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Regulated Funds, Emerging Markets, and Financial Stability

KEY FINDINGS

- » **Regulated fund holdings of emerging market stocks and bonds have grown significantly in the past decade.** This growth is part of a broader trend of investors seeking greater exposure to emerging markets, and these flows have supported strong growth in emerging economies. From 2010 to 2014, emerging market economies received cumulative gross portfolio capital flows of \$1.4 trillion. A small fraction of those inflows—less than \$200 billion—came from regulated funds.
- » **While regulated funds have contributed to the broad trend of portfolio capital flows to emerging economies over the past decade, they are unlikely to pose systemic risk to emerging markets.** New empirical results in this report suggest that there are three main reasons for this.
 - » **First, regulated fund holdings of emerging market securities remain a small portion of the total value of the stocks and bonds of emerging market countries.** In 2013, regulated funds held just 4.3 percent of outstanding debt and 8.5 percent of the stock market capitalisation of emerging market countries. Other market participants are the dominant investors in emerging market equity and fixed-income markets.
 - » **Second, while regulated funds represent a sizeable part of the foreign investor base in emerging market countries, they are a stable investor base.** Regulated funds are not the primary source of the variability of portfolio capital flows to emerging markets. As of 2013, regulated funds held more than half of the emerging market equities held by foreign investors and almost 30 percent of emerging market bonds held by foreign investors. But on average, regulated funds accounted for less than 15 percent of the variance of foreign portfolio capital flows to emerging markets from 2005 to 2013.
 - » **Third, regulated fund holdings are diversified across a wide number of emerging economies, which limits the effects of their portfolio transactions on any particular country.** Regulated fund holdings are spread across more than 85 different countries, and if there were investor outflows from US and European regulated funds, funds could accommodate them by selling a small amount of securities from a wide range of those countries.

New Empirical Results

- » **Monthly returns on emerging market securities are explained by factors other than funds' net purchases of emerging market stocks and bonds—most significantly by capital flows from other (non-fund) foreign investors.** For example, the returns on US Treasury securities and the S&P 500 index affect the returns on emerging market bonds and equities, respectively. More notably though, statistical analysis demonstrates that a broader measure of all foreign investor flows dominates net purchases by regulated funds. Thus, when this broader measure is included in the analysis, it shows that regulated funds' net purchases have no effect on monthly returns of emerging market securities. This suggests that regulators should focus on portfolio capital flows to emerging market countries from all foreign investors, rather than narrowly focusing on those from regulated funds.
- » **Regulated funds' net purchases of emerging market securities do not drive returns.** Weekly data show that while net purchases respond with a lag to returns on emerging market securities, those purchases do not have a persistent effect on future returns. In addition, weekly data demonstrate that the gradual and lagged response of net purchases to returns explains much of the monthly correlation between net purchases and returns.

Introduction

In the quarter century since the fall of the Berlin Wall, the global economy has become much more open. With this new openness, capital flows to emerging market economies have boomed. One of the reasons for this is investors' desire to diversify their portfolios away from shocks that primarily affect their home countries and to gain access to higher returns often seen abroad, especially in developing countries. Another reason is that capital markets in emerging economies have grown rapidly as emerging market governments and corporations have sought new sources of financing. From 2000 to 2013, emerging market economies received cumulative gross capital inflows of nearly \$10 trillion (Figure 1).¹ These inflows came from three sources: *foreign direct investment*, which occurs when a foreigner obtains a controlling interest in a business; *other investment inflows*, such as bank deposits; and *portfolio capital flows*, which arise from foreigners' net purchases of stocks, bonds, and other securities issued by entities in emerging market countries.

Of the roughly \$10 trillion of capital inflows into emerging market economies, \$1.7 trillion is attributable to this last source—portfolio capital flows. Even though portfolio capital flows make up only a small fraction of the total capital flows to emerging economies, observers have

raised some concerns about their impact on emerging economies. Portfolio capital flows are generally thought to be more variable than foreign direct investment because it is easier to sell equity and debt securities than a controlling interest in a company. Many observers have suggested that if portfolio capital inflows quickly turn to outflows, it could disrupt the financial markets and economy of an emerging country.

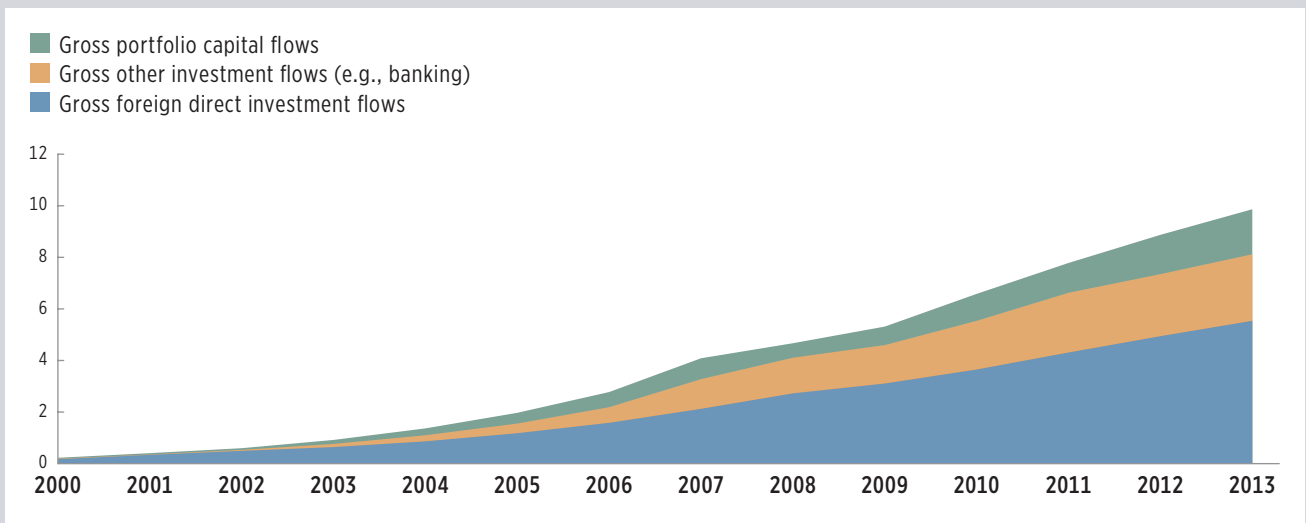
In particular, some economists have suggested that regulated funds²—which have contributed to the broad trend of portfolio capital flows to emerging economies—could prove to be a relatively unstable source of capital, perhaps even to the extent of posing systemic risks to emerging markets. They argue that in times of economic stress, regulated fund investors will generate heavy sales of fund shares, which could put downward pressure on securities prices and perhaps ultimately destabilise the financial market of an emerging economy.

