How ETFs Amplify the Global Financial Cycle in Emerging Markets*

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Abstract

Since the early 2000s exchange-traded funds (ETFs) have grown to become an important investment vehicle worldwide. In this paper, we study how their growth affects the sensitivity of international capital flows to the global financial cycle. We combine comprehensive micro-level data on investor flows with a novel identification strategy that controls for unobservable time-varying economic conditions at the investment destination. For the emerging market universe, we find that the sensitivity of investor flows to global risk factors for equity (bond) ETFs is 1.5 (1.25) times higher than for equity (bond) mutual funds. In turn, we show that countries where ETFs hold a larger share of financial assets are significantly more sensitive to global risk factors, both in terms of total equity flows and prices. We conclude that the growing participation of ETFs amplifies the incidence of the global financial cycle in emerging markets.

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1 Introduction

The mutual fund industry has grown rapidly over the past fifteen years and now manages 40 trillion U.S. dollars in assets worldwide (Khorana et al., 2005; ICI, 2017). As a result, mutual funds have become major international financial intermediaries, acting as an important channel for cross-border portfolio capital flows (Didier et al., 2013). Within the fund industry one of the most notable developments in the past decade has been the growth of passively managed funds and exchange-traded funds (ETFs) (Cremers et al., 2016). As shown in Figure 1, the assets held by ETFs have increased even more rapidly than those of the industry as a whole, so that ETFs' share of fund assets has gone from only 3.5 percent in 2005 to 14 percent in 2017. The rise of ETFs has been even more striking for funds investing in emerging market (EM) assets, with the ETF share reaching 20 percent in 2017.[1]

In this paper we show that the growing role of ETFs as a channel for international capital flows has amplified the transmission of global risk shocks to emerging economies. Recent work has extensively documented how shocks to U.S. financial conditions are transmitted to other countries in a so-called global financial cycle (Rey, 2015). While much of this research has focused on bank flows (Bruno and Shin, 2015b,a), changes in U.S. monetary policy and risk appetite are also transmitted via portfolio flows (Forbes and Warnock, 2012; Fratzscher, 2012; Avdjiev et al., 2017). At the same time, it is clear that exposure to the global financial cycle varies across countries (Cerutti et al., 2015; Choi et al., 2017) and over time (Ahmed and Zlate, 2014). Figure 2 plots how the exposure of aggregate portfolio equity capital inflows to global risk has steadily increased over the last 15 years. It is striking how this increased sensitivity has coincided with share of EM financial assets. But are these two trends related? And if so, how?

We explore the relationship between the increased sensitivity of EM capital flows and the growth of ETFs in two steps. First, we present robust evidence that fund-level investor flows to ETFs respond more to global risk shocks than do flows to traditional mutual funds. By contrast,

[1] ETFs account for an even larger share (25 percent) of the assets of equity funds dedicated to investing in emerging markets. While the share of EM bond funds assets held by ETFs is much lower, it has been growing very rapidly. Prior to 2006 there were essentially no EM bond ETFs.

ETF flows respond much less, if at all, to changing economic conditions in the countries in which the funds invest. Second, we show that where ETFs hold a larger share of the host country's market capitalization, aggregate portfolio flows are more sensitive to global factors. These findings indicate that the rise of ETFs as a conduit for international capital flows has amplified the effects of the global financial cycle in emerging markets. Moreover, the patterns we find in the data are consistent with the liquidity of ETF shares attracting relatively uninformed investors who respond more to shifts global risk but less to local fundamentals.

Our analysis uses comprehensive data from EPFR Global on monthly investor flows to mutual funds and ETFs over the period 1997 to 2017.[2] Our dataset contains more than 33,000 mutual funds and more than 6,000 ETFs, with more than 29 trillion U.S. dollars in assets under management at the end of June 2017. Beyond its extensive coverage, this database has several appealing features. First, it contains the investor flows to each mutual fund or ETF. Second, it provides information on each fund's investment scope, indicating the country or set of countries where the fund invests. Importantly, the coverage of the dataset is sufficiently broad that the investment scope varies for ETFs and mutual funds, so that both categories include global, regional, and dedicated country funds. In addition, EPFR provides information on each fund's location, allowing us to control for domicile-specific push factors and thus focus on the effects of truly global factors.

Our novel empirical approach exploits these features of the data. We examine how investor flows into funds respond to global push factors and test whether the response differs for mutual funds and ETFs. We also control for economic conditions in each fund's investment destination. Because we are studying investor flows to funds, we control for these so-called pull factors at the investment-scope rather than at the country level. We do this in two ways, in separate sets of regressions. First, we construct a measure of economic conditions at the investment scope level by averaging the growth in industrial production (IP) across in the countries included in each fund scope. Second, we use investment-scope-time fixed effects to absorb any time-varying, investment-scope-specific factors that might affect fund flows. This allows us to identify more cleanly how

[2]Throughout the paper we use the term investor flows and fund flows interchangeably to refer to end investors' purchases and redemptions of shares in mutual funds and ETFs.

global risk factors differentially affect flows going into ETFs versus mutual funds.

We find that increases in global risk are negatively related to investor flows into both mutual funds and ETFs. However, the sensitivity of ETFs to these push factors is significantly larger than for mutual funds investing in emerging markets. Quantitatively, the exposure to push factors is almost 1.5 times bigger for equity ETFs, and 1.25 times larger for bond ETFs, relative to mutual funds. This result is robust to the inclusion of fund- and investment-scope-time fixed effects, as well as time-varying fund controls such as past performance and financial conditions in the domicile of the fund. Importantly, our finding holds even when we restrict our sample to funds investing in a single country, suggesting that our conclusions on fund flows extend to country capital flows. We show that the results are not driven by global risk shocks affecting large and small funds differently, or by differences in the responses of passive and active funds. Furthermore the use of alternative measures to gauge global risk and the exclusion of the period corresponding to the 2007/2008 global financial crisis do not alter our main conclusions.

Overall, the results of our fund-level analysis are consistent with ETFs attracting relatively uninformed investors who value the funds' liquidity. We find that while mutual fund investors respond to local conditions in the countries where these funds invest, ETF investors do not. In addition, we show that the sensitivity of ETF flows to global factors significantly exceeds that of flows to passive, low-fee mutual funds. Similar to ETFs, this group of traditional mutual funds offer passive management and low cost access to EM assets. The key difference is that shares in index mutual funds cannot be continuously bought. Thus it appears that ETFs' liquidity attracts investors who are particularly sensitive to global risk and inattentive to local conditions in emerging economies.

We also demonstrate that the findings of our fund-level analysis have aggregate implications that are economically significant. We show that where ETF hold a larger share of a country's equity market capitaliation, both portfolio inflows and aggregate stock market prices are more sensitive to global risk. Quantitatively, a one- standard-deviation increase in the share of equity held by ETFs is associated with an exposure to global risk that is 2.5 times higher for portfolio equity inflows.

For stock market prices, a similar increase is associated with an exposure to global factors almost 1.4 times larger. It follows that while the low costs and high degree of liquidity offered by ETFs may attract new investors to the EM asset class, the benefits of a broader investor base of EM issuers may be offset by the fact that the greater sensitivity of ETF flows deepens exposure to the global financial cycle, raising the volatility of financing conditions in recipient economies.[3]

Our paper relates to four strands of the literature. In addition to the already mentioned body of work on the global financial cycle, we contribute to the large literature on the drivers of capital flows to emerging markets (Ahmed and Zlate, 2014) and the relative importance of global push factors and local pull factors (Forbes and Warnock, 2012; Cerutti et al., 2015), in particular work using mutual fund data to explore the issue (Fratzscher, 2012). In this context, Jotikasthira et al. (2012) also study withdrawals and redemptions by end investors and how they affect the transmission of shocks across countries but do not differentiate between types of funds as we do.[4] Similar to our work, some previous research has examined how the behavior of international capital flows differs depending on the type of institution or investor with which the originate. In one of the first papers making use of mutual fund data, Borensztein and Gelos (2003) compare capital flows via open-ended funds with those via-closed ended funds. Whereas Raddatz and Schmukler (2012) and Miyajima and Shim (2014) study whether the portfolio decisions of fund managers differ from those of end investors, we analyze the differences in the behavior of end investors in two different types of funds—ETFs and traditional mutual funds.[5] In a closely related paper, Brandao-Marques et al. (2015) do compare the sensitivity of ETFs and mutual funds in the EPFR data, but study country flows rather than fund flows.[6]

Our paper is closely linked to a recent literature studying the consequences of the growth of ETFs in financial markets and economic activity (Bhattacharya and O'Hara (2017)). Our findings

[3] See Converse (2017) for a detailed exploration of the negative effects of capital flow volatility on the real economy in emerging markets.

[4] In their paper Jotikasthira et al. (2012) build empirical evidence at the international level based on a large literature both theoretical (Shleifer and Vishny (1997)) and empirical (Coval and Stafford (2007)) on asset fire sales.

[5] In related papers Levy-Yeyati and Williams (2012) and Raddatz et al. (2017) show how the decisions of managers to follow benchmark indexes might transmit shocks across countries.

[6] More broadly, this study is related to a large literature studying international mutual funds and how these institutional investors affect international financial markets and asset prices. See among others Kaminsky et al. (2004); Gelos and Wei (2005); Broner et al. (2006); Gelos (2011); Shek et al. (2015); Forbes et al. (2016).

are also consistent with work showing that U.S. stocks with a greater ETF ownership share exhibit higher return volatility (Ben-David et al., 2014; Baltussen et al., 2016). In addition, findings that the relative importance of global as opposed to local factors is greater for ETF investor flows is consistent with Da and Shive (2017), who find that ETF ownship increases comovment in U.S. equity returns.

Finally, our paper relates to the literature on the drivers of investor flows into managed funds (for a survey see Christoffersen et al., 2014), which has explored in depth the relationship between fund flows and performance. We take on board the insights from this literature by controlling for the past performance of funds in our main specifications, but study how another set of variables— global risk and local economic conditions in the countries where the funds invest— affect flows to different types of funds.

The rest of the paper is structured as follows. Section 2 presents information on the institutional details and the mechanics of ETFs. Section 3 details the data. Section 4 presents our empirical strategy and results concerning the sensitivity of fund flows to global risk factors. Section 5 analyzes the aggregate implications, particularly the link between ETF participation and the global financial cycle. Section 6 concludes.

2 ETFs and Institutional Details

This section presents a brief description of the structure and functioning of exchange traded funds (ETFs), focusing on the ways in which they differ from traditional mutual funds. This section is informed by the concise and insightful institutional detail in Ben-David et al. (2014) and Da and Shive (2017), as well as the comprehensive chapter by Deville (2008).

Like a mutual funds, an ETF is an investment vehicle which owns a basket of underlying assets, usually stocks or bonds.[7] Often the basket is constructed to track the performance of a particular

[7]There are also other types of ETFs, for example, commodity ETFs. Because the EPFR data contain only equity and bond ETFs, here we limit our discussion to these ETF types. In markets outside the U.S., there are also synthetic ETFs which replicate the performance of a designated basket of securities through the trading of derivatives. While flows in and out of synthetic ETFs do not directly generate capital flows, they nonetheless affect asset prices.

index. Although actively managed ETFs do exist, they are rare– of more than 700 ETFs in our dataset which focus on emerging markets, only 7 are actively managed.

When open-ended mutual fund investors buy or sell shares, they enter into a transaction with the fund, and the price at which the transaction happens is determined by the fund's net asset value (NAV) at the end of the trading day on which the buy or sell request is made. By contrast, ETF shares are continuously traded on stock exchanges, allowing investors to buy or sell shares at any time at the current market price. In this sense, ETFs are like closed-end mutual fund, which also have exchange-traded shares. The continuous trading of ETF shares not only makes them easy for investors to buy and sell at low cost, but also greatly reduces the need for the fund to hold a cash allocation to satisfy redemptions, eliminating the cash drag that is an implicit cost mutual fund investing.

Whereas closed-end mutual funds have a fixed number of shares, set at the fund's IPO, ETF shares can be created or redeemed. Indeed, the creation and redemption of ETF shares ensures that the value of the ETF's shares outstanding closely tracks the basket of underlying assets. The ETF has a number of so-called authorized participants (APs), large financial institutions that can create or redeem shares in the fund. To create new ETF shares, an AP buys up the underlying assets and exchanges them for fund shares. When an AP redeems shares, it returns shares to the fund administrators and receives the corresponding quantity of underlying assets.

If the value of ETF shares differs from the value of the underlying basket, there is an arbitrage opportunity for the fund's APs. For example, when an ETF's outstanding shares are more valuable than the underlying, an AP can buy up the underlying, exchange it for fund shares, then sell the fund shares at a profit. These sales will cause the price of the ETF shares to fall until the ETF and the underlying are equal in value. Of course, if the underlying assets are relatively illiquid, there is scope for the price of the ETF to diverge from the underlying since arbitrage will not always be possible.

