8] We also reconcile the data on Assets Under Management (AUM) when they deviate by more than five percent between the two databases.[9] Data on expense ratios, front and rear loads, 12b-1 fees are obtained from CRSP MFDB. Morningstar is the primary source for style classifications.

Following Kacperczyk Nieuwerburgh and Veldkamp (2014) we address the potential bias resulting from a fund's incubation period being included in the databases by removing observations prior to the fund's inception date. Moreover, because incubated funds tend to be smaller (Evans (2010)), we only include a fund in our final sample once it passes the $15 million threshold for AUM. To ensure that we only keep equity funds, we further exclude any fund that holds less than 70 percent of their assets in equities (Amihud and Goyenko (2013)). The average fund in our pooled sample holds more than 95 percent in equities at any given point in time.

3.1 Fund benchmarks and underlying portfolio holdings

We classify each fund into one of four primary benchmarks: i) All Country World Index (ACWI) (developed and emerging markets), ii) WORLD (developed markets), iii) ACWI ex. U.S., or iv) WORLD ex. U.S.. In our empirical tests, we focus primarily on funds with ex. U.S. benchmarks, which we refer to as international funds, and they account for the majority of the sample. In contrast, global funds that include the U.S., constitute only 27 percent of the sample. The former is more popular as most fund companies already offer a wide array of U.S. equity funds. International

[8] See section 8.1 in the Appendix for a complete description of the methodology used to reconcile return data from CRSP MFDB and Morningstar.

[9] Section 8.2 in the appendix provides additional details.

funds also present a cleaner test of the local information advantage hypothesis, since the U.S. market represents roughly half of the global benchmarks by capitalization, and global funds that are managed by a U.S.-based firm may have a home advantage in the U.S. stock market.

The benchmark is time-invariant for most funds. The only exception is if a fund has changed its strategy from global to international, or vice-versa. To identify such cases, we first look for changes in either the Morningstar Category variable or the Lipper Objective Codes from CRSP. Next, we confirm each case by manually checking the fund's historical prospectus. Another possibility is that a fund changed its strategy from a sector, country, or regional fund to a global/international fund. In such cases, we only keep the data after the fund has converted to a global/international strategy.

Many of our empirical tests require data on the fund's actual portfolio holdings, and its benchmark holdings. We collect this data from Morningstar Direct, because it provides reliable and complete holdings data. Morningstar requires all funds to report complete holdings, including cash equivalents and short positions, on a monthly or quarterly schedule. For benchmark holdings, we use the corresponding Vanguard index funds, since we do not have access to historical benchmark data.

The benchmark for ACWI is the Vanguard Total World Stock Index Fund (Ticker: VTWSX). This fund is, however, only available after July 2008. Prior to this date, we construct the index using three component funds that cover developed (Vanguard Developed Markets Index Fund), emerging (Vanguard Emerging Markets Stock Index Fund) and the U.S. equity markets (Vanguards Total Stock Market Index Fund). To combine the three funds into one global benchmark, we need weights for each of the three regions. We start by computing the weights in July 2008 based on VTWSX. We then back-fill the weights by assuming that any changes over time are solely driven by return differences. This gives us a complete time-series of benchmark holdings from January 2000 to December 2014.

The benchmark for WORLD is the same as the one for ACWI, except that we exclude all stocks that are headquartered in emerging markets. The benchmarks for ACWI ex. U.S. and WORLD ex. U.S. are the Vanguard Total International Stock Index Fund and Vanguard Developed Markets Index

Fund. Both funds are available for the entire sample period.

To determine a fund's style tilt (value/blend/growth), we use the Morningstar style box classifications, which are available on a monthly basis. We follow Sensoy (2009) and convert the monthly classification into a time-invariant classification by using the time-series mode. For funds that changed their strategy from global to international (or vice-versa), the style classification is estimated separately for each sub-period.

Data on underlying stock returns, domicile and other stock characteristics (e.g., Amihud's illiquidity) is obtained from CRSP and Compustat Global. We convert international stock prices to U.S. dollars using the exchange rates from the U.S. Federal Reserve Board's H.10 release. We carefully clean the underlying stock data in Compustat Global following the suggestions by Ince and Porter (2006), among others.[10]

Our final sample consists of 489 distinct funds holding 13,558 unique stocks. The benchmark funds hold 12,526 unique stocks. The total number of unique stocks held by our sample funds and/or their benchmark funds is 16,340.

3.2 Sub-advisor data

We gather information on whether or not a fund is sub-advised, and if so to whom. In all but two cases, the mutual fund company that launches the fund is the advisor. If no sub-advisory contract exists, then the advisor is solely responsible for managing the fund. For sub-advised funds, the advisor acts as a manager of the managers. The advisor is responsible for determining how the fund's assets are spread among the sub-advisors. Following prior literature (Chuprinin, Massa, Schumacher (2015)),we use the SEC semi-annual reports for investment companies (NSAR) filings to obtain accurate fund advisor and sub-advisor data. The NSAR filings contain detailed information regarding fund characteristics, including the name and headquarter location of the advisor and each sub-advisor (if any). Fund management companies are required to submit NSAR filings to the

[10] Specifically, we only include common stocks, we remove penny stocks (less than 1 USD) and stocks with prices greater than 1 million in local currency. We set monthly returns, R_t, to missing in cases where R_t or R_{t-1} is greater than 300% and $(1 + R_t)(1 + R_{t-1}) - 1$ is less than 50%. Returns greater than 990% are set to missing.

SEC semi-annually. We therefore assume that the sub-advisory contracts remain constant for the six-month period between filings.

By definition, a sub-advisor's responsibilities are predominately research and asset management. Using a sub-advisor's headquarter location, we determine whether a fund has a foreign presence that gives it a local information advantage outside of the U.S.. In the empirical tests, we are interested in two types of funds: those that have a foreign presence by having at least one sub-advisor located abroad, and those that have U.S. sub-advisors only.

Next, we classify each fund as either outsourced or in-house. We accomplish this by checking corporate affiliations between the advisor and the sub-advisors using Bloomberg, supplemented by web queries we carefully trace a firm's parent (or subsidiaries) all the way up (or down) the corporate ladder. Following the existing literature, funds are classified as outsourced if at least one sub-advisor is unrelated to the fund brand/advisor.

4 Empirical methodology and variable construction

4.1 Performance measures

We employ a variety of performance measures. First, we calculate risk-adjusted returns relative to the capital asset pricing model (CAPM). When assessing a fund manager's skill, retail investors have been shown to be most attentive to past CAPM alphas (Berk and Van Binsbergen (2014); Barber, Huang and Odean (2016)). However, this finding does not necessarily imply that the true asset pricing model is the CAPM (Jegadeesh and Mangipudi (2017)). Therefore, we also consider the 3-factor model of Fama and French (1992) (FF3) and the 4-factor model of Carhart (1997) (FFC4). We use the prior 36 months to estimate factor loadings. For funds with less than 24 months of return data, we instead use the median factor loadings of other funds with the same benchmark and style classification as of $t-1$. To obtain appropriate factors for our sample of global/international equity funds, we use country-level factors provided by AQR and weigh each country by each fund's

actual country weight based on the most recently reported holdings.[11]

As an alternative to factor-based risk-adjustment, we follow Pastor, Stambaugh and Taylor (2015) (among others) and evaluate fund performance relative to index-based benchmarks. The first such measure is the benchmark-adjusted gross return (BENCHMARK ADJUSTED RETURNS) i.e., the fund's gross return minus the benchmark index return. This effectively assumes that the beta on the benchmark equals one. The second is the benchmark-adjusted alpha, BENCHMARK ALPHA. In this case, we estimate the OLS beta on the benchmark using the prior 36 months of data.

To study the impact of sub-advisor location and affiliation on fund performance we regress fund $i's$ risk-adjusted return in month t on lagged sub-advisory variables, a set of control variables and style and time fixed effects. Our primary performance regression is given by equation 1:

$$\begin{aligned} \text{PERFORMANCE}_{i,t} = \gamma \; + \; \beta \cdot \; \text{US} \;\; \text{IN-H}_{i,t-1} \; + \; \theta \cdot \text{US} \;\; \text{OUTS.}_{i,t-1} \; + \; \phi \cdot \text{INT'L} \;\; \text{IN-H}_{i.,t-1} \\ + \lambda \cdot \text{INT'L} \;\; \text{OUTS.}_{i,t-1} + \; \boldsymbol{\omega} \cdot \boldsymbol{v_{i,t-1}} + \; \xi \cdot \eta_t \; \epsilon_{i,t} \end{aligned} \tag{1}$$

where $\boldsymbol{v_{i,t-1}}$ is a k-vector of lagged control variables, $\boldsymbol{\omega}$ is a vector of coefficient estimates. The sub-advisory variables are defined as follows: US $\text{IN-H}_{i,t}$ takes a value of one if fund i has an in-house sub-advisor headquartered in the US at time t, US $\text{OUTS.}_{i,t}$ equals one if fund i has an outsourced sub-advisor headquartered in the U.S. at time t and zero otherwise, INT'L $\text{IN-H}_{i,t}$ takes a value of one if fund i has an in-house sub-advisor located abroad at time t and zero otherwise and INT'L $\text{OUTS.}_{i,t}$ equals one if fund i has an outsourced sub-advisor located in a foreign country at time t and zero otherwise. Fund characteristics expected to influence performance are contained in $\boldsymbol{v}$.

We conjecture that funds managed by internationally-based sub-advisors have a local information advantage (*Hypothesis 1:* $\phi > 0$ and $\lambda > 0$). Moreover, if agency costs exceed the potential benefits of local information advantage, then internationally outsourced sub-advised funds are expected to

[11] For countries with unavailable factors, primarily emerging markets, we instead use the corresponding regional factors. For Latin American stocks we use North American factors, for African and Middle Eastern stocks we use European factors, and for tax havens we use global factors.

underperform relative to in-house foreign sub-advised funds (*Hypothesis 2a:* $\phi - \lambda > 0$). Alternatively, if the benefits of local information advantage exceed the agency costs, then international outsourced sub-advised funds are expected to outperform relative to outsourced US sub-advised funds (*Hypothesis 2b:* $\lambda - \theta > 0$).

We include a (mostly) standard set of control variables: the net expense ratio from CRSP (EXPENSE RATIO) as a measure of the annual fees paid by investors, the cumulative gross return over the preceding 12-months (PAST PERFORMANCE), and the net fund flows over the preceding 12-months (NET FLOWS). In addition, we control for the liquidity of fund holdings relative to its benchmark, as measured by the natural logarithm of the dollar-weighted monthly Amihud's illiquidity for the funds holdings minus the natural logarithm of the dollar-weighted monthly Amihud's illiquidity for the benchmark (LN(ILL. DEV.)). To account for the possibility that investors in the institutional share-class are more sophisticated and the fund managers are more incentivized to generate alpha, we include the percentage of assets in institutional share-classes (IO).

All explanatory variables are lagged by one month and each regression includes style and time fixed effects. Standard errors are clustered by style × time to account for any residual dependence among funds in the same style at a given point in time. To minimize the impact of outliers, we winsorize all control variables at the 1^{st} and 99^{th} percentiles on an annual basis (see Table A1 in the appendix for additional variable descriptions).

