



Determinants of flows into retail international equity funds

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Abstract

Diversification benefits appear to be a major reason why investors choose international equity funds. Funds less correlated with the US market tend to receive higher flows from investors. In addition, investors prefer funds that invest in a diversified portfolio of securities from different regions in the world to funds that focus only on a specific region. Risk-adjusted return is shown to exert greater effect on flows into international equity funds than raw return. International equity funds from fund families offering a greater number of investment objectives also receive higher flows. On the other hand, international equity fund investors do not appear to be sensitive to expenses or exchange rates.

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INTRODUCTION

With the rapid development in international markets, the investable universe for domestic investors is no longer just the domestic market. However, to trade stocks listed on foreign stock exchanges directly, an investor needs to obtain foreign currency, study the various rules and restrictions of foreign stock exchanges, often trade at inconvenient times because of the time difference, and perhaps open separate brokerage accounts in different countries. The high costs and inconvenience make it almost infeasible for the vast majority of individual investors to invest in foreign stocks directly.

International equity funds provide a sensible opportunity for individual investors to invest in foreign stocks at a reasonable cost. With the help of international equity funds, individual investors can easily have access to a diversified portfolio of foreign stocks without facing any of the problems mentioned above.

Despite the growing importance of international equity funds, little research has been done to study the determinants of flows into international equity funds, or, ultimately, the long-term behavior of international equity fund investors.¹

Even though there is a large literature on the determinants of flows into domestic equity funds, the findings might not apply to international equity funds, because international equity funds differ from domestic equity funds, both in the profile of investors

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and in fund characteristics. For instance, a study by the Investment Company Institute (1996) shows that international mutual fund shareholders on average are wealthier, better educated, and more sophisticated than domestic fund shareholders. As a result, the more sophisticated investors tend to have a better understanding of the diversification benefits, and are more likely to pursue international investments to construct a more diversified portfolio, rather than just chasing past performance, as is well documented for domestic equity fund investors.

In addition, domestic fund investors are found to be sensitive to expenses (Sirri & Tufano, 1998), presumably because higher fees lead to poorer performance for domestic funds. Nonetheless, Droms and Walker (1994) find that, for international funds, fund performance is not related to expense ratios. Consequently, flows into international funds might not be significantly correlated with fund expenses.

In summary, the behavior of international equity fund investors might differ from that of domestic equity fund investors and entail separate investigation. This paper intends to fill this void in the current literature.

I find that diversification benefits appear to be a major reason why investors choose international equity funds. Funds less correlated with the US market tend to receive higher flows from investors. In addition, investors prefer funds that invest in a diversified portfolio of securities from different regions in the world to funds that focus only on a specific region. It is shown that risk-adjusted return exerts greater effect on flows into international equity funds than raw return. International equity funds from fund families offering a greater number of investment objectives also receive higher flows. On the other hand, international equity fund investors do not appear to be sensitive to expenses or exchange rates.

As the first comprehensive study of the determinants of flows into international equity funds, this paper provides valuable information for both academics and practitioners regarding the long-term behavior of international equity fund investors.

HYPOTHESIS DEVELOPMENT

As shown in the study by the Investment Company Institute (1996), international mutual fund shareholders differ substantially from domestic fund shareholders. The median household financial assets of international fund shareholders are 60%

higher than those of domestic fund shareholders. International fund shareholders are also better educated. With higher wealth and better education, international fund investors are apparently more sophisticated than domestic fund investors. This finding leads to several hypotheses.

First, more sophisticated investors tend to have a better understanding of the diversification benefits, and are more likely to pursue international investments to construct a more diversified portfolio. As a result, international fund investors might be more interested in funds less correlated with the US market, because lower correlations with the US market lead to stronger diversification benefits and more demand (Diwan, Errunza, & Senbet, 1993; Eun, Senbet, & Janakiraman, 2002). Consequently, I posit the following hypothesis:

Hypothesis 1: International equity funds that are less correlated with the US market are more likely to receive higher flows.