To the extent that they underlying asset is liquid, then, the ETF flows that are the focus of this paper will generate trade in the underlying asset. If and ETF is domiciled in a country other than

the one in which its underlying assets were issued, ETF purchases and redemptions will generate cross-border capital flows.

3 Data

3.1 Fund Flows Data

We obtain monthly fund-level data on mutual funds and ETFs from the commercial data provider EPFR Global.[8] The dataset includes both equity and bond funds, with the data on equity funds covering the period January 1997 to August 2017 and the bond fund data running from January 2002 to August 2017. The data are an unbalanced panel with funds both entering and leaving the sample, so that the data do not suffer from survivorship bias. The full EFPR database contains 33,019 mutual funds (of which roughly 65 percent are equity funds) and 6,431 ETFs (of which 80 percent are equity funds). At the end of June 2017, EPFR funds held 26.4 trillion U.S. dollars in assets under management, accounting for approximately 66 percent of the total worldwide assets of mutual funds and ETFs.[9] Official data on U.S. holdings of foreign assets show that U.S. domiciled mutual funds held around 1.7 trillion U.S. dollars in emerging market assets, and U.S. funds tracked by EFPR hold roughly 50 percent of these (TIC, 2017).[10]

Our primarily variable of interest is investor flows (F_{it}), defined as the U.S. dollar value of the net purchases or redemptions of shares in each fund i in each month t.[11] Throughout our analysis, we normalize flows into each fund by its assets under management at the end of the previous month (A_{it-1}) so that our measure of fund flows is $\left(f_{it} = \frac{F_{it}}{A_{it-1}}\right)$. Importantly, the dataset includes a field classifying each fund according to what we refer to as its investment scope, meaning the country or group of countries where the fund invests. Example of multi-country investment scope categories include "Global Emerging Markets" and "Latin America Regional." See Appendix Table A4 for a

[8] For detailed variable definitions and sources see Table A1.
[9] According to ICI (2017) the total assets of the fund industry are roughly 40 trillion U.S. dollars.
[10] Here we compare the holdings of U.S. domiciled funds with U.S. data on overseas holdings because most countries do not yet report the institutional sector of asset holders.
[11] We use the fund flows variable generated by EPFR, which is calculated by subtracting the change in the fund's net asset value (NAV) from the change in the fund's total assets.

list of the investment scope categories in the dataset and how many funds and observations are assigned to each.

In addition, EPFR also provides data on each fund's performance, meaning the month-on-month percent change in the fund's NAV. Throughout our analysis, we control for the lagged performance of each fund relative to the average performance of funds with the same investment scope. EPFR also provides a host of other fund characteristics which we use in our analysis, such as each fund's domicile and it's declared benchmark.

We clean the EPFR dataset using procedures standard in research using fund-level data, dropping funds with less than one year of data and funds with average assets lower than 10 million U.S. dollars. In addition, we drop funds with extreme values of performance and inflows (measured as a share of lagged assets), specifically funds with observations the top and bottom one percent for these variables. Because our analysis is focused on the role of mutual funds in international capital flows, we exclude from the dataset funds which can be characterized as domestic. This includes funds investing only in the country in which they are domiciled, but also funds domiciled in a country that is included in the fund's investment scope (e.g. a Latin America regional fund domiciled in Brazil). See Table A5 for the number of funds and observations in each domicile in our cleaned dataset.

This procedure leaves us with 12,852 mutual funds and 2,525 ETFs in our dataset. Table 1 presents summary statistics and provides a first glimpse of our main result. The volatility of fund flows normalized by assets is much larger for ETFs than for mutual funds.[12] The greater volatility of ETF investor flows can be seen even more clearly in Figure 3, where we plot the aggregate fund flows normalized by aggregate initial assets for the two types of funds. Even after the global financial crisis, fund flows for ETFs appear to be much more volatile and less persistent than investor flows for mutual funds.

[12]Table A6 contains summary statistics for the assets under management of funds.

3.2 Additional Variables

We analyze the drivers of fund flows using data on pull and push factors. Our main measure of global push factors is the St. Louis Fed Financial Stress Index, which is the first principal component of 18 mostly U.S. financial variables including interest rates, spreads, and equity and bond market implied volatility . In robustness checks, we use a host of other commonly used risk measures: the Chicago Board Options Exchange Market Volatility Index (VIX), the effective yield of the Bank of America Merrill Lynch US High Yield Master II Index (US HY), and the spread between 3-month LIBOR and 3-month Treasury Bill (TED spread). Following the literature, we also run our analysis using the effective federal funds rate (FF Rate) to measure global financial conditions. Since the U.S. policy rate was at the zero lower bound for a substantial portion of our sample period, we also make use of the shadow federal funds rate developed by Wu and Xia (2016) (FF Shadow Rate). With the exception of the shadow fed funds rate, which is made available by the Atlanta Fed, our risk and monetary policy variables were obtained from the Federal Reserve Economic Data (FRED) system at the end of each month.[13] Our analysis also takes into account push factors specific to each fund's home country. Specifically, we use monthly stock market returns measured in dollars from MSCI for the domicile country reported by EPFR. For funds domiciled in financial centers, we assign the major stock market most closely associated with the financial center as its home market.[14]

To capture pull factors for fund investors we use the month-on-month change in country-specific seasonally adjusted industrial production (IP) indexes from the IMF's International Financial Statistics (IFS) database.[15] For multi-country funds, we construct investment scope-level aggregate pull factors by taking the cross-country median value for IP growth for the countries within the fund's scope.[16] Our results are not sensitive to the method used to aggregate across

[13] For summary statistics on these global risk factors see Table A2.

[14] Funds domiciled in Ireland, the British Virgin Islands, and the Channel Islands were matched with UK stock market returns. Funds domiciled in other Caribbean financial centers were matched with U.S. stock returns. Funds domiciled in Luxembourg were assigned German equity returns.

[15] IP data were seasonally adjusted using the X12-ARIMA method developed by the U.S. Census Bureau. For summary statistics on IP growth see Table A3.

[16] Funds to which EPFR has assigned the same investment scope classification may invest in a slightly different set of countries (e.g. not all EM Asia funds invest in Taiwan). In constructing our aggregates, we use the set of

countries in each investment scope; using the mean value of IP growth or taking a weighted average produced quantitatively similar results.

4 Empirical Strategy and Results

4.1 Empirical Strategy

Our empirical strategy relies on reported investor flows, rather than on constructing estimates of capital flows at the fund-country-time level as has been common in the literature. More specifically, we use the following baseline specification:

$$f_{it} = \theta_i + \beta GF_t + \gamma(GF_t * ETF_i) + \lambda LF_{it} + \eta(LF_{it} * ETF_i) + \sum_{k=1}^{3} \delta_k R_{it-k} + \varepsilon_{it} \quad (1)$$

where f_{it} is the fund flow over initial assets for fund i at time t. The variable GF_t is a measure of global risk, LF_{it} captures pull factors, ETF_i is a dummy equal to one if the fund is an ETF, and ε_{it} is an error term. The specification includes fixed effects at the fund level θ_i. Since a large body of work has shown that past performance affects fund flows, we include three lags of the fund's returns relative to other funds with the same investment scope (R_{it}).

Throughout the paper we try to keep the specification parsimonious and therefore include only one pull and one push factor in each regression. For GF_t our main variable is the Saint Louis Fed Financial Stress Index, a broad measure of global risk conditions.[17] The global factor variables enter in differences (when the level can be negative) or log differences (when the levels are strictly positive), consistent with using flows as dependent variables.

One challenge associated with analyzing fund flows (as opposed to country flows) is measuring pull factors for multi-country funds. To do this, we construct LF_{it} at the investment scope level

countries which MSCI assigns to each country group each period. As a result, the set of countries included in each category varies over time. For example, we include Greece in "Emerging Europe" after November 2013, when it was downgraded from MSCI's developed markets index.

[17] Using narrower various narrower measures of risk and global financial conditions does not alter our results.

using monthly growth in industrial production. As described in detail in Section 3, for funds investing in more than one country we use the median industrial production growth in the group of countries included in the fund's investment scope category, although our results are robust to the mean and the GDP-weighted average IP growth. Notice that in Equation 1 $\beta + \gamma$ captures the sensitivity of ETFs to push factors, while $\lambda + \eta$ captures the exposure of ETFs to pull factors.

Beyond this baseline specification, we use an alternative approach exploiting higher dimensional fixed effects as follows:

$$f_{it} = \theta_i + \theta_{st} + \gamma(GF_t * ETF_i) + \eta(LF_{it} * ETF_i) + \sum_{k=1}^{3} \delta_k R_{it-k} + \varepsilon_{it} \tag{2}$$

where θ_{st} are fixed effects at the investment scope-time level. By doing this, we absorb all time-varying shocks non-parametrically at the investment scope level. Thus, we can more cleanly identify the difference in sensitivities coming from the difference in the type of fund. For instance, if financial institutions create ETFs to service country or regions with higher sensitivity to push factors, this would generate a high γ in Equation 1 even if ETF flows per se were not more sensitive. The use of scope-time fixed effects addresses this concern because it allows us to compare the sensitivities of ETFs and mutual funds with the same investment scope, controlling for any time varying factors specific to the investment scope.[18]

4.2 Main Results

We begin by estimating equation 1, dividing funds into those investing in developed markets and those targetting emerging markets (Table 2).[19] The results show that an increase in global risk is associated with a reduction in capital flows to both equity (panel a) and bond funds (panel b). This is true for funds investing in developed markets and those targeting emerging markets (Columns 1

[18] The structure of our database allows us to use fixed effects at a finer level such as the fund domicile-investment scope-time level, or the benchmark-time level. However, especially for bond funds, there is not enough presence of ETFs within those dimensions, and therefore we favor the investment scope-time fixed effects for most of the paper.

[19] While all our regressions contain fund performance controls, we do not report the estimated coefficients for compactness. Full results including our estimates for δ_{it-k} in equations 1 and 2 are presented in A8.

and 4). For developed market funds, the sensitivity of ETFs to both push and pull factors is not significantly different from that of traditional mutual funds (Columns 2-3). However, estimates for funds investing only in emerging markets indicate that ETF flows are significantly more sensitive to push factors than mutual fund flows (Columns 5-6). Indeed, ETF flows' exposure to global risk is almost 1.5 times bigger for equity funds (Panel A) and 1.25 times larger for bond funds (Panel B). These results are not altered when we include investment scope-time fixed effects (columns 3 and 6), which allow us to compare ETFs with mutual funds that have the same investment scope and also control for any time-varying determinants specific to the investment scope. This strategy helps us control for the fact that financial institutions may choose to create ETFs specifically to cater to investment scope categories which, for other reasons, exhibit more volatility in fund flows. The differences between our findings for developed market funds and those for EM funds lead us to exclusively study EM funds in the remainder of the paper.[20]

As discussed below in section 4.4, our results are robust to excluding the global financial crisis from our sample; however, we do find substantial time variation in the relationship between our global push factor and fund flows to ETFs. Figure 3 plots the 36-month rolling slope of a regression of aggregate fund flows on our chosen measure of global risk. Except for a brief period of time, the sensitivity of ETF flows to push factors is greater (in absolute terms) than for traditional mutual funds.[21] Moreover, the sensitivity of investor flows into ETFs has been increasing steadily since 2012 while the sensitivity of mutual fund flows has essentially remained constant over the period.

Turning to pull factors, we find that flows to dedicated EM mutual funds are significantly related to economic conditions in the funds' investment destination, but flows to EM bond funds are not. The evidence also suggests that flows to ETFs, whether equity or bond funds, do not respond to pull factors. This is captured in the row of the table labelled "Local Factor ETF" in

[20] We do investigate the responses of developed market ETFs in detail in appendix table A7. We find that dedicated developed market ETFs do appear more sensitive to global risk once we modify our dataset in two ways. First, we re-include funds investing in the country where they are domiciled. We do this because in developed markets these funds cater to foreign as well as domestic investors, unlike in EMs where their investor base is largely domestic. Second, we exclude DM funds investing exclusively in German, Japanese, and U.S. government bonds, which are widely considered safe-haven assets.

[21] The brief period of time is coincidental with the months of August, September and October of 2008, the worst part of the Global Financial Crisis.

the bottom section, which gives the ETF-specific coefficient, and the row below, which gives the p-value from a test of the null that this coefficient is equal to zero.