Reflecting both portfolio capital flows and investment returns, foreigners' holdings of emerging market stocks and bonds have increased markedly since 2005. (Figure 2). In 2005, foreign investors held \$1.5 trillion in emerging market stocks and bonds. By 2013, these holdings had more than doubled to roughly \$3.5 trillion, and were almost evenly split between stocks and bonds.

FIGURE 1

Cumulative Gross Capital Inflows to Emerging Markets

Trillions of US dollars; yearly, 2000–2013

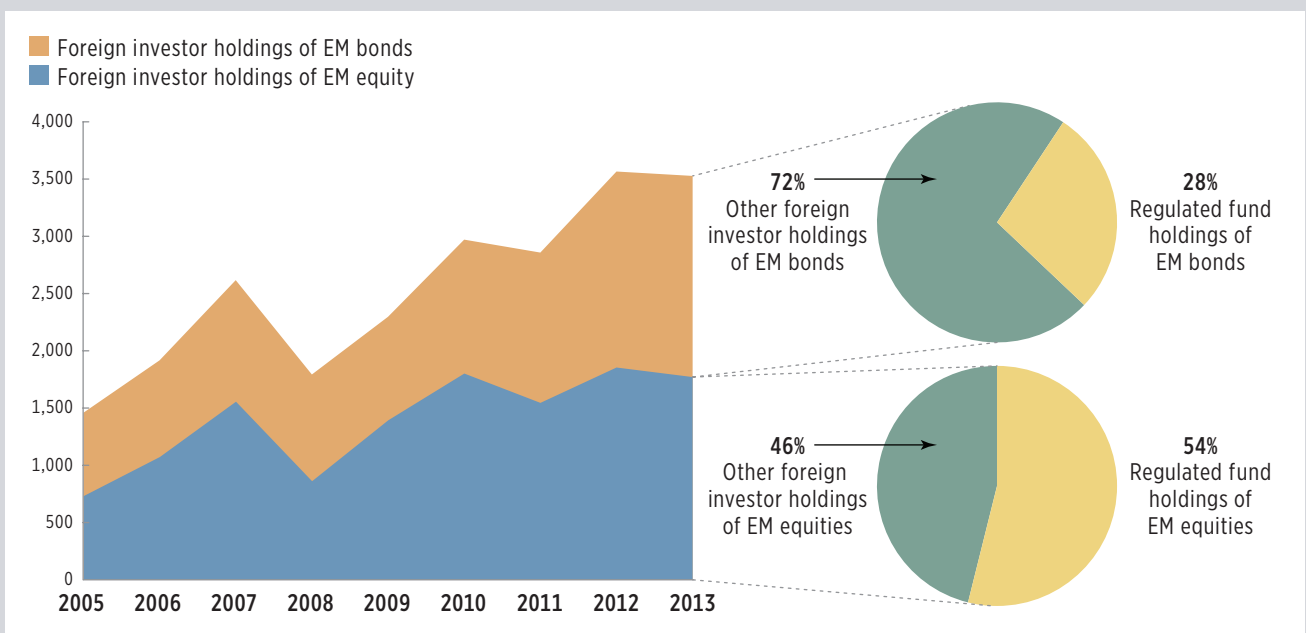


Source: International Monetary Fund *Global Financial Stability Report* (April 2014)

FIGURE 2

Foreign Investor Holdings of Emerging Market Equities and Bonds

Billions of US dollars; 2005–2013



Sources: International Monetary Fund and EPFR Global

Regulated funds accounted for a little more than half of the emerging market stocks held by foreigners and a bit more than one-fourth of the emerging market debt held by foreigners.

This report examines trends in regulated fund holdings of emerging market securities, and puts those trends in context to explain why regulated funds pose limited systemic issues for emerging economies. This report focuses primarily on regulated funds domiciled in either the United States or Europe, mainly because these funds hold the bulk of the worldwide assets of regulated funds and data for these funds are more complete and comprehensive than those available for most other regions.³

Overview of Analysis

The report begins by reviewing earlier research into the hypothesis that regulated funds might pose risks to the financial markets of emerging economies. This hypothesis was previously advanced in the mid- to late-1990s about emerging market equity funds (regulated funds that invest primarily in the stocks of emerging market companies). A range of academic studies found little if any evidence supporting the hypothesis.

In light of the financial crisis, regulators' concerns about systemic risk, and the increase in regulated fund holdings of emerging market stocks and bonds, observers are reexamining the issue.

This report examines more-recent studies surrounding this topic and explains that while questions about the role of regulated funds in emerging markets are understandable, suggestions that such funds are likely to disrupt the capital markets of emerging economies seem overstated for three main reasons. Regulated fund holdings of emerging market securities:

- » remain a small portion of the total value of the stocks and bonds of emerging market countries (page 9);
- » are relatively stable (page 14); and
- » are generally diversified across a wide number of emerging economies, which limits the effects of their portfolio transactions on any particular country (page 21).