Second, in addition to the correlation with the US market, the contribution of an international equity fund to diversification benefits can also be studied from a different perspective. International equity funds can be classified into two categories: regionally diversified funds and regionally focused funds. Regionally diversified funds – international growth funds, international small company funds, and international total return funds – invest in worldwide markets other than the US market, while regionally focused funds focus on a specific region, such as Latin America or Europe. If diversification benefits are a major reason why international fund investors pursue international investments, funds that can easily achieve diversification among different regions in the world should appear more attractive to investors.² Hence I posit the following hypothesis:

Hypothesis 2: Compared with regionally focused funds, regionally diversified funds are more likely to receive higher flows.

Third, more sophisticated investors might pay more attention to risk-adjusted performance measures. It is well documented that domestic equity fund investors chase past raw returns (Gruber, 1996; Sirri & Tufano, 1998), and it is worth testing whether this also applies to international fund investors. In addition, I conjecture that the more sophisticated international fund investors are more likely to



understand that risk-adjusted return better represents the performance of a fund, and therefore posit the following hypothesis:

Hypothesis 3: Risk-adjusted return tends to exert a greater effect on flows into international equity funds than raw return.

The study by the Investment Company Institute (1996) also finds that international fund investors are twice as likely as domestic fund investors to exchange or move money from one fund to another fund, presumably with a different investment objective, within the same fund family. Because fund families offering a greater number of investment objectives (including domestic equity and fixed-income objectives) provide more options for international fund investors to alter asset allocation within the fund family, I posit the following hypothesis:

Hypothesis 4: International equity funds from fund families offering a greater number of investment objectives receive higher flows.

Sirri and Tufano (1998) and Nanda, Wang, and Zheng (2004) both study the spillover effects – flows into a fund can also be affected by fund family level variables: a fund may enjoy higher flows if the fund family it belongs to has larger size or a star fund with superior performance. The number of investment objectives offered in a fund family should also be considered a variable that can capture the spillover effects within a fund family from a different angle.

DATA

Using the CRSP Survivor-Bias Free US Mutual Fund Database, I create a dataset of quarterly data from the first quarter of 1992 to the third quarter of 2001 of 1,603 open-end international equity funds. The time frame is selected because, in the CRSP mutual fund database, the information on some important variables is available only after 1992, such as fund family 12b-1 fee, as well as variables that are used to identify the investment objective of a fund.³

All funds studied in this paper are identified by the ICDI (Investment Company Data, Inc.) Fund Objective Code as international equity funds, which invest primarily in securities traded outside the United States. These funds can be further categorized into the following nine investment objectives, based on the Strategic Insight Fund

Objective Code: international developing markets equity funds, international growth funds, international small company funds, international total return funds, Japanese equity funds, Latin America equity funds, Pacific equity including Japan funds, Pacific equity excluding Japan funds, and European equity funds.⁴

Around 65% of the funds are different share classes of a common portfolio. To examine the effects of loads, 12b-1 fees, and operating expenses, which are specific to each share class, on flows, following Greene and Hodges (2002), I study flows to each share class instead of each portfolio.⁵ About 73% of all funds target retail investors, and these retail international equity funds can be disaggregated into four categories by load types: front-end load funds, back-end load funds, level-load funds, and no-load funds.

ADDITIONAL LITERATURE AND CONTROL VARIABLES

The determinants of flows into domestic equity funds have been the subject of a growing number of academic studies. Many of these determinants might also apply to international equity funds, and should be included as control variables. Sirri and Tufano (1998) find that domestic equity fund investors are fee sensitive, in that funds with higher total fees (expense ratio plus amortized load assuming a 7-year holding period) have lower flows. Using more recent data, Barber, Odean, and Zheng (2005) study the effects of front-end loads, 12b-1 fees, and other operating expenses separately. They find a negative relation between front-end loads and fund flows, no relation between total operating expenses and fund flows, and a positive relation between 12b-1 fees and fund flows. They argue that domestic equity fund investors are more sensitive to salient in-your-face fees, such as front-end loads, than to operating expenses. In addition, the effects of other factors, such as fund size, previous flows, turnover ratio, and fund risk, have also been studied in the literature.