The global risk factor that we use is common to all funds. However, the richness of our data allows us to augment our specification by adding push factors that specific to each fund's domicile. In particular, we include in our baseline specification the stock market returns in the domicile each fund to capture conditions at home for investors (Table 3). Notice that this higher stock market returns at home are associated with larger investor flows to funds (Column 1). Despite its importance, the inclusion of this variable does not alter our main conclusions. There is still a significantly higher exposure of ETFs to push factors (Columns 2-4). Furthermore, the effect is now larger for both equity (Panel A) and bond funds (Panel B); the sensitivity of ETFs is 2.1 and 2.47 times larger, respectively for each of the two types of funds.[22]

4.3 Alternative Hypotheses and Specifications

Is it the fact that the fund is an ETF, or is it more generally a fund characteristic (its size, which could appeal to less informed investors; its passive nature) that is driving our results? When we control for size with a dummy that indicates whether a non-ETF fund is on average larger than two thresholds (100 and 250 million U.S. dollars), large equity funds (so defined) do not seem to have a significantly higher sensitivity to global factors (Table 4, Panel A). In turn, while large bond funds do have a higher exposure to push factors, they are nonetheless significantly less sensitive than ETFs (Panel B). We also examine the distinction between high-fee, actively managed mutual funds and low-fee, passively managed indexed funds (including, but not exclusively, most ETFs) in Table 5.[23] We use an Index dummy indicating whether the fund is a passively managed indexed fund, and we show that passive equity and bond funds are not significantly different from other mutual funds, and that the new specification does not alter the coefficients for ETFs. The result is consistent with our view that the distinctive characteristic of ETFs is their enhanced liquidity,

[22] Since the stock market returns at the domicile of the fund seems to be an important explanatory variable, we include it in the rest of the estimations as a control.

[23] While active ETFs do exist, there are very few. Our dataset includes more than 700 ETFs investing in emerging markets, of which only seven are actively managed.

rather than their cost or their passive nature.[24]

Because country-specific ETFs are much less common than country-specific mutual funds, there is a concern that our results may reflect differences in the sensitivity of flows to multi-country (global and regional) and single-country funds. This could be a problem especially if the former funds cater to less specialized, possibly less sophisticated investors that are more sensitive to push factors. These concerns are dispelled in Table 6, where we distinguish global and regional funds from country funds. For equity funds, results between the two groups are qualitatively and quantitatively similar (Panel A). In the case of bond funds, there does not seem to be a different sensitivity to global risk factors for country ETFs, but this is likely due to the small number of country-specific bond funds in our sample. Our dataset contains 98 country-specific EM bond funds, of which only 8 ETFs. We also analyze how our findings depend on the investment horizon. For that, we re-estimate our baseline specifications for 3- and 6-month frequencies (Table7). The conclusions regarding the sensitivity of ETFs fund flows to push factors is very similar, albeit stronger for bond funds. With respect to pull factors, equity and bond ETFs flows now behave differently. Equity ETFs flows are positively associated to changes in economic growth, as is the case for regular mutual funds. Instead, investor flows to bond ETFs remain uncorrelated with pull factors over longer horizons. Overall, this evidence suggests that country capital flows channeled via ETFs are much more sensitive to push factors than regular mutual funds, regardless of the investment scope.[25]

We also analyze how our findings depend on the investment horizon. We re-estimate our baseline specifications for 3- and 6-month frequencies (Table 7). The conclusions regarding the sensitivity of ETFs fund flows to push factors is very similar, albeit stronger for bond funds. With respect to pull factors, equity and bond ETFs flows now behave differently. Equity ETFs flows are positively associated to changes in economic growth, as is the case for regular mutual funds. Instead, investor

[24] We also test whether flows to mutual funds and ETFs respond differently to lagged fund performance and find they do not. The inclusion of these additional interaction term does not subtantially change our coeffecient estimates for global factors. Results are available upon request.

[25] The previous finding on country funds also confirm the (lack of) sensitivity of ETFs to pull factors, which remains unchanged when we focus solely on country funds (Panel A, Column 3 of Table 6). Note that our measure of local factors for global and regional funds is a weighted cross-country average, which may weaken the accuracy with which our model measures country-specific conditions, a concern that is not applicable to country funds.

flows to bond ETFs remain uncorrelated with pull factors over longer horizons.

What is behind out results? In principle, our findings appear consistent with ETF flows being dominated by fickle uninformed investors with a preference for liquidity (as opposed to sophisticated investors using ETFs to carry out "quick in-quick out" strategies). This is in line with the data documented by Ben-David et al. (2014) on the investor base of S&P 500 ETFs: institutional investors own over 70 percent of the common stock issued by S&P 500 companies but only 56 percent of the shares of S&P 500 ETFs, the rest of which is held mainly by retail investors that, as suggested by Stambaugh (2014), are more likely to behave as uninformed liquidity traders. Still, further research on the nature of the ETF investor (if that class indeed exists) should shed more light on the underpinnings of the ETF sensitivity to global risk.

4.4 Robustness

We study the robustness of the results reported above along four different dimensions. First, we start by excluding the period of the global financial crisis of 2007/2008, by dropping the periods from March 2007 until March 2009 from our estimations (Table 8). We do this since crisis periods tend to rise both the correlations of investment flows to global risk factors. However, the sensitivity of fund flows to ETFs are still significantly larger than those for mutual funds, both in the case of equity and bond funds. Furthermore, ETFs flows are not significantly associated with pull factors.

Second, we control for the possibility of different long-term trends in ETF and non-ETF investor flows. In many countries, and especially the United States, there has been a trend of inflows to ETFs and outflows from more traditional mutual funds. We address this concern by using fixed effects at the fund domicile-year-ETF level. Thus, we absorb the long-term trends of investor flows going into the two type of funds at the fund domicile level. Results are presented in Table 9 and are qualitatively similar when using these fixed effects for both equity and bond funds.

Third, we analyze the robustness of our proxy for global risk factors. Initially, we use broad measures of global risk appetite such as the VIX, TED Rate, US HY, and the first principal component of these variables (PCA1) as pull factors (Table 10). Our main conclusions do not

change for equity and bond funds, especially when we use a broad measure such as the PCA1 (Table 11). When we use the other variables, that capture only one dimension of global risk appetite, our findings are very similar for equity funds, and somewhat less significant for bond funds. Moreover, ETFs fund flows have a higher exposure to US monetary policy variables such as the fed funds rate and fed funds shadow rate (Table 11). All in all, our findings are robust to the use of different variables to capture global risk.

Fourth, we use both the average and GDP-weighted average of the monthly industrial production as alternative pull factors in Table 12. The conclusions regarding these factors are unchanged when we use these variables. Notice that investor flows to ETFs are not significantly associated to changes in economic conditions at the investment scope of these funds.

5 From Fund to Country: ETFs and the Global Financial Cycle in Emerging Markets

Having presented evidence that flows channeled to emerging markets via ETFs are more sensitive to global risk shocks, in this section we ask whether this greater sensitivity affects countries' exposure to the global financial cycle at the aggregate level. After all, ETFs account for less that half of EM mutual fund assets, and mutual funds are only a subset of cross border investors. We address this question in two steps. First, we present evidence that ETFs have boosted the sensitivity of aggregate fund flows to global risk. Second, we provide a quantitative assessment of this enhanced sensitivity for capital flows and prices at the country level.

An examination of the changing sensitivity of total fund flows to emerging markets highlighted in the introduction to this paper strongly suggests that it is a result of the greater sensitivity of ETF flows to global risk shocks. Figure 4 shows this by plotting the 36-month rolling slope coefficient, but this time for the aggregate flows into all funds (the blue line). We compare this with the slope for flows into traditional mutual funds (the red line). The sensitivity of flows to all funds spiked during the financial crisis but fell back to its pre-crisis value relatively quickly. Sensitivity jumped

again around the time of the Euro crisis in 2011, but rather than returning to its previous level it has remained elevated or even increased. A look at the sensitivity of traditional mutual funds shows that the sensitivity of their investment flows to global risk did fall after the Euro crisis. Thus, Figure 4 demonstrates that the growing importance of ETFs in the fund industry combined with the rise in ETF flows' sensitivity over the last several years (recall Figure 3 and the associated discussion) has resulted in fund flows overall becoming more sensitive, that is, more closely linked to global risk factors.

To explore this hypothesis further, we construct a measure of ETFs' market penetration in each country, defined as a share of a given country's equity market capitalization held by ETFs:

$$\text{ETF Share}_{ct} = \frac{\sum_{i \in ETF} w_{ict} A_{it}}{\text{Mcap}_{ct}} \tag{3}$$

where w_{ict} is the share of fund i's assets invested in country c at time t, and A_{it} is the fund's total assets under management measured in U.S. dollars.[26] Both w_{ict} and A_{it} are obtained from EPFR data. The numerator thus captures the dollar value of all ETFs assets in country c at time t, while the denominator is the stock market capitalization of country c (Mcap_{ct}, also measured in U.S. dollars). We test whether capital flows and asset prices are more exposed to global risk factors in countries with a greater ETF presence using the following specification:

$$y_{ct} = \theta_z + \beta GF_t + \mu(GF_t * \text{Share ETF}_{ct-1}) + \delta(\text{Share ETF}_{ct-1}) + \varepsilon_{ct} \tag{4}$$

where y_{ct} is the aggregate variable of interest, either quarterly portfolio equity liability flows from the balance of payments or monthly MSCI country stock market returns. We also include a set of either time or country fixed effects (θ_z, where $z = c, t$). In equation 4, μ captures how the

[26] Throughout this section we focus on portfolio equity flows and equity prices. We do this because both portfolio capital flows and bonds prices are much more diverse and more difficult to compact. For instance, portfolio debt liability flows in the balance of payments include purchases of both soveign and corporate securities, both of which may be denominated in either domestic or foreign currency. Accordingly, there are separate price indexes for sovereign and corporate debt in domestic and foreign currency. We therefor restrict our analysis to the aggregate implications for equity.

sensitivity of capital flows and prices to global factors vary with the presence of ETFs.

As Table 13 shows a greater ETF share is associated with a higher aggregate exposure to global risk for both equity flows and stock market prices. Portfolio equity inflows are negatively associated with global risk (Panel A, Column 1). This association is larger (in absolute value) when the ETF share in the equity market is greater (Column 2). The result holds even when we include time fixed effects and concentrate on the cross-country variation in the ETF share (Column 3). Thus, our findings at the micro level also have implications on the aggregate. How large is the effect? With the share of equity assets in a country held by ETFs is at its mean (ETF Share$_{ct}$ = 0.477), the country's inflows beta to the global risk factor is -0.083; for a country with an ETF share one standard deviation (0.737 percentage points) higher, this beta increases to -0.211 (in absolute terms), which implies an exposure 2.55 times higher. The conclusions are qualitatively similar when looking at aggregate stock market returns (Panel B). Increasing the ETF share by one standard deviation relative to the average ETF share, the beta to global risk is 1.36 times higher. In other words, the effects are economically substantive.

As could be seen in columns 4 and 5, where we add the share of assets held by non-ETF mutual funds (Non-ETF Share) and its interaction with the global risk factor, our result is not driven by the expansion of broader mutual funds into these countries: both with country- and time-fixed effects, the interaction of this variable with global risk is not statistically significant in almost all specifications (it is only significant at the 10 percent level for prices), whereas the coefficient of ETF share remains fairly stable and significant.

A potential problem with these estimates is that greater financial integration may lead to an increase in both the ETF share and the equity market co-movement with global factors. To address these concerns, in column 6 we replace the ETF dummy with a variable (MSCI EM), indicating the MSCI country classification. It takes the value 0 if a country is classified as frontier/standalone, 1 if is an emerging market, and 2 if classified as developed market.[27] Combining this variable with

[27] Our sample includes a broad category of emerging markets, not only emerging markets by the MSCI classification but also the rest of developing economies included in EPFR data. These are classified by MSCI into standalone or frontier markets. We also have countries that have been classified developed markets by MSCI at some point in time such as Greece or Israel.

country fixed effects, we can estimate how market co-movements (both in terms of equity flows and prices) changes with a (largely exogenous) change in the MSCI classification.[28] We find that inclusion into these benchmark indexes is also associated with greater exposure of capital flows and prices to global risk. Our findings are summarized in Figure 6 where we look at the cross-sectional βs for both portfolio equity inflows and stock market returns for the 2000-2017 period and relate them to the average share of assets held by ETFs for a given country and period. Overall, we find that the inclusion (exclusion) from the benchmark index tracked by ETF investors raises (reduces) the country's betas, even when we look exclusively at the cross-section of countries, which is again consistent with the hypothesis that ETFs amplify the incidence of global factors on local markets.

6 Conclusion

From the early 2000s, the asset management industry has experienced a notable development through the impressive growth in the assets under management of ETFs. Since then, these investment vehicles have been the subject of intense debate regarding their consequences for the stability of capital flows, albeit with scarce empirical support.