This report finishes by addressing concerns that regulated funds could amplify changes in emerging market securities prices. By analysing both monthly and weekly data, this report demonstrates that returns on emerging market stocks and bonds are explained by factors other than funds' net purchases of emerging market stocks and bonds—the most significant being capital flows from other (non-fund) investors to emerging economies. This report shows that while funds' net purchases of emerging market securities respond to returns on emerging market securities, they do not have a persistent influence on future returns on those securities. Thus, when looking at the effects of regulated fund flows on the financial stability of emerging market economies, it is important that regulators consider all economic factors as well as the portfolio capital flows from all foreign investors, rather than narrowly focusing on regulated funds and their activities.

An Old but Unsubstantiated Hypothesis: Regulated Funds Disrupt Financial Markets in Emerging Economies

The notion that outflows from regulated funds might destabilise financial markets is an old one, dating back to the late 1920s (Collins and Plantier 2014). This hypothesis has resurfaced from time to time about both equity funds and bond funds. Each time, observers have argued that although regulated funds may not have previously destabilised financial markets, things have changed recently—most notably, assets in regulated funds have grown. Because of the growth, it is conjectured, regulated funds might disrupt markets in the *future*.

Pre-Financial Crisis Research

In the mid- to late-1990s, similar concerns arose surrounding the investments of US regulated funds in emerging market equities. Observers noted that assets in US-domiciled emerging market equity funds grew considerably in the 1990s. It was posited that those fund shareholders might redeem heavily following a decline in the stock markets of emerging economies. If so, those regulated funds might be forced to liquidate their holdings of emerging market equities, amplifying downward pressure on the stock markets of those countries (Folkerts-Landau et al. 1997).

A number of studies examined this theory. Generally speaking, the studies found little support for the hypothesised amplification, sometimes called a 'negative feedback,' from shareholder redemptions from regulated funds and stock prices in emerging market economies.

For instance, Rea (1996) studied flows to US emerging market equity funds from 1991 to early 1996. He found that shareholders in such funds did not redeem heavily during periods of weakness in emerging markets. In fact, these funds garnered investor inflows during some periods in which equity prices in emerging markets moved sharply lower. During other market downturns, such as the Mexican peso crisis in late 1994, outflows from emerging market equity funds were small and short-lived.

Post and Millar (1998) examined flows from emerging market equity funds during the Asian currency crisis of 1997. They showed that after Thailand floated the baht in early July 1997, returns on emerging market funds were significantly negative—about 13 percent in August 1997 and 16 percent in October 1997—but that emerging market funds experienced modest and gradual outflows, with peak outflows in December 1997 of 2.5 percent of the assets of these funds. They note that these outflows were unlikely to have had a significant effect on emerging stock markets as these funds accounted for only 1.2 percent of the stock market capitalisation of emerging equity markets in December 1996.

Borensztein and Gelos (2003) make a similar point, indicating that emerging market funds (based on a sample including emerging equity funds domiciled in the United States and elsewhere) held only about 3 percent of the stock market capitalisation in emerging Asia in the late 1990s. That share has risen since the late 1990s but remains small (see page 9).

Kaminsky et al. (2001) reach a different conclusion about the effects that flows to regulated funds can have on the financial markets of emerging economies. They argue that 'injections and redemptions [of such funds] are large relative to total funds [i.e., assets] under management.' For example, they report that redemptions from emerging market funds that invest in Latin America reached 25 percent of the assets of those funds in 2005:Q1 during the Mexican crisis. It is unclear how they arrived at this figure. ICI data indicate that net outflows from US-domiciled emerging market funds with a Latin American focus totaled just \$66 million in 2005:Q1, which was just 1.8 percent of their December 1994 assets.

In short, pre-financial crisis literature at best yields mixed evidence for the hypothesis that regulated funds somehow destabilise the securities markets of emerging economies.

Post-Financial Crisis Research

In the aftermath of the 2007–2008 global financial crisis, a number of commenters have again asked whether regulated funds might destabilise the financial markets of emerging economies. As in the past when the destabilising-fund-flow hypothesis has resurfaced, commentators and studies have cited the fact that regulated fund holdings of emerging market securities have grown substantially, in this case since 2009.

New studies have looked at the issue, focusing on the effect of flows from regulated funds to bond markets in emerging economies. For example, a recent paper by Miyajima and Shim (2014) from the Bank for International Settlements states, ‘The presence of asset managers in emerging market economies has grown considerably, and...may create one-sided markets and exacerbate price fluctuations.’ They claim to have found evidence that emerging market bond fund flows drive returns on emerging market bonds.

One of the most prominent postcrisis studies on this issue is Feroli et al. (2014). Based on a statistical analysis of aggregated weekly flows to US regulated bond funds, they argue that fund flows can amplify changes in market prices. In particular, their results seem to indicate that outflows from emerging market bond funds can amplify declines in emerging market bond prices, consistent with a view that regulated fund flows can destabilise financial markets. Their analysis, however, is highly sensitive to critical underlying assumptions. As Collins and Plantier (2014) show, if one makes plausible alternative assumptions, there is no statistical evidence that flows from US-domiciled emerging market bond funds are destabilising. In fact, Collins and Plantier (2014) find some evidence that regulated fund flows may in fact buffer shocks to emerging financial markets.

Feroli et al. (2014) and Miyajima and Shim (2014) are macro-level studies—that is, they examine data that is aggregated across regulated funds. Recent studies have used fund-by-fund data (micro-level data) to discern whether regulated funds could be disruptive, such as through *herding* (many investors trading in the same securities or same direction), *momentum trading* (buying winners and selling losers), or *contagion selling* (selling in markets where the fundamentals have not changed).