4.2 Measures of active fund management

An active line of inquiry in the mutual fund literature is whether actions by managers reveal the existence of skilled asset management. The existing literature has documented a positive relationship between various measures of active fund management (or activeness) and future performance. In several tests, we explore differences in activeness between funds that are expected to have an informational advantage (foreign-based vs. US-based sub-advised funds). Our conjecture is that funds with a local information advantage should also have greater activeness, which is a necessary

condition for obtaining higher risk-adjusted performance.

We use three measures to quantify the level of activeness by mutual funds. First, we construct active share by Cremers and Petajisto (2009), which is based on the deviation of a fund's actual portfolio weights from those of its benchmark (Vanguard benchmark index funds, as discussed in section 3.1). The second measure is tracking error, which is defined as the standard deviation of the difference between the fund's gross return and its benchmark returns, estimated over a rolling 24-month window (minimum 12 observations). Third, we use fund turnover from CRSP MFDB, since it has been shown to be positively associated with fund performance, primarily in the time-series (Pastor, Stambaugh and Taylor (2017)). Turnover is defined as the lesser of the fund's total purchases and sales over the prior 12 months, divided by the fund's average AUM over the same 12-month period.

4.3 Descriptive statistics

In Table 1, we report for each year the number of funds, the proportion of funds that are managed by foreign-based sub-advisors and the proportion of funds that are outsourced. It is apparent that the number of mutual funds with an international mandate has steadily increased over time. This is consistent with an increasingly accessible global market for mutual funds. The fraction of funds that are sub-advised (both US- and foreign-based) has steadily increased until around 2009, after which we see a stabilization at around 52% of the sample of funds. Lastly, the proportion of funds that outsource sub-advisory duties peaks in 2009 at around 35%, which is followed by a modest decline to 28% at the end of 2014. The overall proportion of outsourced funds in our sample is comparable to those reported in Chen, Hong, Jiang and Kubik (2013) and Chuprinin, Massa, Schumacher (2015).

[Table 1]

Table 2 reports univariate differences between sub-advisory categories. Tests in panel A examine the impact of having a foreign-based sub-advisor (*Hypothesis 1*). In Panel B, we compare funds that are managed by outsourced foreign sub-advisors to funds managed by in-house foreign sub-advisors, outsourced U.S. sub-advisors and in-house U.S. sub-advisors (*Hypotheses 2a* and *2b*).

From panel A, we can see that funds that are managed by foreign-based sub-advisors tend to be older, larger, have lower expense ratios, are more likely to be broker-sold, and have a lower proportion of assets under management in institutional share-classes. Moreover, foreign-based sub-advised funds have a lower level of activeness, as indicated by their significantly lower levels of active share and tracking error. In terms of fund performance, there is no statistically significant difference in unconditional means. Thus, while many fund characteristics differ significantly depending on sub-advisor location, there appears to be no impact on overall fund performance.

It is apparent from column (5) in Panel B that outsourced foreign sub-advised funds are typically older, smaller, cheaper, have a larger proportion of assets in the institutional share-classes and have lower net flows relative to in-house foreign sub-advised funds. Risk-adjusted performance is significantly lower for outsourced foreign sub-advised funds (by as much as 132 bps per year for FF3), while benchmark-adjusted returns are insignificantly lower.

Columns (6) and (7) test for differences between funds that are managed by outsourced foreign sub-advisor relative to outsourced US and in-house US sub-advised funds. In this case, we see that outsourced foreign sub-advised funds are, on average, older, larger and less expensive. They are also significantly lower activeness, as indicated by a lower tracking error and active share. Lastly, they tend to underperform US sub-advised funds by as much as 1.08% per year on a risk-adjusted basis.

[Table 2]

Debaere and Evans (2017) argue that the underperformance of outsourced funds is endogenous to the decision to outsource. More specifically, after controlling for the lack of internal expertise of fund management companies that outsource fund management (as proxied by fund family size), the underperformance is no longer evident. We measure fund family size by the total AUM of all funds in a family with a foreign investment mandate (including global, international, regional, country and international sector funds). Our evidence, in Panel A, indicates that fund family size is more than twice as large for foreign-based sub-advisors (both in-house and outsourced) relative to US-based sub-advised funds, and relative to non-sub-advised funds. In Panel B, we find that fund

family size is significantly greater for outsourced foreign sub-advised funds relative to outsourced US sub-advised funds.

To summarize, our univariate results indicate that funds managed by foreign-based sub-advisors have significantly different characteristics and lower levels of activeness, but they do not show any abnormal performance. Instead, our univariate results suggest that the subset of funds that are managed by outsourced foreign sub-advisors tend to underperform relative to their peers. This preliminary evidence suggests that the potential for local information advantage among foreign-based sub-advised funds may be overstated.

5 Empirical results

The univariate tests in the previous section indicate that funds that outsource sub-advising duties to foreign-based managers underperform relative other funds in our sample. In this section, we confirm the robustness of this result using multivariate regressions, while controlling for other factors relevant to mutual fund performance. In addition, we explore several potential channels for this underperformance.

5.1 Main results: Fund-level performance and sub-advising status

We examine the relationship between sub-advising status and risk-adjusted returns by estimating Equation 1 separately for international funds (ex. U.S.) in Panel A, and for global funds (incl. U.S.) in Panel B. Again, the reason for the split is that international funds offer a cleaner test of the local information advantage hypothesis, since global funds that are managed by a US-based firm may have a home advantage in the U.S. stock market compared to foreign markets. International funds also account for the vast majority of the sample (73 percent).

The baseline regression results for international funds in Table 3 - columns (1), (3), (5), (7) and (9) - show that funds that are managed by foreign-based sub-advisors do not outperform other

funds. In fact, they underperform relative to non-sub-advised funds. This runs counter to the local information advantage hypothesis (*Hypothesis 1*). Next, we include separate interaction terms for funds managed by in-house and outsourced sub-advisors. The results in columns (2), (4), (6) and (8) show that outsourced funds (both international and U.S. sub-advised) significantly underperform relative to non-sub-advised funds. To illustrate, for international outsourced funds, the risk-adjusted abnormal returns are lower by between 5.22 bps per month (benchmark-adjusted returns) and 10.14 bps per month (FF3 alpha). This translate to an underperformance of between 62.64 and 121.68 bps per year.

[Table 3]

In agreement with *Hypothesis 2a*, we find that international outsourced funds underperform international in-house funds. The performance differential is significant at the 10 (5) percent level for all (4 out of 5) performance measures. This confirms that agency issues also exist among foreign-based sub-advisors. In contradiction to *Hypothesis 2b*, we find that international outsourced funds do not outperform U.S. outsourced funds. Instead, 4 out of 5 of the performance measures are lower for international outsourced funds. The performance differential is, however, significant only for the FF3 alpha (-67.1 bps per year, t-stat = 2.08). This suggests that agency problems for foreign-based sub-advisors may be severe enough to mute any local information advantage.

Although outsourcing abroad seems to lead to even lower performance than outsourcing domestically, we also find poor overall performance among outsourced U.S. sub-advised funds. Specifically, they significantly underperform by between 39.1 bps per year (CAPM alpha) and 67.4 bps per year (FFC4 alpha) relative to non-sub-advised funds. However, we see a very different picture when we look at the sample of global funds, which include a significant allocation to the U.S. equity market (see Panel B): outsourcing domestically is associated with significantly greater performance relative to non-sub-advised funds by between 63.8 and 111.7 bps year. Despite the substantially reduced sample size for global funds, we obtain significant results at the five percent level for three out of five performance measures. Moreover, the performance differential between U.S. outsourced funds with international (Panel A) versus global (Panel B) investment mandates is between is between

11 and 14 bps per month (significant at the one percent level for all five performance measures).

These results indicate that outsourcing domestically is not universally bad. It depends on the investment mandate. Global funds typically invest between 40 and 60 percent of their assets in US stocks, whereas international funds are expected to invest only in foreign (ex. U.S.) stocks. If global funds that outsource fund management domestically have a home information advantage in their U.S. investments, then it could explain their outperformance. Similarly, global funds that are managed by outsourced foreign-based sub-advisors do not underperform relative to other funds, possibly due to outperformance in their U.S. investments. Therefore, it is possible that analyzing fund-level performance makes it difficult to identify any abnormal returns earned by trading on local information (or lack thereof). We will revisit this issue in section 5.4, where we decompose fund-level performance and characteristics at the regional sub-portfolio level.

The economic significance of the underperformance we document for international outsourced funds is similar to that reported for outsourced funds in the existing literature. Chen, Hong, Jiang and Kubik (2013) show that outsourced funds underperform in-house funds by about 80.4 bps per year using Fama-Macbeth regressions. Similarly, Chuprinin, Massa, Schumacher (2015) find that outsourced funds underperform other funds in their sample by about 85 bps per year. An important difference in our study is that the performance consequences of outsourcing domestically depend on the investment mandate of the fund (international or global).[12]

5.2 Activeness and fund performance

Our conjecture is that funds with a local information advantage should also have a greater degree of activeness in portfolio management, which is a necessary condition for obtaining higher risk-adjusted performance. Conversely, the underperformance of international outsourced funds may

[12]In unreported results, we attempt to replicate results from prior literature by re-estimating Eq. (1) replacing US OUTS. SA and INT'L OUTS. SA with a single dummy variable for outsourcing (similar to regressions in Chen, Hong, Jiang and Kubik (2013) and Chuprinin, Massa, Schumacher (2015)). We find no significant effect of (unconditional) outsourcing. This seemingly different result is reconciled by concentrating on similar sample periods - Chen, Hong, Jiang and Kubik (2013) use data spanning 1994 to 2007 while the sample in Chuprinin, Massa, Schumacher (2015) covers 2001 to 2008.

be due to a lack of activeness. We start by examining the overall relationship between fund performance and activeness for our sample of funds.

Table 4 provides the results for regressions of fund performance on fund activeness, as measured by active share, turnover ratio and tracking error. To ease the interpretation of the coefficient estimates, we standardize each measure of activeness. We include the same control variables as in Equation 1, as well as fund and time fixed effects. As before, standard errors that are clustered by time × style.

[Table 4]

The results agree with the expectation that active fund management should be positively related to performance. Coefficient estimates for active share (specifications (2), (5), (8), (11) and (14)) are positive and significant for each performance measure. To illustrate the economic magnitude, a one standard deviation increase in active share is associated with a 6.14 bps per month (73.7 bps per year) increase in FF3 alpha. The effects are almost twice as large for CAPM alphas, benchmark-adjusted returns and benchmark-adjusted alphas.

Under the assumption that the set of profitable investment opportunities varies over time, we should expect to find a positive relationship between fund turnover and future performance (see Pastor, Stambaugh and Taylor (2017) for a formal model). As expected, the relationship is positive and at least marginally significant for each performance measure. Turnover is most strongly related to benchmark-adjusted returns and alpha.

The effect of tracking error on performance (columns 1 and 4) is insignificant after controlling for fund fixed effects. In unreported tests we confirm that tracking error is positively associated with performance if we focus on cross-sectional variations (replacing fund fixed effects by style fixed effects).