In this paper, we use detailed monthly micro data at the fund level from 1997 until 2017 to document that investor flows to ETFs are, relative to flows to traditional mutual funds, more volatile and more sensitive to global push factors, especially for funds investing in emerging markets. This difference is economically large, with betas to global factors almost 1.5 times bigger for equity ETFs, and 1.25 time bigger for bond ETFs, relative to non-ETFs. Our findings are robust to the inclusion of fund and investment scope-time fixed effects, time-varying fund controls such as past performance and economic conditions in the domicile of the fund. The results are very similar for global and country funds, indicating that our conclusions on fund flows should extend to country capital flows.

These findings have important implications for aggregate cross-border capital flows: we find that a higher presence of ETFs in a country is associated with a higher exposure to global risk

[28] See the discussion in Raddatz et al. (2017).

both for aggregate portfolio equity flows and stock market returns. These results are not only statistically significant, but of economic importance. A one standard deviation increase in the percentage of local assets held by ETFs yields an exposure to global risk that is 2.5 times in terms of portfolio equity flows and almost 1.4 times larger for prices.

Overall, our results confirm the intuition that growth of passive benchmarked instruments contributes to market co-movement and capital flows synchronicity at the expense of local fundamentals. This begs the question about the nature of this co-movement; whether it is due to the perceived liquidity of ETFs or the unsophisticated nature of its investor base, a natural line for future research.

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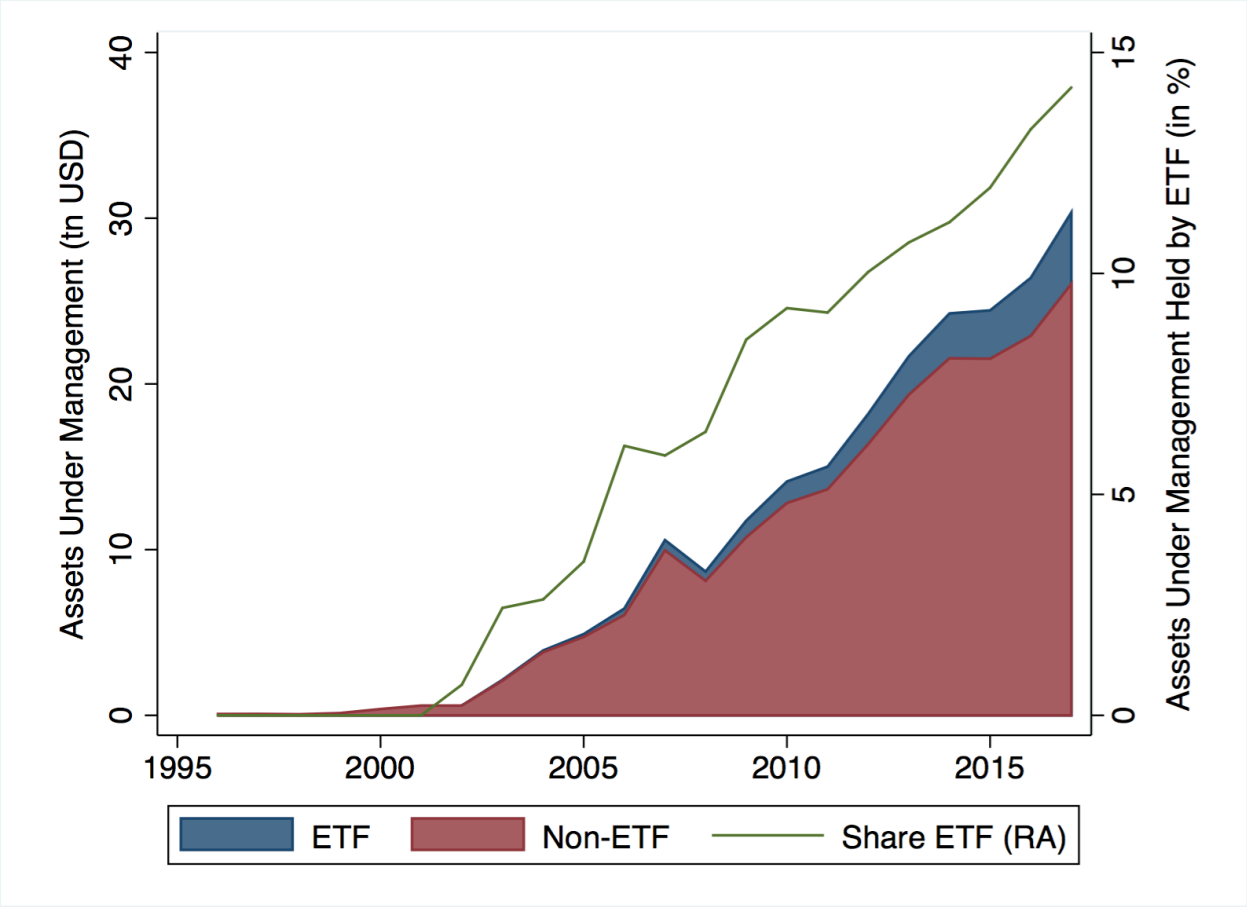
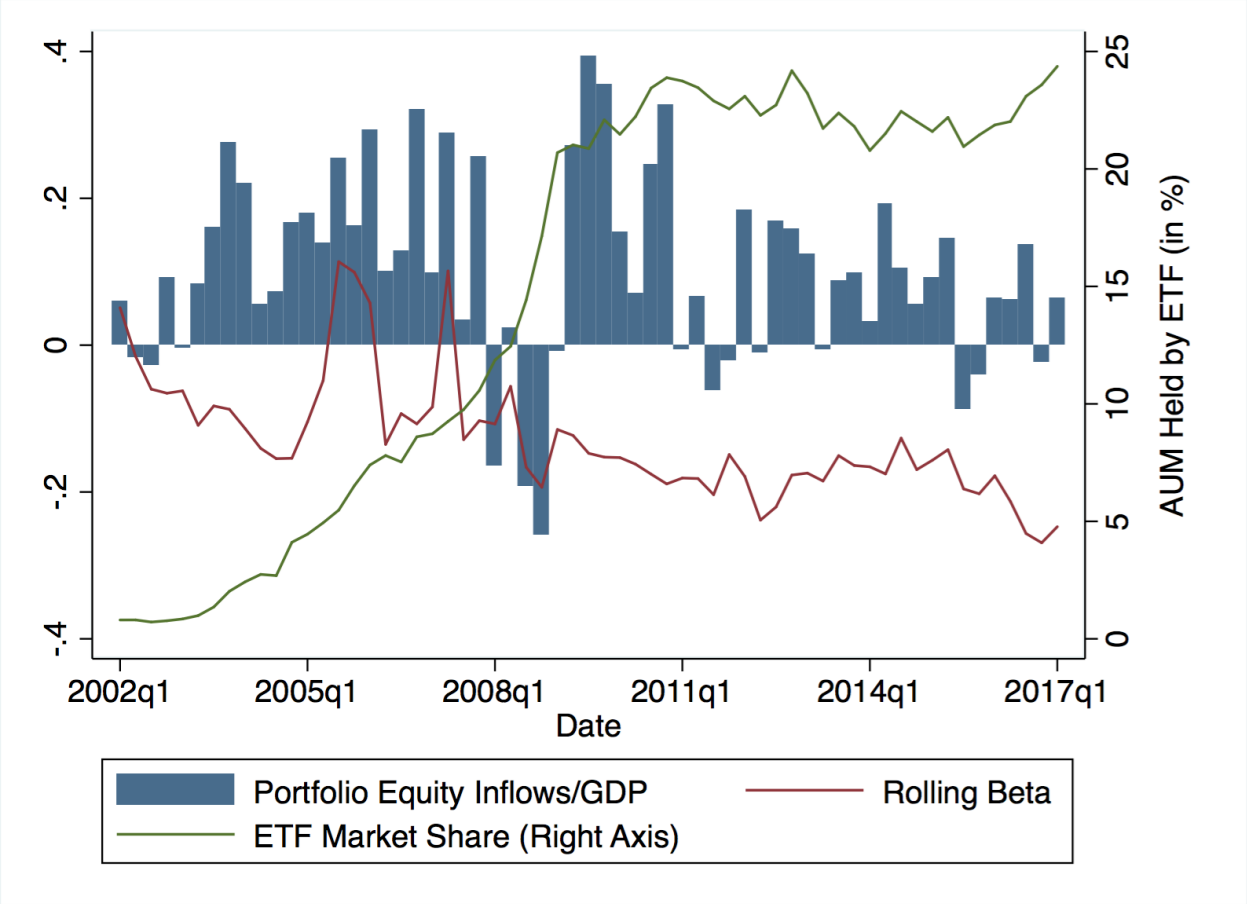
Figure 1: AUM ETF versus non-ETF



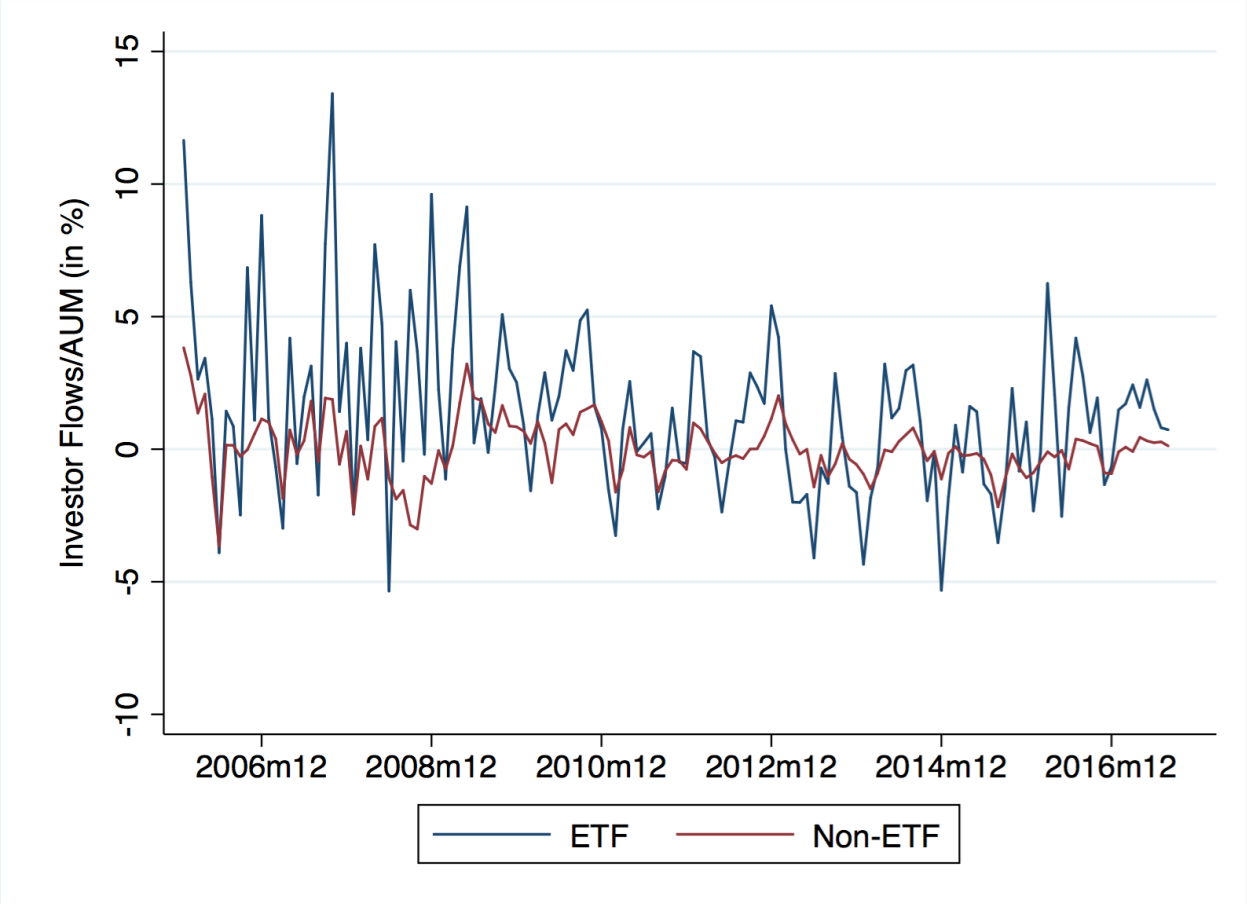
Note: This figure shows the assets under management of ETF and non-ETF in the EPFR data. The data is at plotted at the end of each year. Share ETF (right axis) represents the assets under management held by ETF divided by the total assets under management of all funds in percentage.