For instance, one micro-level study (Raddatz, Schmukler, and Williams 2014) argues that the increased popularity of index funds, combined with attempts by actively managed funds to outperform indexes, means that the securities trades of regulated funds are in some sense coordinated, potentially leading to ‘herding, information cascades, and aggregate or systemically important effects.’

A second micro-level study (Raddatz and Schmukler 2012) claims that regulated funds were not a stabilising force during the global financial crisis and instead, helped spread it across countries. They conclude that ‘capital flows from mutual funds do not seem to have a stabilising role and expose countries in their portfolios to foreign shocks.’

Gelos (2013), however, summarises the evidence in these and other micro-level studies on international and emerging market funds and concludes that ‘the behavior of international mutual funds is complex and overly simplistic characterisations are misleading.’

More recently, some researchers have looked at whether the patterns of investing in emerging market securities are the same for residents of emerging market countries (domestic investors) as for foreigners. For example, Adler, Djigbenou, and Sosa (2014) find that when foreigners pull back from emerging market stocks and bonds, which creates gross portfolio capital outflows, the effect is at least partly offset by domestic investors selling foreign assets and buying domestic stocks and bonds.

Although regulated fund holdings of emerging market stocks and bonds have increased notably in recent years, the evidence is mixed on whether this development poses a greater risk to emerging economies. Given the renewed interest in this topic, the remainder of this report offers new and additional evidence on the issue.

Regulated Fund Holdings of Emerging Market Securities

A range of regulated funds invest in securities issued by emerging market entities. This section sizes regulated fund holdings of emerging market securities.

The primary objective of certain regulated funds is to invest in the stocks and/or bonds of emerging markets. These funds are generally referred to as *emerging market funds* or *emerging market equity and bond funds*. Emerging market funds that primarily invest in stocks are typically denoted as emerging market equity funds, while emerging market funds that primarily invest in emerging market bonds are commonly referred to as emerging market bond funds.

Other regulated funds also invest in emerging market securities. For instance, funds that have a global or international focus may invest in the securities of both developed and developing countries. Even funds that have a more domestic market focus, such as a bond fund whose prospectus states that it will primarily invest in US fixed-income securities, may have some exposure to emerging market securities. Other funds, such as asset allocation funds, target date funds, and target risk funds, may all invest in emerging market securities to some degree.

Irrespective of their primary investment objectives, funds that invest in emerging market securities may be mutual funds or ETFs (as in the United States), UCITS (European regulated funds), or similarly regulated funds in any region. Closed-end funds also may invest in emerging market securities, but are not considered in this report.

US and European Regulated Fund Holdings of Emerging Market Securities

For many years, economists (e.g., Rowland and Tesar 2004) and financial advisers (e.g., Philips 2014) argued that households in many countries were overinvesting in the stocks and bonds issued by entities (corporations and governments) in their home countries, a tendency known

as ‘home bias.’ They also argued that by tilting their portfolios somewhat toward foreign securities, investors could diversify away from shocks that primarily affect their home countries and gain access to higher returns often seen abroad, especially in developing countries.

Investors and portfolio managers have accepted this message. Regulated fund holdings of assets in emerging market economies have grown substantially in the last decade. The growth, which reflects both net purchases of emerging market stocks and bonds and returns on investments, occurred fairly steadily. Primarily due to returns, there was a significant decline and sharp bounce back associated with the 2007–2008 global financial crisis.

Assets in Emerging Market Equities

For example, regulated fund assets that were invested in the stocks of companies headquartered in emerging market economies (emerging market equities) grew from a little more than \$200 billion in 2005 to almost \$1.4 trillion by the end of 2014 (Figure 3).⁴ At that point, 47 percent of regulated fund holdings of emerging market equities were held by US-domiciled funds. The lion’s share of the remainder was held by European-domiciled funds (36 percent) and the balance (17 percent) was held by funds domiciled elsewhere in the world, primarily in Canada and Japan.