5.3 Sub-advisory status and active fund management

The results in the previous sub-sections indicate that international outsourced funds underperform, and that activeness positively predicts future performance. In this section, we make a first attempt to link the underperformance to a lack of activeness in portfolio management among international outsourced funds. In the following section, we decompose these effects at the regional sub-portfolio level.

We estimate Equation (1) with a measure of activeness (active share, turnover, or tracking error) as the dependent variable. Each dependent variable is highly persistent over time. To account for the resulting residual dependence, we cluster standard errors by fund.

The results in Table 5 show that international outsourced funds have significantly lower levels of active share and tracking error. Specifically, active share is lower by 6.3 percent and tracking error is lower by 0.13 percent. Both effects are economically meaningful and correspond roughly to 10 percent of the unconditional mean. In contrast, turnover is significantly higher for international outsourced funds compared to non-sub-advised funds. This result needs to be interpreted with caution, however, because turnover is only positively associated with future risk-adjusted performance after controlling for fund fixed effects. In other words, cross-sectional variations in turnover are not positively to future risk-adjusted performance.

[Table 5]

The combined results thus far support the idea that the relative underperformance of international outsourced funds can be attributed to a lower degree of activeness in portfolio management. However, it could be argued that fund-level tests are too broad and do not capture the effects of specific local information advantage. We address this concern in the next section.

5.4 Decomposing fund performance and activeness

We examine the impact of the sub-advising decision on the performance and activeness within each mutual fund's regional sub-portfolio. We split a fund's most recent reported holdings into

three mutually exclusive sub-portfolios: U.S., Foreign Local and Foreign Non-Local. A fund's Foreign Local sub-portfolio contains all foreign stocks that are headquartered in the same region as the sub-advisor. This is the sub-set of stocks where a fund may have a local information advantage. The sub-advisor headquarters in our sample are concentrated in Europe, Asia and Australia, which is why we focus on two regions: Europe and Asia-Pacific. Similarly, the Foreign Non-Local portfolio contains all stocks that are headquartered in foreign countries where the funds sub-advisor has no physical presence. If the sub-advisor is located in London U.K., for example, then we consider all European stocks to be in the Foregn-Local sub-portfolio, and all Asia-Pacific stocks stocks to be in the Foreign Non-Local sub-portfolio.

We use quarterly snapshots of fund holdings to construct buy-and-hold underlying sub-portfolio returns. For the fund-level performance tests, we used AQR's country-level factors aggregated to the fund-level based on the actual weight invested by a fund in a given country. In the same spirit, we aggregate the factors at the sub-portfolio level here as well. For the U.S. sub-portfolio, we simply use U.S. factors. For the foreign-local sub-portfolio, we use a dollar-weighted average across the included countries. To cleanly decompose the fund-level performance into its sub-portfolio counterparts, we use the previously estimated fund-level betas (based on a rolling 36-month window) when risk-adjusting the sub-portfolio returns.

We use the same three measures of activeness as in the previous section, but we re-define them at the sub-portfolio level. The sub-portfolio active share is defined similarly to the fund-level counterpart, except that the actual and benchmark weights add up to 100 percent within each sub-portfolio.

The second is the sub-portfolio turnover. As in Wermers (2000), Brunnermeier and Nagel (2004) and the CRSP MFDB, we start by defining the fund-level quarterly turnover as the minimum of the absolute values of buys and sells from $t-3$ to t, where buys and sells are measured with end-of-month $t-3$ prices. This (dollar) turnover is then scaled by the AUM at $t-3$. This definition of turnover captures trading unrelated to in- or outflows. Since we calculate it from quarterly holdings snapshots, it is understated relative to the true fund-level turnover, which is based on all trades.

The sub-portfolio turnover measure is defined in an analogous way. If the fund-level turnover uses dollar buys in the numerator (i.e., min($buys, $sells) = $sells), then we also use the dollar buys in the numerator for the sub-portfolio. As with the fund-level turnover, we scale the sub-portfolio turnover by AUM at $t-3$. This provides a clean decomposition, as the fund-level turnover equals the sub-portfolio turnover when summed up across all sub-portfolios.

The third measure is the sub-portfolio tracking error, which is defined as the standard deviation of the difference between the underlying sub-portfolio (buy-and-hold) return and the benchmark sub-portfolio return (the subset of stocks in the benchmark that are in the same sub-portfolio). All regressions include style and time fixed effects with standard errors that are clustered by style × time.

5.4.1 Regional sub-portfolio results

Table 6, Panel A provides the results from regressions of sub-portfolio risk-adjusted returns on sub-portfolio dummies (US, FOREIGN LOCAL and FOREIGN NON-LOCAL) interacted with US and international sub-advising status (US and INT'L SA). In contradiction to *Hypothesis 1*, the full sample results in columns (1) and (5) suggest that international sub-advised funds significantly underperform in their local holdings by 6.3 bps (FF3 alpha) and 7.8 bps (FFC4 alpha) per month. This is clear evidence against the idea that sub-advising abroad is associated with a local information advantage. Specifications (2) and (6) splits the sub-advising dummies into in-house and outsourced. These results are striking: international outsourced funds underperform by as much as 9.7 bps and 9.9 bps per month in their local stock holdings, relative to the omitted category of FOREIGN NON-LOCAL SUB-PORTFOLIO × NON-SUB-ADVISED FUNDS. Specifications (4) and (8) provide the results for the sub-sample of funds with an international (ex. U.S.) investment mandate. It is for this sub-sample that any local information advantage in foreign stocks should be most cleanly identified. In this case, the underperformance is even worse: the coefficient on FOREIGN LOCAL × INT'L OUTS. SA is -13.5 bps (FF3 alpha) and -11.9 bps (FFC4 alpha) per month. These magnitudes are large enough to explain the overall, fund-level underperformance of international outsourced funds, es-

pecially since the weight invested in the foreign local sub-portfolio is on average very high, at 66.3 percent. We also observe significant underperformance for international in-house funds in their local stock holdings, but the magnitudes are lower by about half compared to those for international outsourced funds. As we shall see, these differences can - at least partly - be explained by differences in sub-portfolio activeness.

[Table 6]

Panel B provides the sub-portfolio results for active share and tracking error as the dependent variable. The results in column (1) shows that international sub-advised funds have significantly lower active share in their local sub-portfolios (by about 7.1 percent) compared to the benchmark group (FOREIGN NON-LOCAL × NON-SUB-ADVISED). This effect is economically meaningful when compared to the (unconditional) mean sub-portfolio active share of 79 percent. The effect is even more pronounced when we split international sub-advised funds into in-house and outsourced: active share for the local sub-portfolio is lower by 9.3 percent for international outsourced funds, and lower by 5.7 percent for international in-house funds. For the sub-sample of international mutual funds in column (4), these effects are even greater, at -12.9 percent and -8.4 percent.

The results for tracking error and turnover paint a similar picture. Internationally outsourced funds have a significantly lower tracking error by around 0.18 percent per month within the sub-sample of international funds. Similarly, internationally outsourced funds have significantly lower turnover in their local holdings by about 1.5 percent per quarter (or 6.08 percent per year). This is economically significant when compared to the unconditional mean of 6.9 percent per quarter (or 27.6 percent per year). The corresponding results for turnover and tracking error for international in-house funds are insignificant. This could explain the relative underperformance of international outsourced funds compared to their in-house counterparts.

The sub-portfolio results are clear and consistent: the fund-level underperformance of outsourced sub-advised funds can be explained by their poor performance in local stock holdings, which we ultimately argue is caused in part by their significantly lower active share, turnover and tracking error relative to non-sub-advised funds.

Next, we attempt to reconcile the seemingly conflicting evidence of U.S. outsourced sub-advisors outperforming in global funds (Table 3, Panel B), but underperforming in international funds (Table 3, Panel A). We argue that this performance differential is primarily driven by the local (U.S.) information advantage that these U.S. outsourced sub-advisors have, since the average global fund allocates about 47 percent to U.S. stocks. Hence, the U.S. sub-portfolio can have a meaningful impact on overall fund returns. The full sample results in Panel A, columns (2) and (6) show that U.S. outsourced funds significantly outperform in their local (U.S.) stock holdings by about 12 bps per month. This outperformance is coming entirely from the sub-sample of global mutual funds. Conversely, international funds that are managed by U.S. sub-advisors underperform in their foreign non-local holdings. Jointly, these two findings help to reconcile the fund-level outperformance in global funds by outsourced U.S. sub-advisors and their underperformance in international funds. Moreover, this observation is consistent with the evidence on sub-portfolio activeness. Both sub-portfolio active share and tracking error are significantly higher for global funds that are managed by outsourced U.S. sub-advisors, whereas active share is significantly lower among international funds managed by outsourced U.S. sub-advisors. The only mixed evidence is for turnover, which is in the opposite direction.

6 Alternative explanations

Having established a robust negative relationship between outsourcing abroad and fund performance, which we argue is explained in part by a lack of activeness in fund management, we now focus on ruling out other explanations. First, we examine the possibility of reverse causality; that is, poor fund performance leads to the decision to outsource internationally. Second, we examine whether the distribution channel (broker vs. direct sold) and the associated incentives to generate alpha can explain the underperformance of outsourced funds.

6.1 Reverse causality

It could be that poorly performing funds try to boost performance by tapping into outside expertise or knowledge that in-house managers do not possess. To investigate this possibility, we estimate the effect of performance on the propensity to outsource to sub-advisors headquartered abroad. Under the hypothesis of reverse causality, we would expect past performance to be negatively related to the propensity to outsource internationally. The dependent variable equals one in the first semi-annual observation for which a fund is reported to have an international outsourced sub-advisor. Any subsequent observations are removed from the sample. We use semi-annual observations, since this is the frequency at which the NSAR data (and therefore the sub-advisory data) is available. Performance is measured here by the cumulative CAPM, FF3 or FFC4 alpha over the prior 12 months.

The results in Table 7, columns (4), (5), and (6) indicate that poor performance is not significantly related to the propensity to outsource internationally, which casts doubt on the reverse causality argument. It is important to note that funds that are managed by international outsourced sub-advisors throughout the entire sample period, or during the early part of the sample period, have been removed because there is no prior history to compute lagged performance. As a result, the regression sample only includes 32 semi-annual observations where the dependent variable equals one. This low number, by itself, is an indication that funds in our sample are unlikely to outsource fund management internationally following poor performance.

Another possible explanation is that funds with insufficient internal expertise are more likely to outsource fund management. And because of their lack of expertise, they are also not able to earn higher returns by managing the outsourced funds internally (Debaere and Evans (2017)). The full sample regression results in column (1) show that larger, older and more expensive funds, and funds from large fund families (a proxy for internal expertise), are more likely to hire international outsourced sub-advisors. Therefore, this finding contradicts the lack of internal expertise argument.

[Table 7]

6.2 Distribution channel

Prior literature suggests that funds sold through intermediaries, such as brokers, face a weaker incentive to generate alpha than mutual funds sold directly to retail investors (Bergstresser, Chalmers and Tufano (2009), Del Guercio and Reuter (2014)), and that flows to broker sold funds are highly related to payments made by the fund company to brokers (Christoffersen, Evans and Musto (2013)). It is therefore possible, that the negative effect of international outsourcing on fund performance is a proxy for the relatively poor performance of broker-sold funds. In this case, we would expect to see a higher proportion of broker-sold funds among international outsourced funds. We would also expect to find a stronger negative effect of international outsourcing on fund performance among broker-sold funds, relative to direct-sold funds.