Figure 2: Portfolio Equity Flows and Exposure to Global Risk in Emerging Markets



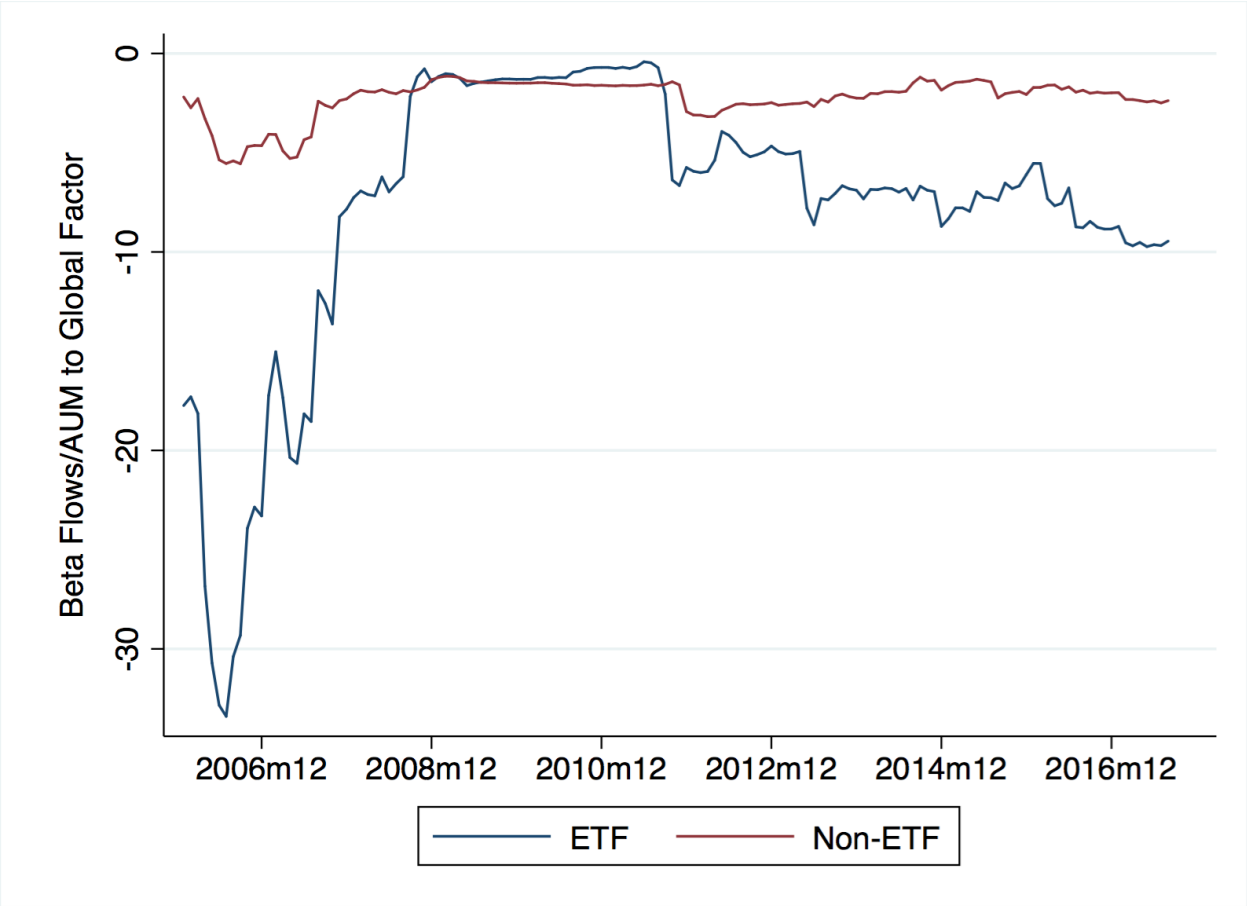
Note: This figure shows the portfolio equity liability flows to emerging markets as a share of GDP. Rolling beta is the slope of a 36-month rolling regression of the portfolio equity liability flows over GDP versus the difference in the St. Louis Financial Stress Index. ETF Market Share (right axis) represents the assets under management held by equity ETF divided by the total assets under management of all emerging market funds in percentage.

Figure 3: Flow Volatility ETF versus non-ETF



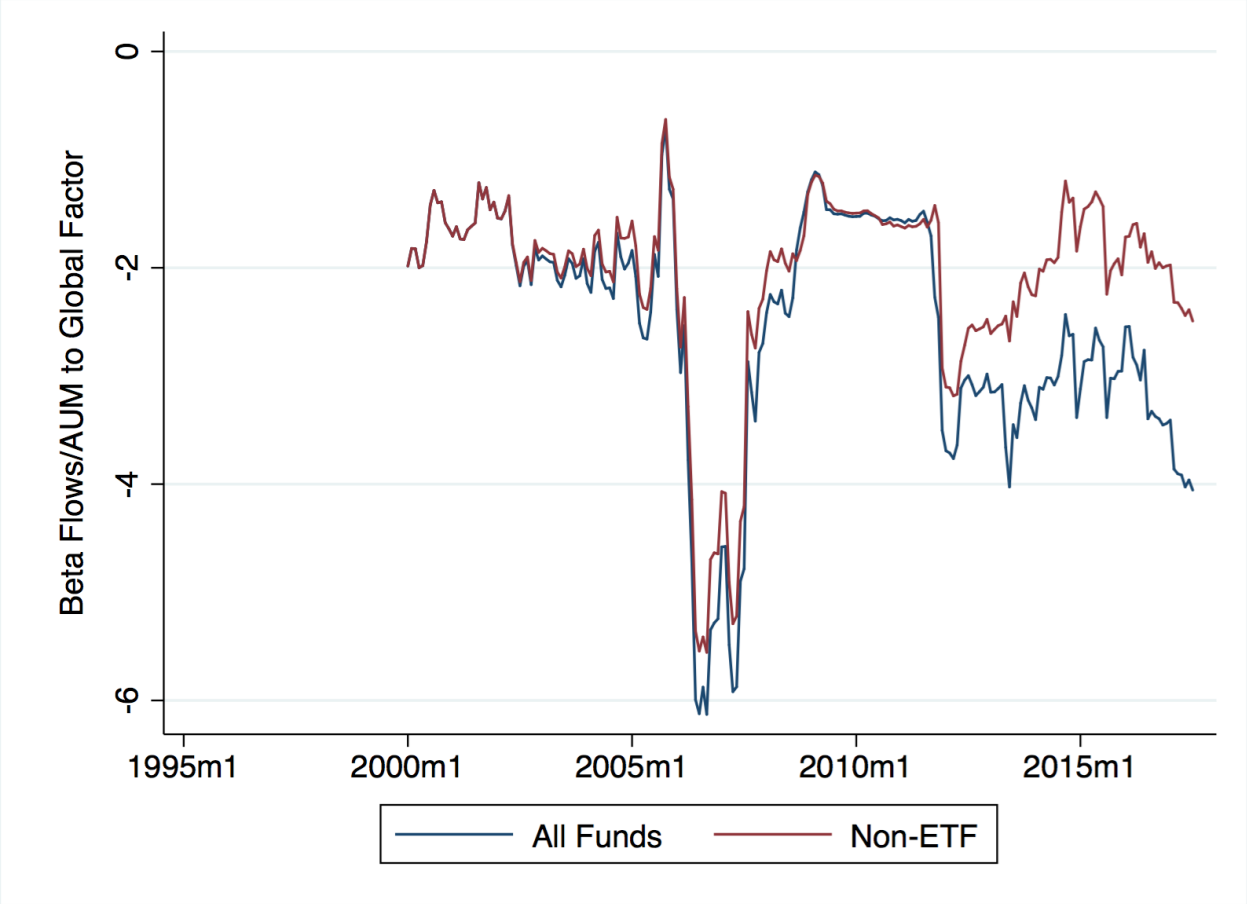
Note: This figure depicts the time evolution of investor flows over initial assets for ETF and non-ETF. Investor Flows are the sum of injections/redemptions at each point in time. AUM are the initial assets under management aggregated at each point in time.

Figure 4: Sensitivity to Global Factors ETF versus non-ETF



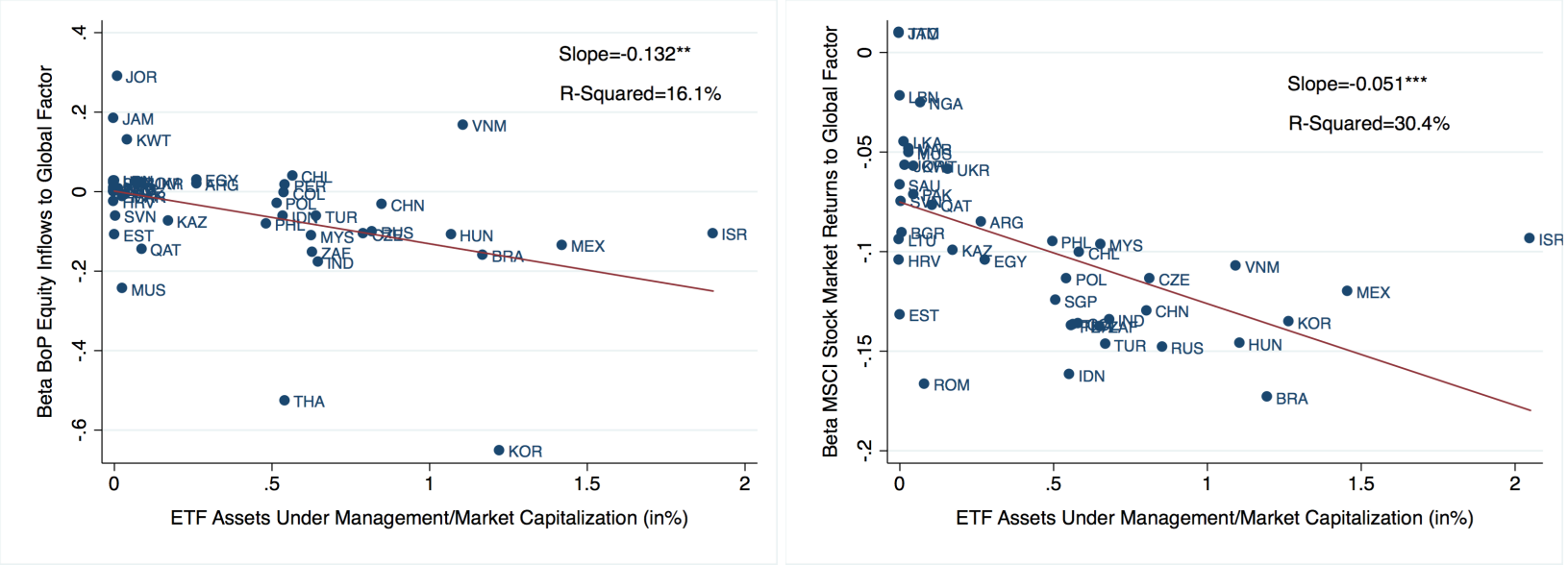
Note: This figure presents the sensitivity of investor flows to global factors for ETF and non-ETF. The beta flows/AUM to Global Factor is the slope of a 36-month rolling regression of the aggregate investor flows over initial assets versus the difference in the St. Louis Financial Stress Index.

Figure 5: Aggregate Sensitivity to Global Factors



Note: This figure shows the sensitivity of aggregate investor flows to global factors. The beta flows/AUM to Global Factor is the slope of a 36-month rolling regression of the aggregate investor flows over initial assets versus the difference in the St. Louis Financial Stress Index.

Figure 6: Country Betas and ETF Share of Market Capitalization



Note: This figure depicts the exposure to global factors and the relationship with the presence of ETFs in each emerging country. The left panel shows the coefficient of a regression of Balance of Payments Portfolio Equity Inflows to the difference in the St. Louis Financial Stress Index in the vertical axis. The right panel presents in the vertical axis the coefficient of a regression of MSCI stock market returns for each country to the difference in the St. Louis Financial Stress Index. These regressions are for the period 2010-2017. The horizontal axis for both panels indicates the equity assets held by ETFs in each country divided by the total stock market capitalization. Slope and R-squared refers to the corresponding statistics for the linear fit of the scatter plot.