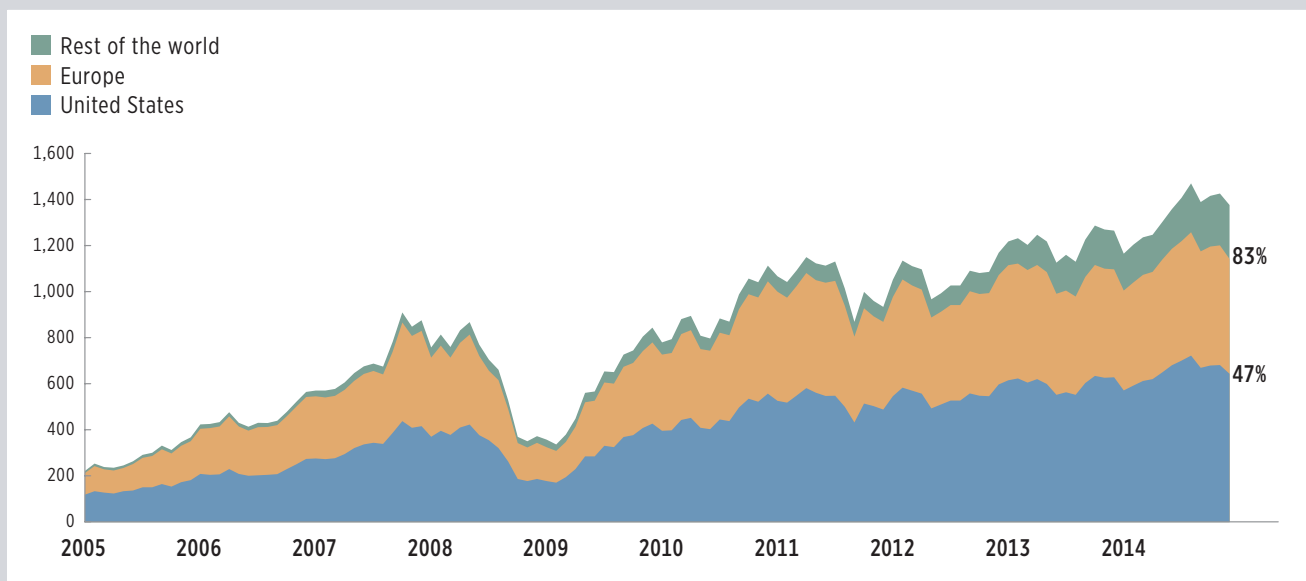
Assets in Emerging Market Bonds

Similar patterns are evident with respect to regulated fund holdings of fixed-income securities issued by entities domiciled in developing economies (emerging market bonds). These grew from \$32 billion in January 2005 to \$526 billion by December 2014 (Figure 4). In this case, however, European-domiciled funds held the majority of the assets, 54 percent (\$285 billion), compared to only 26 percent (\$134 billion) for US-domiciled funds. Regulated funds domiciled elsewhere in the world held the remaining 20 percent, which amounted to \$106 billion.⁵

FIGURE 3

Assets Invested in Emerging Market Equities by Domicile of Regulated Funds

Billions of US dollars; month-end, 2005–2014



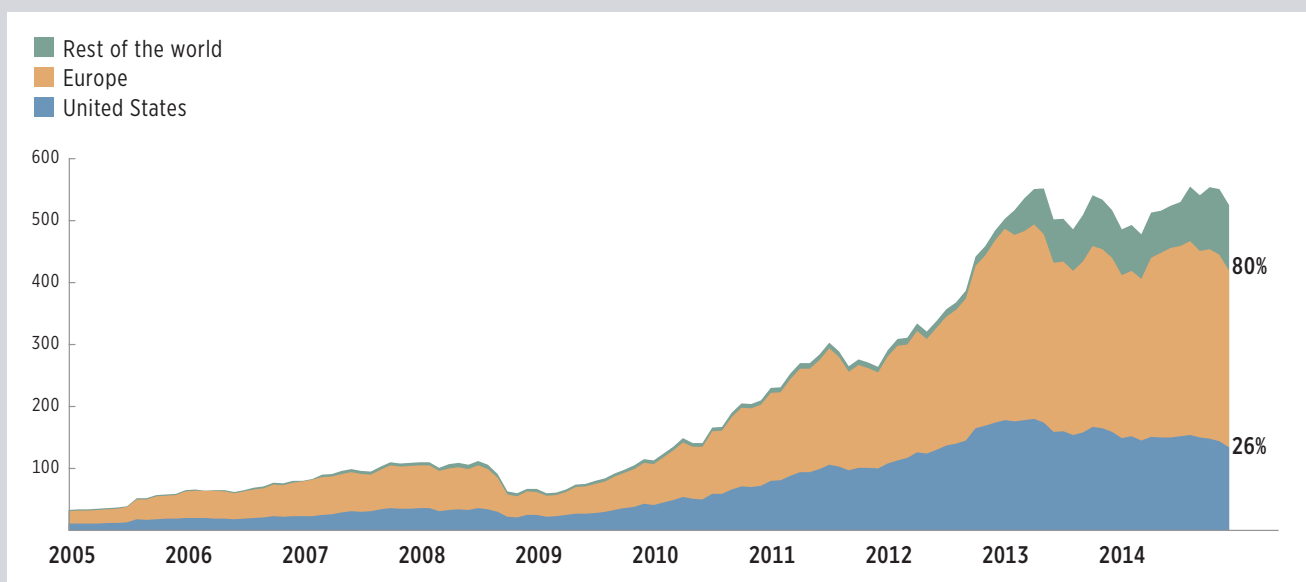
Note: This figure classifies countries as emerging based on EPFR Global's country classification.

Source: EPFR Global

FIGURE 4

Assets Invested in Emerging Market Bonds by Domicile of Regulated Funds

Billions of US dollars; month-end, 2005–2014



Note: This figure classifies countries as emerging based on EPFR Global's country classification.

Source: EPFR Global

The Relative Size of Regulated Fund Holdings in Emerging Markets

The increased participation of regulated funds in the capital markets of emerging economies is likely benign in relation to systemic risk. One reason is that regulated funds' *share* of the total value of stock and bonds of emerging market countries remains relatively small.

Rising, but Still Small Relative to Emerging Market Capital Markets

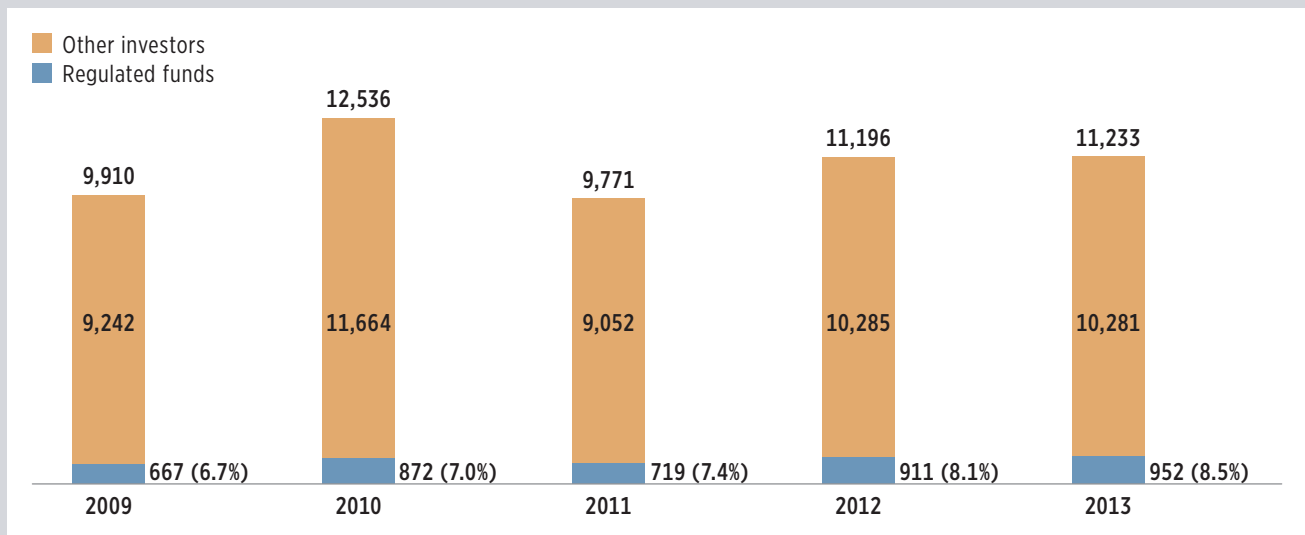
Although regulated funds now hold more assets in emerging market securities than they did a decade ago, it is the scale of those holdings relative to the overall size of the financial markets in those economies that is most relevant.