Furthermore, it is of interest to consider the effect of changes in exchange rates between the US dollar and foreign currencies on flows to international equity funds. It should be noted first that fund returns already contain an exchange rate component, because fund returns are computed using dollar-denominated fund net asset values.⁶ Nevertheless, to test whether flows to international equity funds are directly associated with changes in exchange rates, following Brennan and Cao

(1997), I also add a separate measure of changes in exchange rates.⁷

Variable Definitions

Flows. Consistent with the literature, I define *dollar flows* (*FLOW*) as the change in total assets in excess of appreciation. I especially follow Zheng (1999) in also removing the increase in total assets due to merger, so that the flow measure clearly represents only net new investments made by investors:⁸

$$FLOW_{i,t} = ASSET_{i,t} - ASSET_{i,t-1}(1 + R_{i,t}) - MASSET_{i,t} \quad (1)$$

where $ASSET_{i,t}$ is the total assets of fund i at the end of quarter t , $R_{i,t}$ is the holding period return of fund i during quarter t , and $MASSET_{i,t}$ is the assets added to fund i during quarter t through acquisition of other funds. I also follow Del Guercio and Tkac (2002) in excluding observations from funds closed to new investors, since these funds' flows are artificially restricted.⁹

I then define *percentage flows* (*PFLOW*) as the asset growth rate of a fund due to dollar flows:

$$PFLOW_{i,t} = \frac{FLOW_{i,t}}{ASSET_{i,t-1}} \quad (2)$$

Fund size. Consistent with the literature, $LASSET_{i,t}$, which is the natural log of $ASSET_{i,t}$, the total net assets of a mutual fund, is used to represent the size of a fund.

Performance and risk. *RAW* represents the raw return of a fund. In addition, I follow Sirri and Tufano (1998) in using the standard deviation (*SDRET*) of monthly raw returns of fund i in the past 12 months to measure the risk of a fund, and to study the effect of risk on fund net flows. Furthermore, I also measure the risk-adjusted performance of a fund using the Sharpe ratio (*SHARPE*), which is computed as

$$SHARPE = \frac{\bar{R}_i - \bar{R}_f}{SDRET_i} \quad (3)$$

where \bar{R}_i and \bar{R}_f are the average monthly raw return of fund i and risk-free rate in the past 12 months, respectively, and $SDRET_i$ is the standard deviation of the monthly raw returns of fund i in the past 12 months. *SHARPE* is used to study the effect on flows of risk-adjusted performance.

It should be noted that an investor holding a well-diversified portfolio is presumably more concerned about the systematic risk than the total risk

of a specific fund. As a result, Jensen's alpha should be a more appropriate measure of the risk-adjusted performance of a fund. However, to calculate Jensen's alpha for the international equity funds studied in this paper, which invest in both developed and emerging markets, a well-accepted world index that covers both developed and emerging markets is indispensable. Owing to the lack of such a well-accepted index, I focus on the Sharpe ratio (*SHARPE*) measure in this paper.¹⁰

Expenses and load dummies. As in Barber et al. (2005), I subtract 12b-1 fees (*12B*) from the expense ratio to create a new variable, *NON12B*, which only represents operating expenses. To test whether any type of load international equity funds might receive higher flows than no-load international equity funds, I create three load fund dummy variables, *FLDUMMY*, *BLDUMMY*, and *LLDUMMY*, which take the value of 1 if the fund is a front-end load fund, back-end load fund, and level load fund, respectively, and 0 otherwise.

Turnover ratio. The turnover ratio (*TURNOVER*) of a fund is also included in the analysis to test its possible effect.

Number of investment objectives in the fund family. *NUMOBJ* represents the number of investment objectives based on ICDI's Fund Objective Codes (including domestic equity and fixed-income investment objectives) offered in the fund family.

Changes in the exchange rates. *FX* measures the quarterly percentage changes in the period average indirectly quoted exchange rates between the US dollar and foreign currencies.¹¹ For Japanese equity funds, the exchange rate between the US dollar and the Japanese yen is used. For European equity funds, the exchange rates between the US dollar and the European currency unit (ecu) and between the US dollar and the euro are used for time periods before and after 1999, respectively. For all other funds, the nominal effective exchange rate of the US dollar, which practically measures the exchange rate between the US dollar and the currencies of the rest of the world, is employed. All exchange rate data are obtained from the International Monetary Fund (IMF).