Table 1: Summary Statistics: Fund Flows over Initial Assets

Panel A: Equity Funds						
	All Sample		Developed Markets		Emerging Markets	
	(1)	(2)	(3)	(4)	(5)	(6)
	ETF	Non-ETF	ETF	Non-ETF	ETF	Non-ETF
Mean	0.85	-0.14	0.93	-0.19	0.64	-0.05
Standard Deviation	9.20	5.97	9.43	5.86	8.54	6.23
p10	-7.07	-4.48	-7.24	-4.38	-6.72	-4.73
p25	-0.77	-1.74	-0.77	-1.71	-0.77	-1.82
Median	0.00	-0.30	0.00	-0.36	0.00	-0.16
p75	2.39	0.98	2.68	0.95	1.45	1.05
p90	10.10	4.48	10.48	4.27	9.03	4.96
Number of Funds	1858	9150	1380	6621	479	2551
Observations	109888	657800	81050	457014	28838	200786
Panel B: Bond Funds						
	All Sample		Developed Markets		Emerging Markets	
	(1)	(2)	(3)	(4)	(5)	(6)
	ETF	Non-ETF	ETF	Non-ETF	ETF	Non-ETF
Mean	1.30	0.02	1.26	-0.05	1.58	0.23
Standard Deviation	9.85	6.45	9.88	6.19	9.70	7.18
p10	-7.14	-5.01	-7.14	-4.84	-7.13	-5.56
p25	-0.53	-1.93	-0.51	-1.88	-0.63	-2.10
Median	0.00	-0.18	0.00	-0.24	0.00	-0.03
p75	3.66	1.43	3.62	1.34	4.15	1.73
p90	11.82	5.50	11.62	5.11	12.85	6.81
Number of Funds	406	3595	353	2738	53	859
Observations	20447	202285	17732	151399	2715	50886

Note: This table reports the summary statistics for fund flows over initial assets (in percentage) for the sample used in the main analysis for the all the sample, developed and emerging market funds. The sample is divided into ETF and non-ETF. Panel A shows statistics for equity funds and Panel B for bond funds. Fund flows over initial assets are winsorized at the 1 and 99 percent level.

Table 2: Developed versus Emerging Markets

Panel A: Equity Funds						
	Fund Flows over Initial Assets					
	(1) DM	(2) DM	(3) DM	(4) EM	(5) EM	(6) EM
Local Factor	0.058	0.073*		0.170***	0.187***	
	(0.044)	(0.043)		(0.047)	(0.045)	
Global Factor	-0.997***	-0.941***		-2.118***	-1.857***	
	(0.198)	(0.158)		(0.344)	(0.305)	
Local Factor*ETF		-0.097	-0.065		-0.133	0.030
		(0.108)	(0.103)		(0.087)	(0.073)
Global Factor*ETF		-0.485	-0.438		-2.733***	-2.256***
		(0.552)	(0.472)		(0.607)	(0.519)
Fund Performance Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	No	Yes	No	No	Yes
Local Factor ETF		-0.025			0.054	
P-value		0.824			0.584	
Observations	467681	467681	467263	210392	210392	209696
N. of Funds	7840	7840	7840	2908	2908	2899
R^2	0.077	0.077	0.104	0.064	0.064	0.138
Panel B: Bond Funds						
	Fund Flows over Initial Assets					
	(1) DM	(2) DM	(3) DM	(4) EM	(5) EM	(6) EM
Local Factor	0.158*	0.153		0.099	0.116	
	(0.095)	(0.104)		(0.127)	(0.123)	
Global Factor	-1.367***	-1.380***		-3.294***	-3.169***	
	(0.258)	(0.253)		(0.475)	(0.460)	
Local Factor*ETF		0.047	0.261**		-0.352	-0.255
		(0.141)	(0.125)		(0.332)	(0.359)
Global Factor*ETF		0.242	-0.148		-3.948**	-3.030*
		(0.829)	(0.779)		(1.951)	(1.823)
Fund Performance Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	No	Yes	No	No	Yes
Local Factor ETF		0.200			-0.236	
P-value		0.070			0.524	
Observations	142806	142806	142600	50510	50510	50029
N. of Funds	3046	3046	3042	910	910	901
R^2	0.088	0.088	0.115	0.092	0.092	0.177

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects dividing funds into developed and emerging market funds. Panel A shows the results for equity funds and Panel B for bond funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. Fund Performance Controls indicates whether the regression includes three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 3: Fund Domicile Stock Market Returns

Panel A: Equity Funds				
	Fund Flows over Initial Assets			
	(1)	(2)	(3)	(4)
Local Factor	0.176***	0.193***		
	(0.045)	(0.043)		
Global Factor	-1.512***	-1.248***		
	(0.319)	(0.271)		
Stk Mkt at Fund Domicile	5.032***	5.164***	1.573*	
	(1.062)	(1.011)	(0.834)	
Local Factor*ETF		-0.136	0.028	0.172*
		(0.086)	(0.073)	(0.098)
Global Factor*ETF		-2.945***	-2.265***	-2.789***
		(0.740)	(0.646)	(0.762)
Stk Mkt at Fund Domicile*ETF		-2.393	0.078	0.165
		(2.639)	(2.254)	(2.946)
Fund Performance Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	No	Yes	No
Domicile-Inv. Scope-Time FE	No	No	No	Yes
Local Factor ETF		0.057		
P-value		0.563		
Observations	210194	210194	209498	195690
N. of Funds	2906	2906	2897	2750
R^2	0.065	0.066	0.138	0.216
Panel B: Bond Funds				
	Fund Flows over Initial Assets			
	(1)	(2)	(3)	(4)
Local Factor	0.117	0.137		
	(0.124)	(0.119)		
Global Factor	-2.577***	-2.391***		
	(0.489)	(0.465)		
Stk Mkt at Fund Domicile	5.462***	5.943***	4.173**	
	(2.083)	(2.056)	(1.699)	
Local Factor*ETF		-0.374	-0.267	-0.119
		(0.322)	(0.354)	(0.396)
Global Factor*ETF		-5.970***	-4.768**	-7.038***
		(2.276)	(2.132)	(2.363)
Stk Mkt at Fund Domicile*ETF		-14.464**	-11.459*	-13.875**
		(5.843)	(6.000)	(6.766)
Fund Performance Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	No	Yes	No
Domicile-Inv. Scope-Time FE	No	No	No	Yes
Local Factor ETF		-0.237		
P-value		0.517		
Observations	50510	50510	50029	48254
N. of Funds	910	910	901	870
R^2	0.093	0.094	0.177	0.226

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Panel A shows the results for equity funds and Panel B for bond funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. Stk Mkt at Fund Domicile is the difference in logs of the MSCI stock market index in the domicile of each fund. Fund Performance Controls indicates whether the regression includes three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 4: ETFs or Large Funds?

Panel A: Equity Funds				
	Fund Flows over Initial Assets			
	(1) 100M	(2) 100M	(3) 250M	(4) 250M
Local Factor	0.192***		0.192***	
	(0.043)		(0.043)	
Local Factor*ETF	-0.134	0.028	-0.134	0.028
	(0.086)	(0.073)	(0.086)	(0.073)
Global Factor	-1.076***		-1.174***	
	(0.272)		(0.264)	
Global Factor*ETF	-2.802***	-2.411***	-2.705***	-2.341***
	(0.645)	(0.523)	(0.652)	(0.534)
Global Factor*>100M	-0.319*	-0.225		
	(0.183)	(0.189)		
Global Factor*>250M			-0.260	-0.175
			(0.185)	(0.158)
Fund Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	0.058		0.058	
P-value	0.547		0.547	
Observations	210194	209498	210194	209498
N. of Funds	2906	2897	2906	2897
R^2	0.066	0.138	0.066	0.138
Panel B: Bond Funds				
	Fund Flows over Initial Assets			
	(1) 100M	(2) 100M	(3) 250M	(4) 250M
Local Factor	0.136		0.135	
	(0.119)		(0.119)	
Local Factor*ETF	-0.372	-0.265	-0.372	-0.264
	(0.331)	(0.360)	(0.331)	(0.360)
Global Factor	-1.926***		-2.020***	
	(0.443)		(0.467)	
Global Factor*ETF	-4.401**	-3.715*	-4.300**	-3.571*
	(2.030)	(1.905)	(2.013)	(1.915)
Global Factor*>100M	-0.761*	-0.898**		
	(0.398)	(0.399)		
Global Factor*>250M			-0.886***	-0.991***
			(0.328)	(0.296)
Fund Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	-0.237		-0.237	
P-value	0.526		0.526	
Observations	50510	50029	50510	50029
N. of Funds	910	901	910	901
R^2	0.094	0.177	0.094	0.177

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Panel A shows the results for equity funds and Panel B for bond funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. >100M (>250M) is a dummy variable that is 1 when the assets under management in a fund at a given point in time are larger than 100 (250) millions USD. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 5: ETFs or Passive Funds?

Dependent Variable: Investor Flows over Initial Assets				
	Fund Flows over Initial Assets			
	(1) Equity	(2) Equity	(3) Bond	(4) Bond
Local Factor	0.194***		0.138	
	(0.043)		(0.119)	
Local Factor*ETF	-0.135	0.030	-0.375	-0.266
	(0.086)	(0.073)	(0.332)	(0.360)
Local Factor*Passive	-0.080	0.075	-0.453*	-0.112
	(0.152)	(0.153)	(0.240)	(0.243)
Global Factor	-1.271***		-2.453***	
	(0.277)		(0.476)	
Global Factor*ETF	-2.608***	-2.274***	-3.877**	-3.116*
	(0.620)	(0.522)	(1.948)	(1.836)
Global Factor*Passive	-0.177	0.082	-3.304	-2.357
	(0.667)	(0.692)	(2.354)	(2.429)
Fund Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	0.058		-0.237	
P-value	0.547		0.526	
Observations	210194	209498	50510	50029
N. of Funds	2906	2897	910	901
R^2	0.066	0.138	0.093	0.177

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Panel A shows the results for equity funds and Panel B for bond funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. Passive is a dummy variable that is 1 when the fund is passive but not an ETF. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 6: Global/Regional versus Country Funds

Panel A: Equity Funds

	Fund Flows over Initial Assets					
	(1) Global	(2) Global	(3) Country	(4) Country	(5) Full Sample	(6) Full Sample
Local Factor	0.167***		0.237***		0.192***	
	(0.053)		(0.044)		(0.043)	
Local Factor*ETF	0.154	0.253**	-0.334***	-0.172**	-0.133	0.029
	(0.142)	(0.124)	(0.082)	(0.077)	(0.085)	(0.073)
Global Factor	-1.205***		-1.500***		-1.135***	
	(0.249)		(0.441)		(0.252)	
Global Factor*ETF	-3.019***	-2.640***	-1.996***	-1.872***	-3.018***	-2.655***
	(0.809)	(0.727)	(0.661)	(0.591)	(0.825)	(0.737)
Global Factor*Country Fund					-0.496	
					(0.333)	
Global Factor*Country Fund*ETF					1.022	0.824
					(0.831)	(0.854)
Fund Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes	No	Yes
Local Factor ETF	0.321		-0.097		0.059	
P-value	0.046		0.277		0.541	
Observations	150851	150832	59342	58666	210194	209498
N. of Funds	1987	1987	921	912	2906	2897
R^2	0.070	0.121	0.056	0.176	0.066	0.138

Panel B: Bond Funds

	Fund Flows over Initial Assets					
	(1) Global	(2) Global	(3) Country	(4) Country	(5) Full Sample	(6) Full Sample
Local Factor	0.154		0.016		0.136	
	(0.133)		(0.131)		(0.119)	
Local Factor*ETF	-0.502	-0.291	0.488	0.479	-0.375	-0.262
	(0.384)	(0.360)	(0.411)	(0.954)	(0.332)	(0.358)
Global Factor	-2.479***		-2.030**		-2.481***	
	(0.499)		(1.024)		(0.488)	
Global Factor*ETF	-4.094*	-3.424*	-1.758	2.562	-4.109*	-3.431*
	(2.156)	(1.963)	(4.169)	(4.189)	(2.157)	(1.972)
Global Factor*Country Fund					0.591	
					(0.874)	
Global Factor*Country Fund*ETF					2.893	6.113
					(5.124)	(4.499)
Fund Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes	No	Yes
Local Factor ETF	-0.348		0.504		-0.239	
P-value	0.418		0.164		0.521	
Observations	47060	46964	3450	3065	50510	50029
N. of Funds	812	809	98	92	910	901
R^2	0.092	0.167	0.090	0.299	0.093	0.177

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Panel A shows the results for equity funds and Panel B for bond funds. Global indicates that the estimation is performed only for funds with a global or regional mandate. Country signals that the regression is for country funds only. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. Country Fund is a dummy indicating whether a fund is a country fund. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 7: Longer Horizons Estimations