Figure 5 shows regulated fund holdings of emerging market equities across the globe relative to the total market capitalisation of the stock markets of emerging economies. These holdings rose from \$667 billion in 2009 to \$952 billion in 2013, an increase of 43 percent. Viewed in isolation, these increases might seem large, even strikingly so. But the stock market capitalisation of emerging market economies is much larger and also has been growing. For example, emerging market stock market capitalisation totaled \$9.9 trillion in 2009,⁶ and was \$11.2 trillion by 2013. Thus, in 2013, regulated funds held just 8.5 percent of the stock market capitalisation of emerging market countries. Moreover, regulated funds' share rose only a bit from 2009 to 2013.

FIGURE 5

Regulated Funds' Share of Total Emerging Market Stock Market Capitalisation

Billions of US dollars (percentage of total); year-end, 2009–2013



Note: This figure classifies countries as emerging based on the IMF's country classification. Components may not add to the total because of rounding.

Sources: EPFR Global and International Monetary Fund (IMF)

These characteristics are even more apparent for regulated fund holdings of emerging market bonds. From 2009 to 2013, regulated fund holdings of emerging market bonds increased from \$108 billion to \$484 billion, a jump of nearly 350 percent (Figure 6). As with funds' holdings of emerging market equity, although this increase seems large, it is unclear how large an influence it would have on the financial markets of emerging economies. Emerging market debt outstanding is large and growing. According to the International Monetary Fund (IMF), emerging market debt outstanding totaled \$7.6 trillion in 2009 and rose to \$11.2 trillion by 2013. As a result, in 2013, regulated funds held just 4.3 percent of the total emerging market debt outstanding, up from 1.4 percent in 2009.⁷

Figures 5 and 6 could, however, understate the relative size of regulated fund holdings in financial markets of emerging economies. For legal or institutional reasons, a large portion of the stocks and bonds issued by emerging market entities often do not trade in financial markets or simply cannot be purchased by foreigners. Thus, it

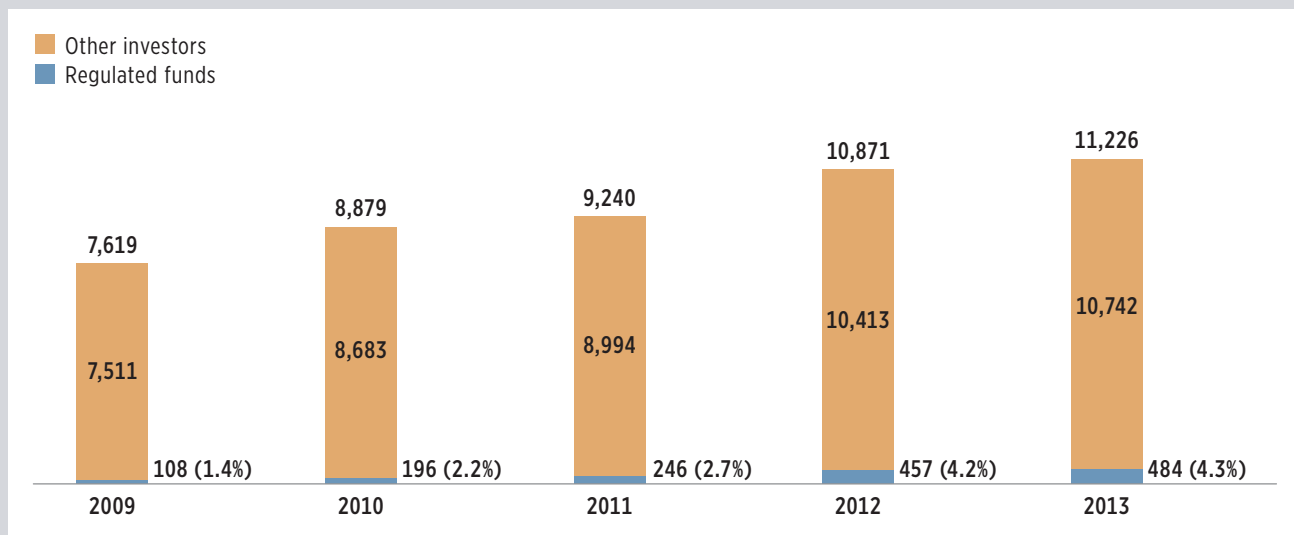
is worth considering scaling the size of regulated fund holdings by the value of the securities that foreigners can actually trade, a concept called 'free float.' For example, one estimate places the free float of emerging market debt at \$2.8 trillion as of 2013, much lower than the \$11.2 trillion in total emerging market debt outstanding.⁸ Even on this basis, regulated funds still hold a small share of outstanding emerging market debt—just 17 percent at year-end 2013.