Correlation of fund return with domestic equity market return. *CORRELATION* gives the correlation coefficient between fund raw return and domestic



equity market return based on monthly raw returns of fund i and market returns in the past 12 months. I adopt the Fama/French benchmark factor RM , which is the value-weighted return on all NYSE, AMEX, and NASDAQ stocks, as the measure of domestic equity market returns.¹²

Regionally diversified funds dummy. *DIVERSIFIED* takes the value of 1 for funds from the following three Strategic Insight investment objectives of regionally diversified funds – international growth funds, international small company funds, and international total return funds – and zero for all other funds that focus on a specific region, such as Latin America or Europe.

SUMMARY STATISTICS

I compute the medians and interquartile ranges, which equal the difference between the third and first quartiles, of various characteristics for international equity funds as a whole and for regionally diversified and focused funds separately. The results are reported in Panel A of Table 1. Regionally

diversified and focused funds appear to be very different in many respects. Compared with regionally focused funds, regionally diversified funds have larger median size (\$30.70 million), better median raw return (1.26%) and risk-adjusted return (0.091), and lower risk, as measured by *SDRET* (4.41%). Regionally diversified funds have lower operating expense ratio (1.41%) and turnover ratio (65%) as well. The correlation of the performance of regionally diversified funds with domestic equity market return (74.60%) is higher than that for regionally focused funds (70.00%).¹³ In addition, regionally diversified funds tend to receive higher flows from investors (2.96%) than regionally focused funds (0.57%). I also report the means and standard deviations of these fund characteristics in Panel B of Table 1. Using means generates the same qualitative results for most variables, except for fund flow and 12b-1 fee.¹⁴

THE STATISTICAL MODEL

To study the determinants of flows into international equity funds, I estimate the following

Table 1 Summary statistics of international equity funds

<i>Fund characteristics</i>	<i>All international equity funds</i>	<i>Regionally diversified funds</i>	<i>Regionally focused funds</i>
<i>Panel A: Median (interquartile range=3rd quartile–1st quartile)</i>			
<i>ASSET</i> (\$ million)	21.65 (95.95)	30.70 (126.18)	13.93 (64.19)
<i>RAW</i> (%)	0.83 (13.60)	1.26 (10.84)	–0.07 (16.99)
<i>SDRET</i> (%)	4.94 (2.91)	4.41 (2.15)	6.19 (3.90)
<i>SHARPE</i>	0.062 (0.544)	0.091 (0.479)	0.016 (0.605)
<i>PFLOW</i> (%)	1.96 (19.24)	2.96 (18.31)	0.57 (20.15)
<i>NON12B</i> (%)	1.50 (0.50)	1.41 (0.46)	1.68 (0.55)
<i>12B</i> (%)	0.25 (1.00)	0.25 (1.00)	0.25 (1.00)
<i>TURNOVER</i> (%)	71 (75)	65 (77)	79 (74)
<i>CORRELATION</i> (%)	72.64 (21.24)	74.60 (19.71)	70.00 (23.54)
<i>Panel B: Mean (standard deviation)</i>			
<i>ASSET</i> (\$ million)	229 (1108)	325 (1457)	113 (347)
<i>RAW</i> (%)	0.64 (12.68)	1.04 (10.89)	0.17 (14.56)
<i>SDRET</i> (%)	5.46 (2.52)	4.58 (1.83)	6.55 (2.82)
<i>SHARPE</i>	0.029 (0.515)	0.056 (0.545)	–0.004 (0.473)
<i>PFLOW</i> (%)	19.83 (71.15)	20.21 (69.22)	19.36 (73.42)
<i>NON12B</i> (%)	1.51 (0.55)	1.36 (0.45)	1.68 (0.61)
<i>12B</i> (%)	0.42 (0.42)	0.39 (0.41)	0.46 (0.42)
<i>TURNOVER</i> (%)	86 (67)	81 (66)	92 (67)
<i>CORRELATION</i> (%)	67.55 (20.04)	69.87 (18.80)	64.69 (21.12)