Dependent Variable: Cumulative Fund Flows over Initial Assets				
	Fund Flows over Initial Assets			
	(1)	(2)	(3)	(4)
	3M Horizon	3M Horizon	6M Horizon	6M Horizon
Local Factor	0.649***		1.050***	
	(0.107)		(0.219)	
Local Factor*ETF	0.205	0.511**	0.428	0.677
	(0.227)	(0.212)	(0.512)	(0.528)
Global Factor	-0.853		-0.063	
	(0.601)		(0.974)	
Global Factor*ETF	-5.018***	-3.973***	-7.545**	-5.688**
	(1.726)	(1.380)	(3.077)	(2.726)
Fund Controls	Yes	Yes	No	No
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	0.854		1.478	
P-value	0.001		0.029	
Observations	208134	207441	199787	199091
N. of Funds	2906	2897	2895	2885
R^2	0.112	0.205	0.154	0.252
Dependent Variable: Cumulative Fund Flows over Initial Assets				
	Fund Flows over Initial Assets			
	(1)	(2)	(3)	(4)
	3M Horizon	3M Horizon	6M Horizon	6M Horizon
Local Factor	0.597**		1.373***	
	(0.299)		(0.454)	
Local Factor*ETF	-0.716	-0.666	-1.913**	-1.345
	(0.648)	(0.702)	(0.879)	(0.856)
Global Factor	-2.004		-2.607	
	(1.275)		(1.794)	
Global Factor*ETF	-12.249***	-9.996***	-19.000***	-14.767***
	(3.262)	(3.373)	(4.518)	(4.097)
Fund Controls	Yes	Yes	No	No
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	-0.119		-0.540	
P-value	0.883		0.655	
Observations	49877	49401	46881	46422
N. of Funds	910	901	906	898
R^2	0.150	0.253	0.198	0.302

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Fund flows are cumulative during an horizon of 3 and 6 months and are divided by the initial assets. Panel A shows the results for equity funds and Panel B for bond funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in logs of the variable indicated at the top of each column. ETF is a dummy indicating whether a fund is an ETF or not. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 8: Time Robustness (Excluding the GFC)

Dependent Variable: Investor Flows over Initial Assets				
	Fund Flows over Initial Assets			
	(1)	(2)	(3)	(4)
	Equity	Equity	Bond	Bond
Local Factor	0.195***		0.091	
	(0.047)		(0.125)	
Local Factor*ETF	-0.147	0.029	-0.247	-0.180
	(0.089)	(0.076)	(0.332)	(0.372)
Global Factor	-1.746***		-3.480***	
	(0.321)		(0.860)	
Global Factor*ETF	-2.817***	-2.607***	-5.301**	-5.033**
	(0.731)	(0.592)	(2.062)	(2.004)
Fund Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	0.049		-0.157	
P-value	0.635		0.683	
Observations	194390	193744	46632	46196
N. of Funds	2885	2875	905	898
R^2	0.069	0.139	0.100	0.182

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. All the estimations exclude the months between March 2007 and March 2009. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 9: Controlling for Long-Term Trends in Investor Flows

Global and Country Funds: Heterogeneity				
	Fund Flows over Initial Assets			
	(1) Equity	(2) Equity	(3) Bond	(4) Bond
Local Factor	0.044		0.049	
	(0.035)		(0.091)	
Local Factor*ETF	-0.177**	-0.082	-0.237	-0.212
	(0.073)	(0.072)	(0.287)	(0.313)
Global Factor	-1.266***		-2.198***	
	(0.213)		(0.416)	
Global Factor*ETF	-1.699***	-1.652***	-2.625**	-2.240**
	(0.470)	(0.417)	(1.206)	(1.130)
Fund Performance Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Fund Domicile-ETF-Year FE	Yes	Yes	Yes	Yes
Local Factor ETF	-0.133		-0.188	
P-value	0.098		0.571	
Observations	210189	209493	50509	50028
N. of Funds	2906	2897	910	901
R^2	0.091	0.148	0.129	0.190

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 10: Global Factor Robustness - Part 1

Panel A: Equity Funds						
	Fund Flows over Initial Assets					
	(1) VIX	(2) VIX	(3) TED Rate	(4) TED Rate	(5) US HY	(6) US HY
Local Factor	0.191***		0.188***		0.184***	
	(0.045)		(0.044)		(0.042)	
Local Factor*ETF	-0.135	0.027	-0.149*	0.010	-0.136*	0.022
	(0.083)	(0.071)	(0.083)	(0.071)	(0.082)	(0.069)
Global Factor	-1.637***		-0.961***		-3.806***	
	(0.378)		(0.256)		(1.018)	
Global Factor*ETF	-2.464***	-2.662***	-1.289*	-1.609***	-6.270***	-7.157***
	(0.655)	(0.628)	(0.740)	(0.575)	(2.073)	(1.781)
Fund Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes	No	Yes
Local Factor ETF	0.056		0.039		0.048	
P-value	0.562		0.682		0.601	
Observations	210194	209498	210194	209498	210194	209498
N. of Funds	2906	2897	2906	2897	2906	2897
R^2	0.066	0.138	0.065	0.138	0.067	0.138
Panel B: Bond Funds						
	Fund Flows over Initial Assets					
	(1) VIX	(2) VIX	(3) TED Rate	(4) TED Rate	(5) US HY	(6) US HY
Local Factor	0.145		0.131		0.164	
	(0.122)		(0.118)		(0.117)	
Local Factor*ETF	-0.413	-0.280	-0.425	-0.301	-0.331	-0.211
	(0.337)	(0.363)	(0.336)	(0.363)	(0.328)	(0.352)
Global Factor	-2.603***		-1.391**		-7.031***	
	(0.780)		(0.648)		(1.649)	
Global Factor*ETF	-1.173	-1.129	-1.067	-1.803	-10.441***	-10.445***
	(1.625)	(1.469)	(2.311)	(1.977)	(3.972)	(3.307)
Fund Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes	No	Yes
Local Factor ETF	-0.269		-0.295		-0.167	
P-value	0.489		0.440		0.652	
Observations	50510	50029	50510	50029	50510	50029
N. of Funds	910	901	910	901	910	901
R^2	0.091	0.177	0.090	0.177	0.094	0.177

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Panel A shows the results for equity funds and Panel B for bond funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in logs of the variable indicated at the top of each column. ETF is a dummy indicating whether a fund is an ETF or not. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 11: Global Factor Robustness - Part 2

Panel A: Equity Funds						
	Fund Flows over Initial Assets					
	(1) PCA1	(2) PCA1	(3) FFunds Rate	(4) FF Rate	(5) FF Shadow Rate	(6) FF Shadow Rate
Local Factor	0.182***		0.194***		0.196***	
	(0.044)		(0.044)		(0.044)	
Local Factor*ETF	-0.141*	0.016	-0.147*	0.017	-0.167*	0.004
	(0.079)	(0.066)	(0.088)	(0.074)	(0.091)	(0.077)
Global Factor	-0.270***		0.291		-0.188	
	(0.056)		(0.459)		(0.386)	
Global Factor*ETF	-0.362***	-0.421***	-4.704***	-2.994**	-2.402***	-1.834**
	(0.099)	(0.088)	(1.553)	(1.350)	(0.894)	(0.718)
Fund Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes	No	Yes
Local Factor ETF	0.041		0.047		0.030	
P-value	0.643		0.644		0.774	
Observations	204181	203567	210194	209498	210194	209498
N. of Funds	2906	2897	2906	2897	2906	2897
R^2	0.069	0.139	0.064	0.138	0.064	0.138
Panel B: Bond Funds						
	Fund Flows over Initial Assets					
	(1) PCA1	(2) PCA1	(3) FFunds Rate	(4) FF Rate	(5) FF Shadow Rate	(6) FF Shadow Rate
Local Factor	0.142		0.156		0.149	
	(0.115)		(0.118)		(0.127)	
Local Factor*ETF	-0.368	-0.255	-0.549	-0.398	-0.524	-0.368
	(0.339)	(0.362)	(0.336)	(0.351)	(0.331)	(0.354)
Global Factor	-0.479***		1.834		-0.563	
	(0.094)		(1.342)		(1.009)	
Global Factor*ETF	-0.411**	-0.430**	-14.136***	-10.676**	-4.651**	-3.830**
	(0.206)	(0.174)	(5.340)	(4.869)	(1.961)	(1.556)
Fund Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes	No	Yes
Local Factor ETF	-0.226		-0.393		-0.375	
P-value	0.555		0.312		0.328	
Observations	50510	50029	50510	50029	50510	50029
N. of Funds	910	901	910	901	910	901
R^2	0.096	0.177	0.090	0.177	0.090	0.177

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Panel A shows the results for equity funds and Panel B for bond funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the first principal component of the difference in logs for the VIX, TED Rate and US HY for the first two columns. For Columns (3)-(6) is the difference of the variable indicated at the top of each column. ETF is a dummy indicating whether a fund is an ETF or not. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 12: Local Factors Robustness

Panel A: Equity Funds				
	Fund Flows over Initial Assets			
	(1) Mean	(2) Mean	(3) GDP Weighted	(4) GDP Weighted
Local Factor	0.125***		0.256***	
	(0.031)		(0.045)	
Local*ETF	-0.051	0.045	-0.125	0.086
	(0.068)	(0.061)	(0.102)	(0.090)
Global Factor	-1.295***		-1.267***	
	(0.276)		(0.270)	
Global Factor*ETF	-2.603***	-2.280***	-2.616***	-2.275***
	(0.618)	(0.521)	(0.620)	(0.518)
Fund Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	0.074		0.130	
P-value	0.341		0.237	
Observations	210194	209498	210194	209498
N. of Funds	2906	2897	2906	2897
R^2	0.066	0.138	0.066	0.138
Panel B: Bond Funds				
	Fund Flows over Initial Assets			
	(1) Mean	(2) Mean	(3) GDP Weighted	(4) GDP Weighted
Local Factor	0.089		0.249*	
	(0.080)		(0.137)	
Local*ETF	-0.244	-0.192	-0.120	-0.075
	(0.237)	(0.248)	(0.416)	(0.465)
Global Factor	-2.481***		-2.432***	
	(0.477)		(0.474)	
Global Factor*ETF	-3.848**	-3.086*	-3.936**	-3.127*
	(1.936)	(1.828)	(1.951)	(1.843)
Fund Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	-0.155		0.130	
P-value	0.586		0.771	
Observations	50510	50029	50510	50029
N. of Funds	910	901	910	901
R^2	0.093	0.177	0.094	0.177

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Panel A shows the results for equity funds and Panel B for bond funds. Local Factor is the either the mean or GDP weighted monthly industrial production growth for the investment scope of each fund. The variable used is indicated at the top of each column. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. Fund Controls indicates whether the regression includes fund control variables. These variables are the three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level and the difference in logs of the MSCI stock market index in the domicile of each fund. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table 13: Aggregate Economic Significance: Country Betas and ETF Share

Panel A: Balance of Payments Portfolio Equity Inflows (2000-2017)						
	Portfolio Equity Inflows/GDP					
	(1)	(2)	(3)	(4)	(5)	(6)
Global Factor	-0.063***	-0.008		-0.012		-0.006
	(0.023)	(0.026)		(0.022)		(0.022)
Global Factor*ETF Share		-0.176***	-0.176***	-0.182***	-0.185***	
		(0.025)	(0.025)	(0.031)	(0.028)	
ETF Share		-0.034*	0.023***	-0.034*	0.025***	
		(0.019)	(0.008)	(0.018)	(0.007)	
Global Factor*Non-ETF Share				0.003	0.004	
				(0.004)	(0.004)	
Non-ETF Share				0.001	-0.001	
				(0.003)	(0.004)	
Global Factor*MSCI EM						-0.105***
						(0.028)
MSCI EM						0.039
						(0.048)
Country FE	Yes	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	No	Yes	No
Observations	2011	2011	2009	2011	2009	1860
N. of Countries	43	43	43	43	43	40
R^2	0.154	0.169	0.096	0.170	0.097	0.156
Panel B: Stock Market Returns (2000-2017)						
	MSCI Country Stock Markets Returns					
	(1)	(2)	(3)	(4)	(5)	(6)
Global Factor	-0.095***	-0.079***		-0.074***		-0.075***
	(0.016)	(0.015)		(0.014)		(0.016)
Global Factor*ETF Share		-0.050***	-0.041***	-0.043***	-0.032***	
		(0.009)	(0.007)	(0.010)	(0.008)	
ETF Share		-0.008***	-0.000	-0.008***	-0.001	
		(0.003)	(0.001)	(0.003)	(0.001)	
Global Factor*Non-ETF Share				-0.004	-0.004*	
				(0.002)	(0.002)	
Non-ETF Share				0.001*	0.001	
				(0.001)	(0.000)	
Global Factor*MSCI EM						-0.040***
						(0.011)
MSCI EM						-0.002
						(0.004)
Country FE	Yes	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	No	Yes	No
Observations	6730	6730	6723	6730	6723	7946
N. of Countries	43	43	43	43	43	43
R^2	0.117	0.128	0.371	0.129	0.372	0.111