To summarise, regulated fund holdings of securities issued by emerging market entities have increased substantially in recent years. This, however, was from a very small base, making percent increases look elevated. Overall, regulated funds continue to hold only a small share of the value of capital markets in emerging economies. Other market participants—including banks, other institutional investors in emerging market countries, and domestic investors—remain the overwhelmingly dominant investors in emerging market equity and fixed-income markets.

FIGURE 6

Regulated Funds' Share of Total Emerging Market Bonds Outstanding

Billions of US dollars (percentage of total); year-end, 2009–2013



Note: This figure classifies countries as emerging based on the IMF's country classification. Components may not add to the total because of rounding.

Sources: EPFR Global and International Monetary Fund (IMF)

Regulated Funds' Purchases of Emerging Market Securities Are Not Necessarily Cross-Border

Portfolio capital flows to emerging markets provide benefits in terms of lowering the costs of financing for businesses and governments. But they can also add to pressures in financial markets, contributing to interest rate and exchange rate variability in emerging market countries.

For these reasons, government agencies and international financial institutions (IFIs)—such as the IMF and the Bank for International Settlements—track cross-border portfolio capital flows. By definition, portfolio capital flows arise if there is a transfer of capital across an international border, in particular when a foreign investor purchases a financial asset from or sells a financial asset to a domestic investor. In tracking statistics on portfolio capital flows, government agencies and IFIs do not attempt to identify the portion of the capital flows arising from regulated funds.

Corporations and governments of emerging market countries often issue equity or debt in markets outside their home countries. One reason they do this is to access the deeper and more liquid markets in advanced economies. Emerging market corporations and governments may also issue bonds denominated in 'hard currencies,' such as the US dollar, euro, and other major developed country currencies, partly because interest costs can be lower on bonds issued in hard currencies and because foreign investors may be more apt to purchase emerging market debt if they can avoid exchange rate risk. Finally, corporations may issue securities outside their home countries to either support their international operations or avoid capital controls of one form or another.

These aspects create challenges for analysts because regulated funds' purchases and sales of emerging market securities may or may not result in cross-border capital flows. Perhaps most obviously, a regulated fund can simply purchase an existing emerging market stock or bond from a resident of a developed country.

Regulated funds often gain exposure to emerging markets through purchases of American Depository Receipts (ADRs), international debt securities or bonds, and other instruments that trade outside the domestic financial markets of emerging market economies.⁹ For example, US-domiciled equity funds largely gain exposure to Chinese stocks through ADRs, which trade on US stock exchanges, and H-shares, which trade on the Hong Kong Stock Exchange (Figure 7),¹⁰ rather than through stocks traded in China (which are known as A-shares). If a regulated fund purchases an ADR or H-share from a resident outside China, the fund in effect gains exposure to Chinese entities without creating a portfolio capital flow.

FIGURE 7

US Regulated Funds Gain Exposure to Chinese Equity Largely Through ADRs and H-Shares

Billions of US dollars; 31 December 2013

Share type	US regulated fund holdings of equity issued by Chinese companies
ADRs (e.g., traded on NYSE, NASDAQ)	\$28.2
H-shares (e.g., traded on Hong Kong SE)	56.0
Unclassified	49.6
Total	133.8

Total market capitalisation of ADRs as of 30 September 2014: \$2.7 trillion US dollars

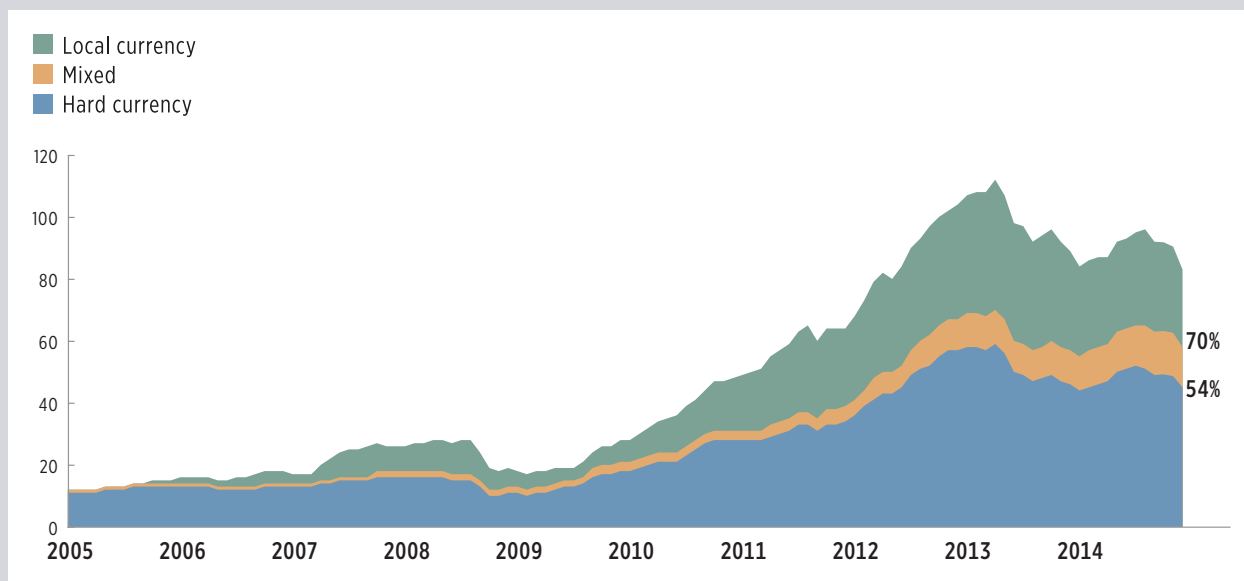
Source: Investment Company Institute tabulations of Morningstar and Bloomberg data

A related issue is what happens when an emerging market fund purchases an emerging market bond that is denominated in a hard currency. Many emerging market bond funds own what are called hard-currency emerging market bond funds (Figure 8). Local-currency bond funds have gained in popularity over time and now manage about 30 percent of emerging market bond fund assets. This preference for hard-currency debt means that these funds may very well purchase outstanding debt securities from another foreign investor, since foreign investors are very active in international hard-currency bonds.