To test these hypotheses, we use two different measures of the distribution channels. Our first classification uses the NSAR load data. Specifically, funds are classified as broker-sold if, over the prior fiscal year, they have either: paid unaffiliated dealers for selling units with a front-end sales load (NSAR Q32 > 0), paid a captive retail sales force (NSAR Q33 > 0), had positive levels of revenue sharing (NSAR Q44 > 0) or had 12b-1 fees greater than 0.25%. The remaining funds are classified as direct-sold.[13] The summary statistics in Table 2, Panel B show that the proportion of broker-sold funds is somewhat higher among international outsourced funds (54%) compared to the sample of non-sub-advised funds (44%). However, international outsourced funds are significantly less likely to be broker-sold compared to international in-house funds (66%).

Our second classification follows Sun (2014) where a fund is defined as direct-sold if 75% of its assets are held in a share class charging no loads and no 12b-1 fees. Broker-sold funds are defined as having non-zero front-end loads and back-end loads, or 12b-1 fees greater than 25 bps. Based on this definition, there is no meaningful difference in the proportion of funds that are broker-sold between international outsourced funds (58%) and non-sub-advised funds (55%).

Table 8, Panel A reports the regression results from estimating Equation (1) separately for broker-

[13] Christoffersen, Evans and Musto (2013) and the their online appendix provides a more detailed discussion.

sold versus direct-sold funds based on the NSAR definition. The results suggest that the underperformance of international outsourced funds is negative for both broker- and direct-sold funds. However, the underperformance is consistently significant only for direct-sold funds. For example, the underperformance is significant for both direct- and broker-sold funds using FF3 and FFC4 alphas. However, when measuring performance with CAPM alphas, benchmark-adjusted gross returns or benchmark-adjusted alphas, the negative effect on performance is almost entirely driven by direct-sold funds. These results cast doubt on the alternative explanation that the underperformance of international outsourced funds is driven by a lack of incentives. The results are similar for direct- vs. broker-sold funds based on the Sun (2014) definition.

[Table 8]

7 Summary and conclusion

In this paper, we analyze the impact of sub-advising abroad using a sample of international and global mutual funds that are registered for sale in the U.S.. First, we document that funds with a foreign presence in research and asset management are not able to exploit local information and expertise to improve fund performance. This finding contradicts theories that suggest local investors are privy to information unavailable to non-locals. After differentiating sub-advisors based on affiliation, we show that outsourced, as opposed to in-house, foreign sub-advised funds significantly underperform on a benchmark- and risk-adjusted basis. Thus, obtaining foreign market exposure through mutual funds that outsource at least partially to international sub-advisors may seem intuitive, but it is not advisable.

We explore a number of possible reasons. First, we show that international outsourced funds are less active, and particularly in foreign regions where they have a sub-advisor presence. Next, we rule out the reverse causality explanation; that is, the notion that poorly performing funds try to boost performance by tapping into outside, foreign expertise. Finally, we also rule out the possibility that the negative effect of foreign outsourcing on fund performance is simply a proxy

for the relatively poor performance of broker-sold funds. Thus, it appears that the most probable channel for underperformance is a relative lack of active management.

References

Y. Amihud, R. Goyenko. Mutual fund R^2 as a predictor of performance. *Review of Financial Studies*, 2013.

B. Baik, J.-K. Kang, and J.-M. Kim. Local institutional investors, information asymmetries and equity returns. *Journal of Financial Economics*, 97, 2010.

B. Barber, X. Huang and T. Odean. Which factors matter to investors? Evidence from mutual fund flows. *Review of Financial Studies*, 29(10), 2016.

D. Bergstresser, J. Chalmers and P. Tufano. Assessing the costs and benefits of brokers in the mutual fund industry. *Review of Financial Studies*, 22(10), 2009.

J. Berk and R. Green. Mutual fund flows and performance in rational markets. *Journal of Political Economy*, 112(6), 2004.

J. Berk and J. Van Binsbergen. Measuring skill in the mutual fund industry. *NBER working paper*, 2014.

M. Brunnermeier and S. Nagel. Hedge funds and the technology bubble. *Journal of Finance*, 59(5), 2004.

M. Carhart. On persistence in mutual fund performance. *Journal of Finance*, 52(1), 1997.

J. Chen, H. Hong, W. Jiang and J. Kubik. Outsourcing mutual fund management: Firm boundaries, incentives and performance. *Journal of Finance*, 68, 2013.

S. Christoffersen, R. Evans and D. Musto. What do consumers' fund flows maximize? Evidence from their brokers' incentives. *Journal of Finance*, 68, 2013.

O. Chuprinin, M. Massa and D. Schumacher. Outsourcing in the international mutual fund industry: An equilibrium view. *Journal of Finance*, 70, 2015.

G. Cici and L. Palacios. On the use of options by mutual funds: Do they know what they are doing? *Journal of Banking and Finance*, 50, 2015.

J. Coval and T. Moskowitz. Home bias at home: Local equity preference in domestic portfolios. *Journal of Finance*, 54(6), 1999.

J. Coval and T. Moskowitz. The geography of investment: Informed trading and asset prices. *Journal of Political Economy*, 109(4), 2001.

M. Cremers and A. Petajisto. How active is your fund manager? a new measure that predicts performance. *Review of Financial Studies*, 22(9), 2009.

P. Debaere and R. Evans. Outsourcing vs. integration in the mutual fund industry. the puzzle of lower returns. *Working Paper*, 2017.

D. Del Guercio and J. Reuter. Mutual fund performance and the incentive to generate alpha. *Journal of Finance*, 2015.

R. Evans. Mutual fund incubation. *Journal of Finance*, 65(4), 2010.

E. Fama and K. French. The cross-section of expected stock returns. *Journal of Finance*, 47(2), 1992.

E. Fama and K. French. Size, value and momentum in international stock returns. *Journal of Financial Economics*, 105(3), 2012.

A. Frazzini and O. Lamont. Dumb money: mutual fund flows and the cross-section of stock returns. *Journal of Financial Economics*, 88(2), 2008.

X. Gao, T. Wong, L. Xia, and G. Yu. Local information advantage and the agency cost of delegated portfolio management: Evidence from mutual funds investing in china. *Working Paper*, 2013.

J. M. Griffin. Are the fama and french factors global or country specific? *Review of Financial Studies*, 15(3), 2002.

M. Grinblatt and M. Keloharju. How distance, language and culture influence stockholdings and trades. *Journal of Finance*, 56(3), 2001.

H. Hau. Location matters: An examination of trading profits. *Journal of Finance*, 56(5), 2001.

Z. Ivkovic and S. Weisbenner. Local does as local is: Information content of the geography of individual investors' common stock investments. *Journal of Finance*, 60(1), 2005.

M. Kacperczyk, C. Sialm, and L. Zheng. Unobserved actions of mutual funds. *Review of Financial Studies*, 21(6), 2006.

M. Kacperczyk, S. V. Nieuwerburgh, and L. Veldkamp. Time-varying fund manager skill. *Journal of Finance*, 69, 2014.

M. Jagannathan, Wei Jiao and Andrew Karolyi. Is there a home field advantage in global markets? *Working Paper*, 2018.

N. Jegadeesh and C. Mangipudi. What do fund flows reveal about asset pricing models and investor sophistication? *Working Paper*, 2017.

C. Kuhnen. Business networks, corporate governance, and contracting in the mutual fund industry. *Journal of Finance*, 64, 2009.

L. Pastor, R. Stambaugh, and L. Taylor. Do funds make more when they trade more. *Journal of Finance*, 724, 2017.

L. Pastor, R. Stambaugh, and L. Taylor. Scale and skill in active management. *Journal of Financial Economics*, 116, 2015.

A. Petajisto. Active share and mutual fund performance. *Financial analysts journal*, 69(4), 2013.

V. Pool, N. Stoffman, and S. Yonker. No place like home: Familiarity in mutual fund manager portfolio choice. *Review of Financial Studies*, 25(8), 2012.

. Ince and . Porter. Individual equity return data from thomson datastream: Handle with care! *Journal of Financial Research*, 29(4), 2006.

C. Schwarz and M. Potter. Revisiting mutual fund portfolio disclosure. *Review of Financial Studies*, 29(12), 2016.

M. Seasholes and N. Zhu. Individual investors and local bias. *Journal of Finance*, 65(5), 2010.

B. Sensoy. Performance evaluation and self-designated benchmark indexes in the mutual fund industry. *Journal of Financial Economics*, 92(1), 2009.

Y. Sun. The effect of index fund competition on money management fees. *Working Paper*, 2014.

M. Teo. The geography of hedge funds. *Review of Financial Studies*, 22(9), 2009.

S. Van Nieuwerburgh and L Veldkamp. Information immobility and the home bias puzzle. *Journal of Finance*, 64(3), 2009.

R. Wermers. Mutual fund performance. An empirical decomposition into stock-picking talent, style, transaction costs, and expenses. *Journal of Finance*, 55(4), 2000.

Table 1

Sub-Advisory Status of Global Mutual Funds

This table summarizes the sub-advisory status over time for our sample of international/global mutual funds that are sold in the U.S.. For each year we provide: the total number of distinct funds (aggregated by share class), the average fraction of funds that are i) sub-advised, ii) sub-advised to at least one internationally headquartered fund manager, iii) sub-advised to in-house fund managers only, and iv) sub-advised to at least one outsourced fund manager. Averages are calculated using monthly observations. We chose this approach since a fund's sub-advisory status can change throughout the year.

Monthly Averages: % of Funds

Year	No. of Funds	SA	Int'l SA	In-H SA	Outsourced SA
1999	153	30.52	11.05	11.43	20.89
2000	195	34.16	12.10	12.31	23.86
2001	211	35.49	11.51	12.58	25.20
2002	231	36.31	12.00	13.55	25.04
2003	247	42.39	15.03	16.34	28.24
2004	266	45.72	15.61	17.77	29.46
2005	288	46.70	16.70	18.00	30.78
2006	314	48.51	17.27	19.05	32.28
2007	347	48.93	15.77	19.49	32.76
2008	378	50.40	16.29	20.29	33.49
2009	394	52.40	20.29	21.67	34.67
2010	405	52.60	21.21	22.28	33.40
2011	412	52.66	20.81	22.67	33.02
2012	404	51.45	19.15	22.62	30.71
2013	393	50.84	18.83	23.25	29.42
2014	384	51.45	19.94	25.07	27.91

Table 2

Univariate Differences Across Sub-Advisory Status

In this table we report univariate tests on the effect of different sub-advising categories. Panel A examines the impact of having a foreign-based sub-advisor. In Panel B we further differentiate foreign presence based on sub-advisor affiliation. In each Panel we report sub-sample means, the difference in means, and the Cochran and Cox t-values. Means are calculated using the full panel of observations (1999-2014).