Note: Regionally diversified funds include the following investment objectives: international growth funds, international small company funds, and international total return funds, while regionally focused funds include the remaining investment objectives. *ASSET* is the total assets of a fund. *RAW* is the raw quarterly return of a fund. *SDRET* is the standard deviation of monthly returns of a fund in the past 12 months. *SHARPE* stands for the Sharpe ratio, a measure of risk-adjusted performance. *PFLOW* measures *percentage flows*, the asset growth rate of a fund due to dollar flows. *12B* represents the 12b-1 fees of a fund, and *NON12B* is created by subtracting 12b-1 fees from expense ratio to represent operating expenses. *TURNOVER* is the turnover ratio of a fund. *CORRELATION* gives the correlation coefficient between fund raw return and domestic equity market return based on monthly raw returns of fund i and market returns in the past 12 months.

random effects panel regression using the full sample of retail international equity funds:¹⁵

$$\begin{aligned} PFLOW_{i,t} = & \alpha + \beta_1 LASSET_{i,t-1} + \beta_2 PFLOW_{i,t-1} \\ & + \beta_3 RAW_{i,t-1} + \beta_4 RAW_{i,t-1}^2 + \beta_5 RAW_{i,t-2} \\ & + \beta_6 RAW_{i,t-2}^2 + \beta_7 NON12B_{i,t-1} \\ & + \beta_8 12B_{i,t-1} + \beta_9 TURNOVER_{i,t-1} \\ & + \beta_{10} SDRET_{i,t-1} + \beta_{11} NUMOBJ_{i,t-1} \\ & + \beta_{12} FX_{i,t-1} + \beta_{13} CORRELATION_{i,t-1} \\ & + \beta_{14} DIVERSIFIED_i + \beta_{15} FLDUMMY_i \\ & + \beta_{16} BLDUMMY_i + \beta_{17} LLDUMMY_i \\ & + u_i + \varepsilon_{i,t} \end{aligned} \quad (4)$$

where all variables are as defined earlier, and u_i is the random disturbance characterizing the i th fund and is constant through time. To capture the well-documented convex relation between fund performance and flow (Chevalier & Ellison, 1997; Sirri & Tufano, 1998) and the potential effect of fund performance in a longer time period, following Barber et al. (2005), I also include squared returns and fund performance two quarters preceding quarter t in the model. In a separate model, $RAW_{i,t-1}$ and $RAW_{i,t-1}^2$ are replaced by $SHARPE_{i,t-1}$ and $SHARPE_{i,t-1}^2$ as a risk-adjusted performance measure.¹⁶ For each model specification, quarter dummies are also included to control for time fixed effects.

Pairwise correlations (not reported) for independent variables are found to be low enough to reduce concern over multicollinearity problems in the regressions. The absolute values of all correlations are less than 0.30, while the majority of them are less than 0.10.¹⁷

ESTIMATION RESULTS

Table 2 reports the estimation results for all variables except for the quarter dummies. Model 1 uses performance measures based on raw returns, and Model 2 uses performance measures based on Sharpe ratios.

As predicted, diversification benefits appear to be a major reason why investors choose international equity funds. First, *CORRELATION* is significantly and negatively correlated with fund flows in both models, showing that funds less correlated with the US market receive higher flows from investors. Second, after controlling for the effects of other factors, flows into regionally diversified funds are on average about 4 percentage points higher than

those into regionally focused funds. This finding shows that investors apparently prefer funds that invest in a diversified portfolio of securities from different regions in the world.