Note: This table reports the OLS coefficients from a regression of Balance of Payments Portfolio Equity Liability Flows over GDP (Panel A) or MSCI Country Stock Market Returns (Panel B) on different explanatory variables and different sets of fixed effects for emerging markets at the quarterly frequency. Global Factor is the difference in the St. Louis Financial Stress Index. ETF Share is the assets under management of equity ETFs divided by the total equity market capitalization. Non-ETF Share is the assets under management of equity of funds that are not ETFs divided by the total equity market capitalization. MSCI EM is a variable that is 0 when a country is a frontier markets or standalone market under, 1 when it is an emerging market, and 2 when it is a developed market under MSCI classification scheme. All the estimations are for the period 2000-2017. Panel A estimations are at the quarterly frequency and Panel B at the monthly frequency. The dependent variable is winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table A1: Variable Definition and Source

Variable	Definition	Source
F_{it}	Injections/Redemptions to fund i at time t in US dollars	EPFR
A_{it}	Assets under management to fund i at time t in US dollars	EPFR
Fund Performance	Portfolio return of each fund minus the average return at the investment scope level	EPFR
STLFSI	St. Louis Financial Stress Index	FRED
VIX	Chicago Board Options Exchange Market Volatility Index	FRED
US HY	Effective yield of the Bank of America Merrill Lynch US High Yield Master II Index	FRED
TED Rate	Spread between 3-month LIBOR and 3-month Treasury Bill	FRED
PCA1	Principal Component of the monthly growth (in logs) of VIX, US HY and TED Rate	Own
FF Rate	Effective Federal Funds Rate	FRED
FF Shadow Rate	Wu-Xia Federal Funds Rate	Atlanta Fed
Median IP Growth	Median of the Monthly Industrial Production Growth at the Investment Scope Level	IMF IFS
Mean IP Growth	Mean of the Monthly Industrial Production Growth at the Investment Scope Level	IMF IFS
GDP Weighted IP Growth	GDP weighted Monthly Industrial Production Growth at the Investment Scope Level	IMF IFS
Stk Mkt at Domicile	Monthly Growth of the MSCI Stock Market Index at the Domicile of the Fund	MSCI

Table A2: Summary Statistics: Global Factors

Summary Statistics Global Variables						
	(1)	(2)	(3)	(4)	(5)	(6)
	St. Louis FSI	VIX	TED Rate	US HY	FF Rate	FF Shadow Rate
Mean	-0.01	-0.00	-0.00	0.00	-0.02	-0.02
Standard Deviation	0.26	0.16	0.22	0.09	0.17	0.20
p10	-0.22	-0.18	-0.29	-0.09	-0.21	-0.25
p25	-0.12	-0.09	-0.14	-0.06	-0.02	-0.08
Median	-0.02	-0.01	-0.00	-0.01	0.00	0.00
p75	0.07	0.07	0.14	0.04	0.02	0.09
p90	0.18	0.18	0.25	0.11	0.15	0.20
Observations	248	248	248	248	248	248

Note: This table reports the summary statistics for the variables used as global factors. The St. Louis FSI, the FF Rate and the FF Shadow Rate are in differences. The VIX, TED Rate, US HY are in differences of logs.

Table A3: Summary Statistics: Local Factors

Industrial Production Growth in Investment Scope									
	All Sample			Developed Markets			Emerging Markets		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Median	Mean	GDP Weighted	Median	Mean	GDP Weighted	Median	Mean	GDP Weighted
mean	0.18	0.18	0.19	0.05	0.05	0.05	0.27	0.26	0.28
sd	2.61	2.63	2.60	2.44	2.46	2.42	2.71	2.74	2.72
p10	-2.23	-2.27	-2.22	-2.22	-2.22	-2.20	-2.25	-2.30	-2.25
p25	-0.76	-0.81	-0.72	-0.81	-0.84	-0.77	-0.72	-0.79	-0.69
p50	0.25	0.25	0.26	0.10	0.10	0.10	0.37	0.35	0.38
p75	1.19	1.24	1.17	0.93	0.98	0.91	1.32	1.38	1.32
p90	2.45	2.50	2.46	2.21	2.25	2.15	2.59	2.65	2.63
N	9424	9424	9424	3699	3699	3699	5725	5725	5725

Note: This table reports the summary statistics for the variables used as local factors. Median, mean and GDP weighted indicates how the monthly growth in industrial production was aggregated at the investment scope level. All the variables are in percentages.

Table A4: Funds by Investment Scope

Panel A: Developed Markets	Equity Funds		Bond Funds	
	(1) Observations	(2) Funds	(3) Observations	(4) Funds
Europe	84007	1221	17180	355
Europe ex-UK	45518	697	39421	847
Global	189738	2928	82413	1397
Global ex-US	67734	868	3820	54
Japan	35554	515	496	9
Pacific	13223	185	148	5
United States	65646	1089	16032	306
Other	36644	530	9621	219
Total	538064	7999	169131	3091
Panel B: Emerging Markets	Equity Funds		Bond Funds	
	(1) Observations	(2) Funds	(3) Observations	(4) Funds
Asia ex-Japan	51377	648	5395	110
China	16299	275	1212	31
Emerging Europe	15610	162	2024	26
Global Emerging Markets	68527	924	40469	652
Greater China	12641	123	68	2
India	10072	156	308	9
Latin America	12691	145	1291	21
Other	42407	617	2834	66
Total	229624	3029	53601	912

Note: This table shows the statistics for the investment scope of the funds. Panel A reports the developed market funds, and Panel B the emerging market funds. Other is a residual category indicating all other domiciles.

Table A5: Funds by Domicile

Panel A: Number of Funds

	Equity Funds			Bond Funds		
	(1) All Sample	(2) DM	(3) EM	(4) All Sample	(5) DM	(6) EM
Canada	522	455	67	78	70	8
France	714	607	109	267	256	11
Germany	296	280	16	118	113	5
Ireland	1188	852	339	440	349	92
Japan	245	125	120	166	91	75
Luxembourg	3303	2366	944	1752	1327	425
Switzerland	270	222	49	181	173	8
United Kingdom	733	521	215	131	118	13
United States	2347	1764	589	474	311	163
Other	1409	827	583	399	286	114
Total	11005	7999	3029	4001	3091	912

Panel B: Number of Observations

	Equity Funds			Bond Funds		
	(1) All Sample	(2) DM	(3) EM	(4) All Sample	(5) DM	(6) EM
Canada	36028	29972	6056	4144	3767	377
France	47004	39530	7474	13647	13033	614
Germany	21715	20496	1219	5952	5639	313
Ireland	73366	48846	24520	26658	20735	5923
Japan	10374	5451	4923	7241	3968	3273
Luxembourg	235145	161760	73385	94549	69651	24898
Switzerland	18518	14610	3908	9250	9096	154
United Kingdom	57137	37372	19765	9302	8293	1009
United States	182008	132528	49480	32289	21478	10811
Other	86393	47499	38894	19700	13471	6229
Total	767688	538064	229624	222732	169131	53601

Note: This table shows the statistics for the domicile of the funds. Panel A reports the number of funds, and Panel B the number of observations in the sample for each domicile. Funds are divided into developed or emerging market funds. Other is a residual category indicating all other domiciles.

Table A6: Summary Statistics: Assets Under Management

Panel A: Equity Funds

	All Sample		Developed Markets		Emerging Markets	
	(1)	(2)	(3)	(4)	(5)	(6)
	ETF	Non-ETF	ETF	Non-ETF	ETF	Non-ETF
Mean	609.40	714.52	569.05	825.99	722.62	460.95
Standard Deviation	2782.76	3649.96	2475.34	4270.73	3501.88	1430.28
p10	12.91	20.00	13.41	23.14	11.72	15.56
p25	27.56	49.32	29.24	57.09	23.27	36.42
Median	86.78	151.16	90.40	171.55	76.68	112.37
p75	315.93	462.10	321.36	518.28	303.65	349.00
p90	1031.81	1296.78	1020.59	1458.55	1065.87	976.13
Number of Funds	1858	9150	1380	6621	479	2551
Observations	110435	658470	81422	457385	29013	201085

Panel B: Bond Funds

	All Sample		Developed Markets		Emerging Markets	
	(1)	(2)	(3)	(4)	(5)	(6)
	ETF	Non-ETF	ETF	Non-ETF	ETF	Non-ETF
Mean	489.09	784.45	457.45	878.80	694.65	504.17
Standard Deviation	1105.49	2356.44	1055.87	2655.26	1367.77	999.38
p10	13.67	28.71	13.60	33.70	14.30	20.25
p25	32.95	76.11	32.85	87.57	34.69	50.83
Median	123.22	221.78	125.90	248.70	105.40	156.59
p75	443.83	670.71	430.55	752.21	569.13	456.71
p90	1273.78	1736.33	1181.92	1877.18	2397.69	1262.66
Number of Funds	406	3595	353	2738	53	859
Observations	20573	202587	17829	151567	2744	51020

Note: This table reports the summary statistics for the assets under management (in millions USD) for the sample used in the main analysis for the all the sample, developed and emerging market funds. The sample is divided into ETF and non-ETF. Panel A shows statistics for equity funds and Panel B for bond funds.

Table A7: Developed Markets - Additional Tests

Developed Market Funds						
	Fund Flows over Initial Assets					
	(1) Equity	(2) Equity	(3) Equity	(4) Bond	(5) Bond	(6) Bond
Local Factor	0.017	0.026		0.179**	0.187**	
	(0.032)	(0.030)		(0.074)	(0.080)	
Global Factor	-1.112***	-0.968***		-1.315***	-1.208***	
	(0.172)	(0.145)		(0.319)	(0.312)	
Local Factor*ETF		-0.055	-0.028		-0.116	0.023
		(0.084)	(0.082)		(0.232)	(0.229)
Global Factor*ETF		-1.065**	-0.967**		-1.762**	-1.914**
		(0.496)	(0.473)		(0.884)	(0.813)
Fund Performance Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	No	Yes	No	No	Yes
Local Factor ETF		-0.029			0.071	
P-value		0.745			0.727	
Observations	818356	818356	818049	287285	287285	287074
N. of Funds	13107	13107	13107	5387	5387	5382
R^2	0.088	0.088	0.108	0.114	0.114	0.138

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for developed market funds. Coefficients were estimated using data that included domestic funds but excluded funds investing exclusively in Japanese, German, or U.S. government bonds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in the St. Louis Financial Stress Index. ETF is a dummy indicating whether a fund is an ETF or not. Fund Performance Controls indicates whether the regression includes three lags of the portfolio returns of the fund minus the average fund returns at the investment scope level. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. The estimations for bond funds do not have funds investing in government debt of safe heaven countries (Germany, Japan, United States). The estimations do not contain the heighten of the global financial crisis (August 2007, September and October 2008) and contain both domestic and international mutual funds. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.

Table A8: Lagged Performance Coefficients

With Lagged Performance Controls				
	Fund Flows over Initial Assets			
	(1) Equity	(2) Equity	(3) Bond	(4) Bond
Lagged (1) Fund Performance	11.941***	9.072***	-10.187***	19.799***
	(1.631)	(1.351)	(3.413)	(3.186)
Lagged (2) Fund Performance	7.729***	6.925***	-3.959	13.096***
	(1.048)	(0.951)	(3.344)	(3.472)
Lagged (3) Fund Performance	5.788***	5.158***	-1.975	11.361***
	(1.111)	(1.065)	(2.611)	(2.498)
Local Factor	0.187***		0.116	
	(0.045)		(0.123)	
Local Factor*ETF	-0.133	0.030	-0.352	-0.255
	(0.087)	(0.073)	(0.332)	(0.359)
Global Factor	-1.857***		-3.169***	
	(0.305)		(0.460)	
Global Factor*ETF	-2.733***	-2.256***	-3.948**	-3.030*
	(0.607)	(0.519)	(1.951)	(1.823)
Fund FE	Yes	Yes	Yes	Yes
Investment Scope-Time FE	No	Yes	No	Yes
Local Factor ETF	0.054		-0.236	
P-value	0.584		0.524	
Observations	210392	209696	50510	50029
N. of Funds	2908	2899	910	901
R^2	0.064	0.138	0.092	0.177

Note: This table reports the OLS coefficients from a regression of fund flows over initial assets on different explanatory variables and different sets of fixed effects for emerging market funds. Local Factor is the median monthly industrial production growth for the investment scope of each fund. Global Factor is the difference in logs of the variable indicated at the top of each column. ETF is a dummy indicating whether a fund is an ETF or not. Lagged (n) Fund Performance is the nth lag of the portfolio returns of the fund minus the average fund returns at the investment scope level. Local Factor ETF indicates the sum of the coefficients for Local Factors and Local Factors*ETF. P-value shows the significance test for Local Factor ETF = 0. Fund flows over initial assets are winsorized at the 1 and 99 percent level. Driscoll-Kraay robust standard errors in parenthesis. *** p< 0.01, ** p< 0.05, *p< 0.10.