Panel A: International Sub-Advised Funds Relative to Other Sample Funds

	(1)	(2)	(3)	(4)	(5)
		Mean		t-stat of Difference	
	Int'l SA	US SA	No SA	(2)-(1)	(3)-(1)
Age	12.74	10.58	12.38	-19.46	-3.29
Active Share	77.74	78.96	81.39	6.98	23.5
Family AUM (CRSP GL. EQ.)	32150	5230	14466	-48.22	-30.3
Brand AUM	22227	5030	13086	-51.39	-24.34
Fund AUM	2022	724	2997	-24.17	11.94
Expense Ratio	1.31	1.39	1.26	15.39	-9.96
Ln(Illiq. Dev.)	35.97	11.53	3.37	-6.86	-9.99
Netflows	0.28	0.46	0.42	2.87	2.54
IO (%)	40.69	44.5	48.71	7.2	16.1
Return Gap	-0.04	-0.04	-0.05	0.07	-1.55
Tracking Error	1.32	1.42	1.46	12.74	19.57
Turnover	0.81	0.78	0.64	-3.03	-24.45
Benchmark Adjusted Returns	0.12	0.12	0.15	0.03	1.97
Benchmark Alpha	0.13	0.13	0.15	0.00	1.33
CAPM Alpha	0.02	0.03	0.03	0.84	0.76
FF3 Alpha	-0.02	-0.02	-0.02	0.1	-0.13
FFC4 Alpha	-0.07	-0.06	-0.06	0.54	1.05
Broker Sold (NSAR)	0.62	0.57	0.45	-7.3	-27.72
Broker Sold (Sun 2014)	0.68	0.5	0.58	-27.84	-17.54

Panel B: Outsourced Funds Relative to In-House Funds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Mean				t-stat of Difference			
	Int'l Outs.	Int'l In-H	US Outs.	US In-H	(2) - (1)	(3) - (1)	(4) - (1)	(3) - (4)
Age	14.68	11.67	10.31	11.14	-13.51	-20.97	-15.51	6.56
Active Share	74.29	79.66	78.44	80.1	18.17	14.61	17.25	6.45
Expense Ratio	1.28	1.32	1.4	1.39	4.55	13.66	11.79	-0.71
Family AUM (CRSP GL. EQ.)	18772	39363	4827	6137	17.71	-14.16	-12.78	5.65
Brand AUM	6217	30849	4228	6879	51.26	-11.62	2.91	13.9
Fund AUM	1667	2213	721	732	5.88	-14.37	-14.09	0.31
Ln(Illiq. Dev.)	40.39	33.51	11.9	-2.19	-1.22	-5.67	-7.35	-2.98
Netflows	0.16	0.34	0.47	0.47	1.71	3.35	2.9	-0.03
IO	52.45	34.19	44.54	45.27	-20.31	-9.24	-7.58	1.05
Return Gap	-0.06	-0.02	-0.04	-0.03	2.06	1.17	1.59	0.55
Tracking Error	1.32	1.32	1.42	1.44	0.09	7.98	8.34	1.9
Turnover	0.77	0.83	0.75	0.88	5.01	-1.83	8.91	12.01
Benchmark Adjusted Returns	0.09	0.13	0.12	0.11	1.56	1.13	0.79	-0.24
Benchmark Alpha	0.09	0.15	0.13	0.13	2.17	1.41	1.41	0.25
CAPM Alpha	-0.04	0.05	0.03	0.04	3.22	2.6	2.76	0.62
FF3 Alpha	-0.09	0.02	-0.03	0.01	4.11	2.5	3.35	1.49
FFC4 Alpha	-0.14	-0.04	-0.07	-0.05	3.31	2.25	2.83	1.09
Broker Sold (NSAR)	0.55	0.66	0.53	0.72	9.67	-2.35	14.27	21.41
Broker Sold (Sun 2014)	0.61	0.71	0.48	0.59	9.92	-13.86	-2.44	12.45

Table 3

Baseline Performance Regression

This table reports OLS estimates from regressing performance measures on sub-advisory variables (Eq. 1). Panel A reports estimates using the international sample of funds, Panel B is restricted to global funds. All regressions use a sample of observations spanning January 1999 to December 2014. The dependent variable is a measure of risk-adjusted performance, either based on factor models (CAPM, FF3, FFC4) or index-based benchmarks (benchmark-adjusted gross return or alpha). Factor loadings are estimated using rolling 36 month windows. The independent variables of primary interest are INT'L OUTS. SA, a dummy variable measuring internationally headquartered sub-advisors, and INT'L IN-H SA, a dummy variable equal to 1 for funds who have an in-house sub-advisor headquartered internationally. For a full description of additional explanatory variables see Table 1. The t-statistics (in parentheses) are calculated from standard errors that are clustered by style × time. ***/**/* denote statistical significance at the 1%/5%/10% level.

Panel A: International Funds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	CAPM Alpha		FF3 Alpha		FFC4 Alpha		Benchmark Adjusted		Benchmark Alpha	
Int'l SA	-0.0238		-0.0346*		-0.0423**		-0.0116		-0.0134	
	(-1.33)		(-1.87)		(-2.27)		(-0.60)		(-0.71)	
US SA Only	-0.0231*		-0.0288**		-0.0412***		-0.0396***		-0.0473***	
	(-1.67)		(-2.06)		(-2.84)		(-2.70)		(-3.07)	
In-H US SA		0.0025		0.0126		-0.0142		-0.0295		-0.0273
		(0.10)		(0.51)		(-0.56)		(-1.05)		(-0.95)
US Outs. SA		-0.0326**		-0.0455***		-0.0562***		-0.0438***		-0.0549***
		(-2.14)		(-2.96)		(-3.55)		(-2.85)		(-3.40)
Int'l In-H SA		-0.0004		0.0053		-0.0142		0.0137		0.0105
		(-0.02)		(0.24)		(-0.64)		(0.55)		(0.42)
Int'l Outs. SA		-0.0625**		-0.1014***		-0.0923***		-0.0522**		-0.0514**
		(-2.54)		(-3.92)		(-3.29)		(-2.19)		(-2.23)
Past Performance	0.0092***	0.0091***	0.0033	0.0031	0.0039*	0.0038*	0.0106***	0.0105***	0.0090***	0.0089***
	(3.80)	(3.76)	(1.42)	(1.35)	(1.71)	(1.66)	(3.88)	(3.85)	(3.34)	(3.31)
IO	-0.0003**	-0.0003*	-0.0004**	-0.0003*	-0.0003**	-0.0003*	-0.0002	-0.0002	-0.0003*	-0.0003
	(-2.03)	(-1.81)	(-2.24)	(-1.88)	(-2.01)	(-1.72)	(-1.15)	(-0.91)	(-1.75)	(-1.52)
Ln(Illiq.)	0.0001	0.0001	0.0001*	0.0001*	0.0001	0.0001	0.0002***	0.0002***	0.0002***	0.0002***
	(1.53)	(1.52)	(1.81)	(1.79)	(1.38)	(1.37)	(3.42)	(3.41)	(3.72)	(3.70)
Netflow	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	-0.0000	-0.0000	0.0001	0.0001
	(1.34)	(1.24)	(1.46)	(1.30)	(1.44)	(1.33)	(-0.11)	(-0.16)	(0.79)	(0.71)
Expense Ratio	0.0062	0.0075	0.0349*	0.0372*	0.0076	0.0101	0.0117	0.0132	0.0235	0.0251
	(0.29)	(0.35)	(1.71)	(1.83)	(0.39)	(0.52)	(0.57)	(0.65)	(1.16)	(1.23)
Observations	36,237	36,237	36,237	36,237	36,237	36,237	38,351	38,351	38,351	38,351
R-squared	0.26	0.26	0.26	0.26	0.28	0.28	0.24	0.24	0.25	0.25
Firm FE	No	No	No	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stlye FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time
t-stats for coeff. diff.										
(t-stat for Int'l - US)	-0.0404		-0.293		-0.0568		1.257		1.537	
(t-stat for Int'l Outs. - US Outs.)		-1.148		-2.079		-1.259		-0.326		0.138
(t-stat for Int'l Outs. - Int'l In-H)		-2.149		-3.569		-2.375		-2.102		-1.982

Panel B: Global Funds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	CAPM Alpha		FF3 Alpha		FFC4 Alpha		Benchmark Adjusted		Benchmark Alpha	
Int'l SA	0.0429		0.0333		0.0196		-0.0135		0.0191	
	(1.28)		(1.04)		(0.61)		(-0.37)		(0.54)	
US SA Only	0.0676**		0.0654**		0.0566*		0.0429		0.0504	
	(2.19)		(2.23)		(1.92)		(1.30)		(1.58)	
In-H US SA		0.0269		0.0520		0.0579		0.0012		-0.0133
		(0.67)		(1.29)		(1.44)		(0.03)		(-0.33)
US Outs. SA		0.0931**		0.0730**		0.0532		0.0627		0.0863**
		(2.52)		(2.11)		(1.49)		(1.56)		(2.28)
Int'l In-H SA		0.0522		0.0400		0.0230		-0.0227		0.0212
		(1.39)		(1.11)		(0.66)		(-0.53)		(0.52)
Int'l Outs. SA		0.0226		0.0165		0.0084		0.0024		0.0137
		(0.44)		(0.35)		(0.16)		(0.04)		(0.25)
Past Performance	0.0061*	0.0060*	0.0054*	0.0054*	0.0059**	0.0059**	0.0068	0.0068	0.0068*	0.0068*
	(1.94)	(1.92)	(1.95)	(1.94)	(2.14)	(2.14)	(1.63)	(1.62)	(1.76)	(1.75)
IO	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	-0.0002	-0.0002	0.0001	0.0001
	(0.13)	(0.18)	(0.16)	(0.17)	(0.16)	(0.16)	(-0.44)	(-0.42)	(0.20)	(0.25)
Ln(Illiq.)	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001	-0.0001	-0.0000	-0.0000	-0.0001	-0.0001
	(-1.85)	(-1.76)	(-1.75)	(-1.68)	(-1.32)	(-1.27)	(-0.47)	(-0.45)	(-1.62)	(-1.57)
Netflow	-0.0001	-0.0001	-0.0002	-0.0002	-0.0002	-0.0002	-0.0001	-0.0001	0.0000	0.0000
	(-0.32)	(-0.36)	(-0.76)	(-0.78)	(-0.93)	(-0.94)	(-0.45)	(-0.48)	(0.07)	(0.01)
EXP RATIO	-0.0252	-0.0260	0.0039	0.0031	-0.0332	-0.0339	-0.0237	-0.0237	-0.0080	-0.0082
	(-0.70)	(-0.72)	(0.11)	(0.09)	(-0.96)	(-0.98)	(-0.60)	(-0.60)	(-0.19)	(-0.20)
Observations	13,521	13,521	13,521	13,521	13,521	13,521	14,113	14,113	14,113	14,113
R-squared	0.10	0.10	0.11	0.11	0.12	0.12	0.18	0.18	0.19	0.19
Firm FE	No	No	No	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stlye FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time	Style×Time
(t-stat for Int'l - US)	-0.684		-0.915		-1.093		-1.439		-0.817	
(t-stat for Int'l Outs. - US Outs.)		-1.189		-1.063		-0.790		-0.939		-1.159
(t-stat for Int'l Outs. - Int'l In-H)		-0.528		-0.454		-0.269		0.392		-0.123

Table 4

Fund Activeness and Performance

This table reports pooled OLS estimates from regressing fund performance on measures of fund activeness for the sample of funds with international (ex US) investment mandates. Regression uses data spanning from January 1999 to December 2014. The independent variables of interest are: tracking error, active share and turnover. Also, we report standardized coefficients for the variables of interest (fund activeness) in order to ease interpretation. Tracking error is calculated using rolling 36-month forward looking windows, active share calculated as described by Cremers and Petajisto (2009) and turnover is taken directly from CRSP. The t-statistics (in parentheses) are calculated from standard errors that are clustered by style × time. ***/**/* denote statistical significance at the 1%/5%/10% level.