The significant and positive coefficient estimates on both raw return and risk-adjusted return variables (including squared returns) are consistent with the convex relation between fund performance and flow. To compare the effects of raw return and risk-adjusted return on fund flows, first, I calculate the flow increase due to a one standard deviation increase in return for both raw return and Sharpe ratio. It is shown that a one standard deviation increase in raw return leads to a 5.88 percentage points increase in fund flow, but the same increase in Sharpe ratio leads to a 13.17 percentage points increase in fund flow, more than twice as much as the effect of raw return.¹⁸ Second, I compare the flow increase due to a 1% increase in return from the mean for both raw return and Sharpe ratio: the effect of risk-adjusted return is also more than twice as great as that of raw return. Consistent with Hypothesis 3, the risk-adjusted performance measure does exert a greater effect on flows into international equity funds than raw returns.¹⁹

Table 2 Determinants of flows into international equity funds

Variables	Model 1	Model 2
$LASSET_{t-1}$	-2.617*** (0.000)	-2.777*** (0.000)
$PFLOW_{t-1}$	0.160*** (0.000)	0.161*** (0.000)
RAW_{t-1}	0.299*** (0.000)	
RAW_{t-1}^2	0.013*** (0.000)	
RAW_{t-2}	0.221*** (0.000)	
RAW_{t-2}^2	0.003*** (0.002)	
$SHARPE_{t-1}$		17.667*** (0.000)
$SHARPE_{t-1}^2$		15.333*** (0.000)
$NON12B_{t-1}$	-0.107 (0.864)	-0.149 (0.810)
$12B_{t-1}$	-0.926 (0.613)	-1.037 (0.572)
$TURNOVER_{t-1}$	0.009** (0.050)	0.006 (0.170)
$SDRET_{t-1}$	-0.747*** (0.000)	

Table 2 Continued

Variables	Model 1	Model 2
NUMOBJ _{<i>t</i>-1}	0.152** (0.013)	0.139** (0.024)
FX _{<i>t</i>-1}	0.015 (0.910)	0.168 (0.216)
CORRELATION _{<i>t</i>-1}	-0.120*** (0.000)	-0.117*** (0.000)
DIVERSIFIED	3.890*** (0.000)	4.223*** (0.000)
FLDUMMY	-2.474*** (0.002)	-2.364*** (0.003)
BLDUMMY	-1.408 (0.448)	-1.123 (0.545)
LLDUMMY	-1.648 (0.368)	-1.639 (0.372)
INTERCEPT	-22.792*** (0.003)	-10.769 (0.165)
Number of observations	15,466	15,467
Overall R ²	0.1326	0.1291

Note: To study the determinants of flows into international equity funds, Model 1 estimates the following random effects panel regression using the full sample of retail international equity funds excluding observations from funds closed to new investors:

$$\begin{aligned}
 PFLOW_{i,t} = & \alpha + \beta_1 LASSET_{i,t-1} + \beta_2 PFLOW_{i,t-1} + \beta_3 RAW_{i,t-1} \\
 & + \beta_4 RAW_{i,t-1}^2 + \beta_5 RAW_{i,t-2} + \beta_6 RAW_{i,t-2}^2 + \beta_7 NON12B_{i,t-1} \\
 & + \beta_8 12B_{i,t-1} + \beta_9 TURNOVER_{i,t-1} + \beta_{10} SDRET_{i,t-1} \\
 & + \beta_{11} NUMOBJ_{i,t-1} + \beta_{12} FX_{i,t-1} + \beta_{13} CORRELATION_{i,t-1} \\
 & + \beta_{14} DIVERSIFIED_i + \beta_{15} FLDUMMY_i + \beta_{16} BLDUMMY_i \\
 & + \beta_{17} LLDUMMY_i + u_i + \varepsilon_{i,t}
 \end{aligned}$$