Fund Actions and Performance (International Funds)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	CAPM Alpha			FF3 Alpha			FFC4 Alpha		
Tracking Error	0.0289			0.0376*			0.0118		
	(1.24)			(1.65)			(0.50)		
Active Share		0.0968***			0.0614***			0.0533***	
		(4.33)			(2.88)			(2.70)	
Turnover			0.0228			0.0290**			0.0209*
			(1.62)			(2.11)			(1.66)
IO	-0.0010*	-0.0009	-0.0010*	-0.0016***	-0.0016***	-0.0017***	-0.0011**	-0.0011*	-0.0011**
	(-1.73)	(-1.57)	(-1.78)	(-2.73)	(-2.81)	(-2.95)	(-1.98)	(-1.96)	(-2.08)
Past Performance	0.0054*	0.0042	0.0050*	-0.0009	-0.0010	-0.0005	-0.0012	-0.0013	-0.0008
	(1.83)	(1.57)	(1.91)	(-0.30)	(-0.40)	(-0.18)	(-0.45)	(-0.53)	(-0.34)
Ln(Illiq.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001	-0.0001	-0.0001
	(0.66)	(0.69)	(0.68)	(0.62)	(0.66)	(0.63)	(-1.37)	(-1.27)	(-1.29)
Netflow	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(-0.15)	(-0.32)	(-0.01)	(-0.09)	(-0.36)	(-0.14)	(-0.17)	(-0.37)	(-0.19)
Expense Ratio	0.1056**	0.0992**	0.0867*	0.1176**	0.0989**	0.0851*	0.1804***	0.1655***	0.1553***
	(2.24)	(2.03)	(1.77)	(2.40)	(2.02)	(1.73)	(3.76)	(3.43)	(3.22)
Observations	35,579	36,256	36,256	35,579	36,256	36,256	35,579	36,256	36,256
R-squared	0.27	0.27	0.27	0.27	0.27	0.27	0.30	0.30	0.30
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FE	No	No	No	No	No	No	No	No	No
Clustering	Style x Time	Style x Time	Style x Time	Style x Time	Style x Time	Style x Time	Style x Time	Style x Time	Style x Time

Fund Actions and Performance (International Funds, Continued)

	(10)	(11)	(12)	(13)	(14)	(15)
	Benchmark Adjusted Return			Benchmark Alpha		
Tracking Error	0.0170			0.0086		
	(0.58)			(0.28)		
Active Share		0.1026***			0.0948***	
		(4.38)			(4.15)	
Turnover			0.0491***			0.0401**
			(3.06)			(2.49)
IO	-0.0001	0.0002	0.0003	-0.0004	-0.0001	0.0000
	(-0.10)	(0.29)	(0.47)	(-0.69)	(-0.16)	(0.04)
Past Performance	0.0023	0.0053*	0.0065**	0.0004	0.0038	0.0050*
	(0.84)	(1.80)	(2.28)	(0.15)	(1.34)	(1.77)
Ln(Illiq.)	0.0001**	0.0001**	0.0001*	0.0001***	0.0001**	0.0001**
	(2.39)	(2.23)	(1.83)	(2.63)	(2.38)	(2.04)
Netflow	-0.0001	-0.0001	-0.0001	-0.0000	-0.0001	-0.0000
	(-1.14)	(-1.54)	(-1.34)	(-0.06)	(-0.54)	(-0.40)
Expense Ratio	0.2264***	0.1989***	0.1987***	0.1909***	0.1646***	0.1682***
	(4.45)	(3.79)	(3.82)	(3.92)	(3.27)	(3.34)
Observations	37,224	37,805	38,376	37,224	37,805	38,376
R-squared	0.25	0.25	0.24	0.26	0.26	0.26
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Style FE	No	No	No	No	No	No
Clustering	Style x Time	Style x Time	Style x Time	Style x Time	Style x Time	Style x Time

Table 5

Fund Activeness and Sub-Advisory Status

This table reports pooled OLS estimates from regressing measures of fund activeness on sub advisory variables. Regressions use data spanning from January 1999 to December 2014. Tracking error is calculated using rolling 36-month forward looking windows, active share is calculated following Cremers and Petajisto (2009) and turnover is taken directly from CRSP. The independent variables of primary interest are INT'L OUTS. SA and INT'L IN-H SA. We report results using the sub-sample of international funds. The t-statistics (in parentheses) are calculated from standard errors that are clustered by fund. ***/**/* denote statistical significance at the 1%/5%/10% level.

	(1)	(2)	(3)	(4)	(5)	(6)
	International			Global		
	Tracking Error	Active Share	Turnover	Tracking Error	Active Share	Turnover
In-H US SA	-0.0152	-2.6361	0.1627*	-0.0623	-4.2827	0.2316
	(-0.22)	(-1.30)	(1.86)	(-0.43)	(-1.06)	(1.54)
US Outs. SA	-0.0298	-3.9797***	0.0762	0.2485**	-1.2357	0.0733
	(-0.75)	(-3.17)	(1.56)	(2.05)	(-0.82)	(0.73)
Int'l In-H SA	-0.0836	-5.8353***	0.1989**	-0.0486	-2.7245*	0.1675
	(-1.49)	(-3.36)	(2.34)	(-0.62)	(-1.70)	(1.41)
Int'l Outs. SA	-0.1257**	-6.2767***	0.1178**	0.1562	-0.3243	0.0850
	(-2.31)	(-3.21)	(2.12)	(0.96)	(-0.18)	(0.72)
Past Performance	0.0045***	0.1389***	-0.0028	0.0022	0.0391	-0.0043**
	(3.51)	(5.18)	(-1.56)	(0.92)	(1.58)	(-2.26)
IO	-0.0007	-0.0221	0.0009*	0.0019*	0.0361**	0.0005
	(-1.37)	(-1.60)	(1.84)	(1.66)	(2.09)	(0.39)
Ln(Illiq.)	0.0002***	0.0015	-0.0002***	-0.0000	-0.0044***	0.0001
	(2.79)	(1.04)	(-2.75)	(-0.20)	(-3.12)	(1.14)
Netflow	0.0001	0.0060**	0.0001	0.0009***	0.0122***	0.0004
	(1.20)	(2.09)	(0.60)	(3.99)	(4.09)	(1.25)
Expense Ratio	0.0819	6.4306***	0.3072***	0.1738**	5.1804***	0.1809*
	(1.58)	(4.17)	(4.94)	(2.20)	(3.14)	(1.75)
Observations	30,992	37,887	38,402	10,749	13,987	14,126
R-squared	0.44	0.24	0.15	0.34	0.25	0.11
Fund FE	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Style FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Fund	Fund	Fund	Fund	Fund	Fund

Table 6

Regional Sub Portfolio Analysis

This table reports analysis of the following sub-portfolios: foreign local, foreign non-local and US. A mutual fund's foreign local sub-portfolio contains all foreign stocks that are headquartered in the same region as the fund's sub-advisor. Foreign stocks that are headquartered in other regions are included in the fund's foreign non-local sub-portfolio.The dependent variables include sub-portfolio: alpha (Panel A), active share (Panel B), turnover (Panel B), and tracking error (Panel B). The second set of column headers denotes the performance measure. The Global and International sample contains all funds while the International funds are those with international (ex US) investment mandates. All regressions use data spanning from January 1999 to December 2014. The t-statistics (in parentheses) are calculated from standard errors that are clustered by fund. ***/**/* denote statistical significance at the 1%/5%/10% level.

Panel A: Regional Alpha

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FF3				FFC4			
	Global and International		International		Global and International		International	
No SA x US SubP	0.0018	-0.0014			0.0301	0.0275		
	(0.06)	(-0.05)			(1.02)	(0.94)		
US SubP x US SA	0.0883**				0.1176***			
	(2.13)				(2.82)			
US SubP x Int'l SA	0.0125				0.0291			
	(0.34)				(0.82)			
Foreign Local x Int'l SA	-0.0630***		-0.0799***		-0.0783***		-0.0859***	
	(-2.93)		(-3.97)		(-3.35)		(-3.84)	
Foreign Non-Local x US SA	-0.0335**		-0.0530***		-0.0536***		-0.0741***	
	(-1.97)		(-2.85)		(-2.94)		(-3.77)	
Foreign Non-Local x Int'l SA	-0.0166		-0.0378		-0.0191		-0.0376	
	(-0.61)		(-1.34)		(-0.70)		(-1.28)	
US SubP x US In-H SA		-0.0034				0.0473		
		(-0.05)				(0.80)		
US SubP x US Outs. SA		0.1246**				0.1256**		
		(2.53)				(2.47)		
US SubP x Int'l In-H SA		0.0371				0.0507		
		(0.90)				(1.32)		
US SubP x Int'l Outs. SA		-0.0643				-0.0411		
		(-1.01)				(-0.65)		
Foreign Local x Int'l In-H SA		-0.0458*		-0.0487**		-0.0693***		-0.0641**
		(-1.90)		(-2.21)		(-2.59)		(-2.39)
Foreign Local x Int'l Outs. SA		-0.0993***		-0.1352***		-0.0974***		-0.1189***
		(-2.85)		(-4.87)		(-2.58)		(-4.27)
Foreign Non-Local x US In-H SA		-0.0111		-0.0378		-0.0379		-0.0639***
		(-0.48)		(-1.49)		(-1.63)		(-2.75)
Foreign Non-Local x US Outs. SA		-0.0419**		-0.0557***		-0.0509**		-0.0627***
		(-2.24)		(-2.89)		(-2.52)		(-2.93)
Foreign Non-Local x Int'l In-H SA		-0.0027		-0.0213		-0.0076		-0.0222
		(-0.08)		(-0.72)		(-0.23)		(-0.68)
Foreign Non-Local x Int'l Outs. SA		-0.0329		-0.0549		-0.0307		-0.0484
		(-0.84)		(-1.28)		(-0.76)		(-1.12)
Omitted Group	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign
Observations	66,237	66,237	42,822	42,822	66,237	66,237	42,822	42,822
R-squared	0.07	0.07	0.09	0.10	0.08	0.08	0.11	0.11
Firm FE	No	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stlye FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Fund	Fund	Fund	Fund	Fund	Fund	Fund	Fund