PFLOW measures percentage flows, the asset growth rate of a fund due to dollar flows change in total assets in excess of appreciation and assets added through acquisition. *LASSET* is the natural log of the total assets of a fund. *RAW* represents the raw return of a fund. *12B* is the 12b-1 fees of a fund, and *NON12B* is created by subtracting 12b-1 fees from expense ratio to represent operating expenses. *TURNOVER* is the turnover ratio of a fund. *SDRET* is the standard deviation of monthly returns of a fund in the past 12 months. *NUMOBJ* represents the number of investment objectives based on ICDI's Fund Objective Codes offered in the fund family. *FX* measures the quarterly percentage changes in the period average indirectly quoted exchange rates between US dollar and foreign currencies. *CORRELATION* gives the correlation coefficient between fund raw return and domestic equity market return based on monthly raw returns of fund *i* and market returns in the past 12 months. I adopt the Fama/French benchmark factor *RM*, which is the value-weighted return on all NYSE, AMEX, and NASDAQ stocks, as the measure of domestic equity market returns. *DIVERSIFIED* takes the value of 1 for funds from the following three Strategic Insight investment objectives of regionally diversified funds – international growth funds, international small company funds, and international total return funds – and 0 otherwise. *FLDUMMY*, *BLDUMMY*, and *LLDUMMY* take the value of 1 if the fund is a front-end load fund, back-end load fund, and level-load fund, respectively, and zero otherwise. *u_i* is the random disturbance characterizing the *i*th fund and is constant through time. Model 2 replaces *RAW* by *SHARPE*, the Sharpe ratio of a fund. The Sharpe ratio measures the risk-adjusted performance of a fund, and is calculated as average monthly return in excess of T-bill return divided by standard deviation of monthly returns in the past 12 months. For each model specification, quarter dummies are also included to control for time fixed effects (coefficient estimates not reported). p-Values are reported in parentheses. ***, **, and * indicate statistical significance at the 1, 5, and 10% confidence levels, respectively.

As expected, international equity funds from fund families offering a greater number of investment objectives receive higher flows. This positive spillover effect from offering more investment objectives in the fund family indicates that investors do value the potential options to alter asset allocation by switching within the fund family.

International equity fund investors do not appear to be sensitive to expenses, as shown by the insignificant coefficient estimates obtained for *NON12B* and *12B*. These findings do not appear to be a surprise, though. It is true that domestic fund investors are found to be sensitive to expenses (Sirri & Tufano, 1998), presumably because, as shown in several studies (Carhart, 1997; Elton, Gruber, Das, & Hlavka, 1993), domestic funds with higher fees do not perform as well as domestic funds with lower fees. However, Droms and Walker (1994) find that, for international funds, expense ratios are not related to risk-adjusted or unadjusted investment returns. The findings on the effects of turnover ratio and load structure are mixed: the coefficient estimate of *TURNOVER* is significant only in Model 1; while *BLDUMMY* and *LLDUMMY* do not appear to affect fund flows, the coefficient estimate of *FLDUMMY* is significantly negative, indicating that front-end load funds tend to receive lower flows, which is consistent with the argument in Barber et al. (2005) that investors are more sensitive to salient-in-your-face front-end loads. In addition, the changes in exchange rates do not seem to be significantly associated with fund flows.

International equity fund flows are found to be highly autocorrelated, as shown by the significantly positive coefficient estimates for lagged flows. Because Warther (1995) shows that aggregate flows follow an AR (3) process, I also estimate a new model including *PFLOW_{i,t-2}* and *PFLOW_{i,t-3}* in the estimation. The estimates are significantly positive for all three lags of flows (not reported). The autocorrelation decreases over time, though, as evidenced by the fact that the coefficient of the third lag is less than one fifth of that of the first lag in magnitude.

CONCLUSIONS

In this paper, I study the determinants of net flows into retail international equity funds, using a data set of retail international equity funds from 1992 to 2001.

I find that diversification benefits appear to be a major reason why investors choose international equity funds. Funds less correlated with the US

market tend to receive higher flows from investors. In addition, investors prefer funds that invest in a diversified portfolio of securities from different regions in the world to funds that focus only on a specific region. A convex relation between fund performance and flow is documented for both raw return and risk-adjusted return. However, it is shown that risk-adjusted return exerts a greater effect on flows into international equity funds than raw return.

International equity funds from fund families offering a greater number of investment objectives receive higher flows, suggesting that investment in these funds might be affected by investors' general asset allocation strategies. In addition, international equity fund investors do not appear to be sensitive to expenses or exchange rates.