Panel B: Active Share, Tracking Error and Turnover

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Active Share				Tracking Error			
	Global and International		International		Global and International		International	
No SA x US SubP	5.0559***	5.1632***			0.4172***	0.4088***		
	(4.43)	(4.59)			(6.13)	(5.95)		
US SubP x US SA	3.2234*				0.4616***			
	(1.74)				(3.52)			
US SubP x Int'l SA	3.6933**				0.3474***			
	(2.25)				(3.91)			
Foreign Local x Int'l SA	-7.1037***		-10.1654***		-0.0381		-0.1060	
	(-5.14)		(-6.00)		(-0.58)		(-1.59)	
Foreign Non-Local x US SA	-2.5328**		-4.0209***		-0.0043		-0.0474	
	(-2.34)		(-3.17)		(-0.08)		(-0.93)	
Foreign Non-Local x Int'l SA	1.3868		-0.5656		0.3342***		0.2504***	
	(0.89)		(-0.30)		(4.68)		(3.57)	
US SubP x US In-H SA		2.0849				0.3011		
		(0.65)				(1.57)		
US SubP x US Outs. SA		4.0998***				0.4469***		
		(2.70)				(2.97)		
US SubP x Int'l In-H SA		3.5654*				0.2783***		
		(1.77)				(3.17)		
US SubP x Int'l Outs. SA		4.0144**				0.4249**		
		(1.98)				(2.44)		
Foreign Local x Int'l In-H SA		-5.6649***		-8.3594***		-0.0376		-0.0627
		(-3.57)		(-4.11)		(-0.57)		(-0.77)
Foreign Local x Int'l Outs. SA		-9.3096***		-12.9318***		-0.0457		-0.1808**
		(-4.28)		(-5.55)		(-0.36)		(-2.09)
Foreign Non-Local x US In-H SA		-0.9836		-2.2726		0.0121		-0.0224
		(-0.63)		(-1.35)		(0.16)		(-0.34)
Foreign Non-Local x US Outs. SA		-2.4697**		-3.9728***		-0.0064		-0.0559
		(-2.12)		(-2.83)		(-0.11)		(-1.03)
Foreign Non-Local x Int'l In-H SA		2.7763		0.6414		0.3918***		0.2893***
		(1.22)		(0.22)		(4.50)		(3.33)
Foreign Non-Local x Int'l Outs. SA		0.3151		-1.4862		0.2735***		0.2148**
		(0.17)		(-0.67)		(2.67)		(2.18)
Omitted Group	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign	No SA × Foreign
Observations	68,963	68,963	43,188	43,188	54,104	54,104	32,377	32,377
R-squared	0.24	0.24	0.17	0.18	0.34	0.34	0.33	0.33
Firm FE	No	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stlye FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Fund	Fund	Fund	Fund	Fund	Fund	Fund	Fund

Panel B: Active Share, Turnover and Tracking Error (Continued)

	(9)	(10)	(11)	(12)
	Turnover			
	Global		International	
No SA x US SubP	-0.0239***	-0.0236***		
	(-4.63)	(-4.65)		
US SubP x US SA	-0.0172***			
	(-2.73)			
US SubP x Int'l SA	-0.0156**			
	(-2.00)			
Foreign Local x Int'l SA	-0.0132***		-0.0045	
	(-2.60)		(-0.79)	
Foreign Non-Local x US SA	0.0140***		0.0266***	
	(2.73)		(4.50)	
Foreign Non-Local x Int'l SA	-0.0425***		-0.0378***	
	(-11.37)		(-8.55)	
US SubP x US In-H SA		-0.0058		
		(-0.65)		
US SubP x US Outs. SA		-0.0227***		
		(-3.33)		
US SubP x Int'l In-H SA		-0.0122		
		(-1.21)		
US SubP x Int'l Outs. SA		-0.0201***		
		(-2.60)		
Foreign Local x Int'l In-H SA		-0.0081		0.0013
		(-1.29)		(0.18)
Foreign Local x Int'l Outs. SA		-0.0231***		-0.0152***
		(-4.75)		(-2.75)
Foreign Non-Local x US In-H SA		0.0178**		0.0304***
		(2.29)		(3.25)
Foreign Non-Local x US Outs. SA		0.0094*		0.0200***
		(1.73)		(3.33)
Foreign Non-Local x Int'l In-H SA		-0.0413***		-0.0359***
		(-9.65)		(-6.64)
Foreign Non-Local x Int'l Outs. SA		-0.0449***		-0.0413***
		(-11.49)		(-9.08)
Observations	61,170	61,170	38,863	38,863
R-squared	0.11	0.11	0.13	0.13
Firm FE	No	No	No	No
Time FE	Yes	Yes	Yes	Yes
Stlye FE	Yes	Yes	Yes	Yes
Clustering	Fund	Fund	Fund	Fund

Table 7

Reverse Causality

This table reports logistic regression results on the propensity for funds to outsource sub-advisory duties internationally. Each regression uses data spanning from January 1999 to December 2014. The dependent variables, INT'L OUTS. SA and US OUTS. SA, equal one for observations on which a fund reports outsourcing abroad (domestically). Regressions in columns (1), (2) and (3) use fund-month observations and thus exclude lagged alphas. In columns (4), (5) and (6) we retain only the first semi-annual observation on which a fund is reported to have an outsourced foreign based sub-advisor. Any subsequent observations are removed from the sample. The frequency is semi-annual, since this is the frequency at which the NSAR data (and therefore the sub-advisor data) is available. 12-month performance is measured by the cumulative CAPM alpha, FF3 alpha or the FFC4 alpha. The t-statistics (in parentheses) are calculated from standard errors that are robust to clustering by fund style × time. ***/**/* denote statistical significance at the 1%/5%/10% level.

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Full	International	Global	Full		
Dependent Variable	Int'l Outs. SA	US Outs. SA		Int'l Outs. SA		
Ln(Family AUM)	0.144***	0.1375***	0.1687**	0.2294***	0.2311***	0.2303***
	(2.95)	(2.61)	(2.09)	(3.89)	(3.92)	(3.91)
Lagged Alpha				0.0251	-0.0155	0.00138
				(0.85)	-(0.41)	(0.04)
Ln(Age2)	0.00828	-0.0272	-0.1747	0.6671***	0.653***	0.6608***
	(0.06)	-(0.24)	-(0.80)	(3.06)	(3.01)	(3.03)
Ln(AUM)	0.0642	0.1331**	0.0508	0.2682***	0.2633***	0.2638***
	(0.90)	(1.97)	(0.46)	(2.56)	(2.54)	(2.54)
Expense Ratio	0.7477**	-0.569***	-0.0086	0.6532**	0.6675**	0.6581**
	(2.48)	-(2.71)	-(0.03)	(1.88)	(1.93)	(1.90)
Turnover	-0.1828	0.0273	0.0628	-0.161	-0.174	-0.1731
	-(1.18)	(0.15)	(0.21)	-(0.67)	-(0.74)	-(0.73)
Net Flows	0.001	0.0007	-0.0016	-0.0012	-0.001	-0.001
	(1.05)	(0.98)	-(1.62)	-(1.00)	-(0.88)	-(0.94)
Lagged Alpha Measure				CAPM	FF3	FFC4
Observations	50,057	36,905	13,152	7,363	7,363	7,363
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Style FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Fund	Fund	Fund	Fund	Fund	Fund

Table 8

Direct vs Broker Sold

This table provides regression estimates of performance as a function of sub-advisory status, fund characteristics and other variables conditional on the fund being either direct sold or broker sold. The dependent variables are specified in column headers. In Panel A we classify funds as direct or broker sold using NSAR data. In specific, broker sold funds are those who, over the prior fiscal year, have either; paid unaffiliated dealers for selling shares with a front-end sales load (NSAR Q32>0), paid a captive retail sales force for selling shares with a front-end sales load (NSAR Q33>0), had positive levels of revenue sharing (NSAR Q44>0) or had 12b-1 fees greater than 0.25%. The remaining funds are defined as direct sold. In Panel B we use the classification in Sun (2014) where a fund is defined direct sold if 75% of its assets are held in a share class charging no loads (i.e. no front-end load and no back-end load) and no 12b-1 fees. Broker sold funds are defined as having front-end loads, back-end loads or 12b-1 fees greater than 25 basis points. Each regression uses data spanning from January 1999 to December 2014. The t-statistics (in parentheses) are calculated from standard errors that allow for clustering by fund style and time. ***/**/* denote statistical significance at the 1%/5%/10% level.

Panel A: NSAR Classifications (International Funds)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	CAPM Alpha		FF3 Alpha		FFC4 Alpha		Benchmark Adjusted Return		Benchmark Alpha	
	Broker-Sold	Direct-Sold	Broker-Sold	Direct-Sold	Broker-Sold	Direct-Sold	Broker-Sold	Direct-Sold	Broker-Sold	Direct-Sold
In-H US SA	0.0298	0.0174	0.0442	0.0125	0.0055	-0.0172	-0.0138	-0.0061	-0.0150	0.0068
	(0.86)	(0.38)	(1.27)	(0.28)	(0.16)	(-0.37)	(-0.36)	(-0.11)	(-0.40)	(0.13)
US Outs. SA	-0.0092	-0.0616***	-0.0244	-0.0783***	-0.0505**	-0.0686***	-0.0495*	-0.0414*	-0.0545**	-0.0724***
	(-0.38)	(-2.76)	(-1.00)	(-3.44)	(-2.07)	(-2.97)	(-1.83)	(-1.74)	(-2.05)	(-3.08)
Int'l In-H SA	0.0398	-0.0144	0.0376	0.0051	0.0195	-0.0190	0.0528	0.0005	0.0502	-0.0046
	(1.31)	(-0.51)	(1.21)	(0.18)	(0.61)	(-0.67)	(1.47)	(0.02)	(1.45)	(-0.14)
Int'l Outs. SA	-0.0501	-0.1008***	-0.1038***	-0.1304***	-0.0940***	-0.1068***	-0.0003	-0.1129***	-0.0127	-0.1093***
	(-1.45)	(-2.90)	(-2.98)	(-3.55)	(-2.62)	(-2.70)	(-0.01)	(-3.20)	(-0.34)	(-3.25)
Past Performance	0.0090***	0.0066**	0.0046	0.0004	0.0042	0.0014	0.0114***	0.0063*	0.0101***	0.0051
	(3.13)	(2.36)	(1.63)	(0.16)	(1.55)	(0.49)	(3.70)	(1.90)	(3.55)	(1.53)
IO	-0.0001	-0.0006***	0.0001	-0.0006***	0.0003	-0.0004**	-0.0001	-0.0005**	-0.0001	-0.0007***
	(-0.33)	(-2.93)	(0.27)	(-2.92)	(0.86)	(-2.16)	(-0.25)	(-2.04)	(-0.30)	(-2.75)
Ln(Illiq.)	0.0001	0.0001	0.0001	0.0001*	0.0000	0.0001	0.0001**	0.0002***	0.0002***	0.0002***
	(1.00)	(1.26)	(1.02)	(1.69)	(0.50)	(1.60)	(2.56)	(2.82)	(2.77)	(2.94)
Netflow	0.0001	0.0000	0.0001	0.0000	0.0002	-0.0000	0.0000	-0.0001	0.0001	-0.0001
	(1.24)	(0.30)	(1.15)	(0.30)	(1.46)	(-0.23)	(0.08)	(-0.56)	(1.01)	(-0.53)
Expense Ratio	0.0073	0.0113	0.0686**	0.0387	0.0649**	0.0068	0.0511	0.0206	0.0430	0.0456
	(0.21)	(0.32)	(2.04)	(1.12)	(2.00)	(0.20)	(1.42)	(0.61)	(1.18)	(1.38)
Observations	14,348	16,520	14,348	16,520	14,348	16,520	15,058	17,522	15,058	17,522
R-squared	0.28	0.26	0.27	0.26	0.29	0.28	0.24	0.24	0.26	0.26
Firm FE	No	No	No	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stlye FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time