International equity funds exhibit increasing importance for both individual investors and the globalization of financial markets. As the first comprehensive study of the determinants of flows into international equity funds, this paper sheds light on the long-term behavior of international equity fund investors. Using the results in this paper, international equity fund portfolio managers and financial advisers can better understand what drives the decisions of international equity fund investors. The findings in this paper can also help senior executives and boards of directors of mutual fund families better formulate their policies regarding the change in fees, the expansion of investment objectives, and what types of international equity funds to offer.

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NOTES

¹Several studies (Greene & Hodges, 2002; Goetzmann, Ivković, & Rouwenhorst, 2001) investigate the day trading of international equity funds. The focus of these studies is the fair pricing issue, and the interaction between daily flows and returns for international equity funds, instead of investors'

long-term behavior. The rest of the literature on international equity funds focuses on their performances (Cumby & Glen, 1990; Droms & Walker, 1994).

²It should be noted that a measure based on regional diversification cannot substitute for a measure based on diversification at the security level – a measure based on the number and weights of different securities in the portfolio. Unfortunately, owing to the lack of portfolio constituent data, such a security-level diversification measure is not studied in this paper.

³Even if all data back to 1962, the first year of the CRSP data, are included, observations from 1992 to 2001 will still account for 93.04% of all observations. International equity funds were rare before 1992. The number of international equity funds did not reach 50 until 1987. Given the dominance of the 1992–2001 data, I believe the same qualitative results will still be obtained even if I use data back to 1962.

⁴For the description of each investment objective, please refer to Appendix A to the CRSP Survivor-Bias Free US Mutual Fund Database Guide.

⁵I also conduct tests using data at the portfolio level and obtain the same qualitative results, which are not reported in the paper.

⁶See Chapter 2 of the CRSP Survivor-Bias Free US Mutual Fund Database Guide for details.

⁷Unfortunately, data limitation prevents further analysis of the effect of currency risk. For example, no data can be obtained as to how a fund predicts exchange rate changes, or whether a fund hedges currency risk.

⁸Del Guercio and Tkac (2002) also try to control for any effect to flows due to merger.

⁹As a result, 218 observations are excluded, which account for 0.94% of all observations.

¹⁰The well-known MSCI EAFE Index covers only *developed* economies in Europe, Australasia, and Far East.

¹¹As an example of indirectly quoted exchange rates, US\$1=100 yen. An increase in the exchange rate indicates that the US dollar appreciates.

¹²Data on *RM* are downloaded from Ken French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

¹³The high correlation is consistent with findings in the literature, which suggest that foreign stocks respond contemporaneously to common news that affects US stock prices (Eun & Shim, 1989; Goetzmann et al., 2001).

¹⁴The differences mentioned above have all been shown to be significant based on tests of the equality of medians or means between regionally diversified and focused funds (results not reported).

¹⁵The panel regression method is used to account for the fact that observations from the same fund are not independent relative to one another in this time-series cross-sectional (panel) data set.

¹⁶Because *SHARPE* is calculated with data in the past 12 months (see Eq. (3)), the rolling nature makes $SHARPE_{i,t-1}$ and $SHARPE_{i,t-2}$ highly correlated with each other (0.628). Owing to multicollinearity concerns, $SHARPE_{i,t-1}$ and $SHARPE_{i,t-2}$ cannot be included in the same regression. In addition, *SDRET* is not included either, because *SDRET* is used as the denominator to compute *SHARPE* (see Eq. (3)).

¹⁷A separate study also reveals that fund age (*AGE*) and the natural log of fund assets (*LASSET*) are highly

correlated with each other (0.456). As a result, *AGE* is not included in the model owing to multicollinearity concerns.

¹⁸Based on coefficient estimates from Table 2 and standard deviations reported in Table 1, for raw return, $5.88 = 12.68 \times 0.299 + 12.68^2 \times 0.013$; for Sharpe ratio, $13.17 = 0.515 \times 17.667 + 0.515^2 \times 15.333$. Even if I also take the effect of RAW_{t-2} into consideration, the effect of Sharpe ratio is still more than 40% greater. Similar analysis is also performed in Barber et al. (2005).

¹⁹As related evidence, international equity fund investors appear to be very sensitive to the risk of a fund, as represented by *SDRET*.

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