Panel B: Sun (2014) Classifications (International Funds)

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	CAPM Alpha		FF3 Alpha		FFC4 Alpha		Benchmark Adjusted Return		Benchmark Alpha	
	Broker-Sold	Direct-Sold	Broker-Sold	Direct-Sold	Broker-Sold	Direct-Sold	Broker-Sold	Direct-Sold	Broker-Sold	Direct-Sold
In-H US SA	-0.0040	0.0158	0.0198	-0.0012	-0.0038	0.0081	-0.0404	-0.0371	-0.0403	-0.0404
	(-0.12)	(0.36)	(0.58)	(-0.03)	(-0.11)	(0.20)	(-1.12)	(-0.81)	(-1.07)	(-0.91)
US Outs. SA	-0.0798***	0.0080	-0.0988***	-0.0120	-0.1122***	0.0010	-0.0844***	-0.0185	-0.1008***	-0.0251
	(-3.53)	(0.29)	(-4.25)	(-0.43)	(-4.66)	(0.04)	(-3.68)	(-0.66)	(-4.29)	(-0.89)
Int'l In-H SA	-0.0325	-0.0095	-0.0225	-0.0140	-0.0471	-0.0270	0.0030	-0.0333	-0.0076	-0.0231
	(-1.14)	(-0.26)	(-0.78)	(-0.40)	(-1.55)	(-0.75)	(0.09)	(-0.83)	(-0.23)	(-0.58)
Int'l Outs. SA	-0.0540*	-0.0606	-0.0867***	-0.1223***	-0.0877**	-0.0822**	-0.0130	-0.1389***	-0.0248	-0.1174***
	(-1.67)	(-1.51)	(-2.58)	(-2.96)	(-2.46)	(-2.00)	(-0.41)	(-3.17)	(-0.79)	(-2.81)
Past Performance	0.0100***	0.0086***	0.0039	0.0016	0.0040	0.0032	0.0100***	0.0099**	0.0090***	0.0071*
	(3.65)	(2.66)	(1.47)	(0.55)	(1.58)	(1.05)	(3.40)	(2.27)	(2.99)	(1.66)
IO	-0.0004*	0.0000	-0.0007***	0.0002	-0.0005**	0.0001	-0.0002	0.0003	-0.0004	0.0002
	(-1.94)	(0.13)	(-2.92)	(0.50)	(-2.14)	(0.42)	(-0.77)	(0.78)	(-1.64)	(0.66)
Ln(Illiq.)	0.0001	0.0001	0.0001	0.0001*	0.0000	0.0001*	0.0001***	0.0002***	0.0002***	0.0002**
	(1.56)	(0.83)	(1.08)	(1.73)	(0.67)	(1.86)	(2.72)	(2.79)	(3.62)	(2.34)
Netflow	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	-0.0001	0.0001	0.0001	0.0001
	(0.57)	(1.21)	(0.86)	(0.58)	(1.08)	(0.74)	(-0.44)	(0.59)	(0.45)	(0.55)
Expense Ratio	0.0050	-0.0564	0.0311	-0.0193	0.0128	-0.0696	0.0074	-0.0236	0.0068	0.0060
	(0.19)	(-1.22)	(1.21)	(-0.42)	(0.52)	(-1.53)	(0.28)	(-0.51)	(0.25)	(0.14)
Observations	19,174	10,969	19,174	10,969	19,174	10,969	20,084	11,909	20,084	11,909
R-squared	0.26	0.27	0.26	0.27	0.28	0.29	0.24	0.25	0.26	0.25
Firm FE	No	No	No	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stlye FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time	Style × Time

8 Appendix:

8.1 Reconciling Returns

Pastor, Stambaugh and Taylor (2015) (2014 - data appendix) find that 3.1% of all monthly returns are inconsistent during the 1979 to 2011 period, in the sense that the fund returns from Morningstar Direct and CRSP MFDB differ by more than 10 bps per month. In our raw sample of global equity funds, the proportion of monthly returns that are inconsistent is only 0.61%. The lower proportion of inconsistent returns is likely a consequence of greater data accuracy in more recent years (our sample starts in 2000). Nevertheless, we follow Berk and Van Binsbergen (2014), and Pastor, Stambaugh and Taylor (2015) and apply the following procedures to fix any inconsistent returns.

First, we compute two sets of monthly returns based on the reported NAVs and dividends paid in Morningstar Direct and CRSP MFDB.

$$imp\_CRSP\_Ret_{i,t} = \frac{CRSP\_NAV_{i,t} + CRSP\_DIV_{i,t} - CRSP\_NAV_{i,t-1}}{CRSP\_NAV_{i,t-1}} \tag{2}$$

$$imp\_MS\_Ret_{i,t} = \frac{MS\_NAV_{i,t} + MS\_DIV_{i,t} - MS\_NAV_{i,t-1}}{MS\_NAV_{i,t-1}} \tag{3}$$

In cases where the dividend data is missing we apply the following set of rules to fill in the dividend data.

1. If the dividend is missing in one database (either Morningstar Direct or CRSP MFDB), but not the other, then we fill the dividend value for that database using the dividend value of the other database.
2. If (1) does not resolve the missing dividend problem then we assume that the dividend paid is zero for that observation.
3. If under assumption (2), we find that the difference between the reported return in CRSP (rep_CRSP_RET) and the implied return (imp_CRSP_RET) is equivalent to the difference between the reported return in Morningstar Direct (rep_MS_RET) and the implied return (imp_MS_RET), and that the reported returns are greater than the implied returns (rep_CRSP_RET - imp_CRSP_RET > 0, and rep_MS_RET > imp_MS_RET), then we can infer that the difference is caused by dividends. In such cases we replace the implied returns by the reported returns.

Then, for a given observation with inconsistent returns, we apply the following set of rules:

1. If rep_CRSP_RET is consistent with both imp_CRSP_RET and imp_MS_RET, then we accept rep_CRSP_RET as the correct monthly return.
2. If rep_MS_RET is consistent with both imp_CRSP_RET and imp_MS_RET, then we accept rep_MS_RET as the correct monthly return.

3. If rep_CRSP_RET is consistent with imp_CRSP_RET, but not with imp_MS_RET, and rep_MS_RET is not consistent with imp_MS_RET, we accept rep_CRSP_RET.
4. If rep_MS_RET is consistent with imp_MS_RET, but not with imp_CRSP_RET, and rep_CRSP_RET is not consistent with imp_CRSP_RET, we accept rep_MS_RET.
5. If rep_CRSP_RET is consistent with imp_CRSP_RET, and both rep_MS_RET and imp_MS_RET are missing, then we use rep_CRSP_RET.
6. If rep_MS_RET is consistent with imp_MS_RET, and both rep_CRSP_RET and imp_CRSP_RET are missing, then we use rep_MS_RET.

8.2 Reconciling Assets Under Management

We use CRSP MFDB as our primary source of Assets Under Management (AUM) data. To obtain fund-level AUM, we sum up the share-class level AUM data.

There are instances of extreme reversals in the AUM that likely reflect decimal-place mistakes. We perform the following procedure to fix these extreme reversals separately in AUM data from Morningstar Direct and CRSP MFDB. First, we create a variable for the fraction change from last month to the current month,

$$dAUM_{i,t} = (AUM_{i,t} - AUM_{i,t-1})/AUM_{i,t-1} \tag{4}$$

Second, we create a variable to capture reversal pattern,

$$rev\_next = (AUM_{i,t+1} - AUM_{i,t})/(AUM_{i,t} - AUM_{i,t-1}) \tag{5}$$

This variable will be approximately -1 if it is a reversal (e.g. 20m, 2m, 20m). If abs($dAUM$)$\geq$ 0.5, $-0.75 > rev\_next > -1.25$, and $AUM_{i,t-1} \geq \$10m$, then we assign a missing value to both $AUM_{i,t}$ and $dAUM_{i,t}$.

Next, if the relative deviation between CRSP and Morningstar AUM is greater than 5%, the absolute deviation is greater than $0.75 million, the relative deviation between CRSP AUM and the sum of the market value the funds underlying holdings exceeds 5%, and, the relative deviation between Morningstar AUM and the sum of the market value the funds underlying holdings exceeds 5%, then we set the AUM data to missing.

Finally, if the AUM data from CRSP is missing, but the Morningstar AUM data is within 5% of the sum of the market value of the funds underlying holdings, and the absolute difference is less than $0.75 million, then we use the Morningstar AUM data.

8.3 Additional Tables

Table A1

Variable Definitions

This table provides definitions of variables used throughout the article.

Performance Measures	
BENCHMARK ALPHA	Alpha estimated from regressing gross returns on benchmark returns using prior 36 months of returns (24 months min.)
CAPM ALPHA	Capital asset pricing model alpha estimated using prior 36 months of returns (24 months min.)
FF3 ALPHA	Fama and French 3-factor Alpha estimated using prior 36 months of returns (24 months min.)
FFC3 ALPHA	Carhart 4-factor Alpha estimated using prior 36 months of returns (24 months min.)
BENCHMARK ADJ. RETURNS	Gross fund returns in excess of the funds corresponding benchmark index return
Sub-Advisory Variables	
INT'L SA	Binary variable equal to 1 if a fund has an internationally headquartered sub-advisor
INT'L IN-H SA	Binary variable equal to 1 if a fund has an affiliated sub-advisor located in a foreign country (ex-U.S.)
INT'L OUTS. SA	Binary variable equal to 1 if a fund has an unaffiliated sub-advisor located in a foreign country (ex-U.S.)
US SA	Binary variable equal to 1 if a fund has a sub-advisor headquartered in the United States
US IN-H SA	Binary variable equal to 1 if a fund has an affiliated sub-advisor headquartered in the United States
US OUTS. SA	Binary variable equal to 1 if a fund has an unaffiliated sub-advisor headquartered in the United States
Additional Explanatory Variables	
ACTIVE SHARE	$\text{ACTIVE SHARE}_{i,t} = \frac{\sum_{j=1}^{N} \lvert w_{i,j,t} - w_{benchmark,j,t} \rvert}{2}$
EXPENSE RATIO	The percentage of fund assets used to pay for operating expenses and management fees.
AUM	Fund assets under management
NET FLOWS	$\text{NET FLOWS}_{i,t} = 100 \cdot \left(\frac{AUM_{i,t} - (1+R_{i,t}) \cdot AUM_{i,t-1})}{AUM_{i,t-1} \cdot (1+R_{i,t})} \right)$
% IO	The proportion of a fund's assets held by institutional investors
LN(ILL. DEV)	The natural log of the fund's deviation from it's benchmarks illiquidity measure - the illiquidity measure is as defined in Amihud (2002)
LN(AGE)	The natural log of the number of years since a funds inception as a global/international fund
TRACKING ERROR	The standard deviation of the difference between a fund's returns and it's benchmark returns (calculated using 24 month rolling windows with a minimum of 12 months)
RETURN GAP	The difference between the funds reported return and a hypothetical portfolio that invests in previously disclosed fund holdings.
TURNOVER	The lesser of the dollar value of purchases or sales divided by previous period assets under management