FIGURE 8

Assets of US Emerging Market Bond Funds by Currency Type

Billions of US dollars; month-end, 2005–2014



Note: This figure classifies countries as emerging based on EPFR Global's country specification.

Source: EPFR Global

The growth of ADRs and the issuance of offshore equity and debt complicates efforts to gauge the potential influence of regulated funds on emerging markets. Official statistics are insufficient to determine whether a regulated fund's purchases and sales of emerging market securities are cross-border. Consequently, most analyses, including the analysis in this report, simply assume that when a regulated fund purchases or sells an emerging market security, that creates a cross-border capital flow. This approach would overstate the portfolio capital flow arising from a regulated fund to the extent that it buys or sells emerging market securities from other investors who do not live in an emerging market country.

In fact, portfolio capital flows to emerging markets may be driven more by new issuance of debt and equity than regulated funds' purchases and sales of emerging market securities. Certainly, much of the new issuance of emerging market stocks and bonds appears to be absorbed by investors other than regulated funds. For example, Shin (2014) reports that emerging market corporate bond issuance has grown tremendously since the global financial crisis. Since June 2013, US and European regulated funds have not increased their holdings of emerging market bonds, and net fund purchases of emerging market bonds from 2010 to 2014 totaled just \$134 billion. This indicates that investors other than regulated funds must have been absorbing the vast majority of new emerging market bond issuance since the financial crisis.

Regulated Funds Typically Constitute a Minority of Foreigners' Holdings of Emerging Market Stocks and Bonds

Domestic investors, such as banks, institutional investors, and retail investors, provide the vast majority of capital to emerging market economies and play a key role in financial stability. Yet theoretically, regulated funds could still have an outsized influence on capital markets in emerging economies if they constitute a sizeable fraction of the emerging market stocks and bonds held by investors *outside* of emerging market countries.

For instance, suppose that the total bonds outstanding in a given emerging market country (country X) is \$100 billion. Fifty billion is held by residents of that country and the remaining \$50 billion is held by foreigners. Suppose also that regulated funds hold \$40 billion of the \$50 billion held by foreigners. It is possible that the \$40 billion could have an outsized influence on the bond market of country X, if the residents of country X trade their bonds very little. This might be the case if, say, that debt were held by defined benefit pension (DB) plans that seek to hold a fixed proportion of

their portfolios in country X's bonds. In that case, because regulated funds could be the most active traders in the bonds of country X, their actions might have an outsized effect on that country's bond prices, and thus, interest rates.

Regulated funds account for a substantial fraction of the foreign portfolio investment—foreign holdings of emerging market stocks and bonds—in a number of emerging market countries. Generally, however, regulated funds do not account for the *majority* of that investment. Figure 9 tabulates estimated regulated fund holdings of emerging market stocks and bonds as a percentage of all foreigners' holdings for 11 emerging market countries as of 2012. The median was just 30 percent.¹¹

Thus, regulated funds hold a sizeable fraction of the emerging market country equities and bonds held by all foreign investors, but generally not the majority. The majority is held by other foreign investors, such as banks, DB pension plans, insurance companies, sovereign wealth funds, hedge funds, and individual investors with direct holdings.

FIGURE 9

Regulated Fund Holdings Account for a Minority of Foreign Portfolio Holdings in Many Emerging Markets

Country	Regulated fund share of foreign portfolio holdings Percent, year-end 2012
Brazil	29
Chile	30
China	82
India	56
Korea	25
Mexico	30
Poland	26
Russia	47
South Africa	39
Thailand	34
Turkey	29
Median	30

Source: Investment Company Institute tabulations of EPFR Global and International Monetary Fund (IMF) International Investment Position data (June 2014)

Regulated Funds Account for a Small Portion of Cumulative Flows of Foreign Investment in Emerging Market Countries

Yet another way to gauge whether regulated funds might have a sizeable influence on financial markets in emerging market countries is to examine investment flows, as opposed to levels of holdings.

Figure 10 shows cumulative flows of new capital by foreigners to emerging market countries from 2010 to 2014.¹² The top panel shows investment flows to emerging market equities and the bottom panel shows flows to emerging market bonds. According to the IMF, from the first quarter of 2010 to the fourth quarter of 2014, all foreign investors cumulatively purchased, on net, \$400 billion in emerging market equity and more than \$1 trillion in emerging market bonds. Of that, regulated funds' cumulative purchases, on net, totaled \$60 billion in emerging market equity and \$134 billion in emerging market bonds.

In short, during the past five years, regulated funds have accounted for less than 15 percent of the \$1.4 trillion of new foreign portfolio capital flowing to emerging economies. The balance of new foreign portfolio investment—more than 85 percent—has come from other financial market participants.

The Relative Stability of Regulated Fund Flows to Emerging Market Countries

Although regulated funds do not account for the majority of the emerging market stocks and bonds held by foreigners, authorities may be more concerned about the *stability* of regulated fund holdings of foreign capital.

Consequently, this section analyses the variability of portfolio capital flows from regulated funds to emerging economies. As it turns out, portfolio capital flows from regulated funds to emerging markets are *less* variable than those attributable to other investors. In addition, portfolio capital flows from regulated funds in some cases actually *offset*, rather than add to, the portfolio capital flows from other investors. Thus, if anything, regulated funds create a more stable base of capital investment for emerging market countries.

Funds Are a Relatively Stable Source of Foreign Investment in Emerging Market Countries

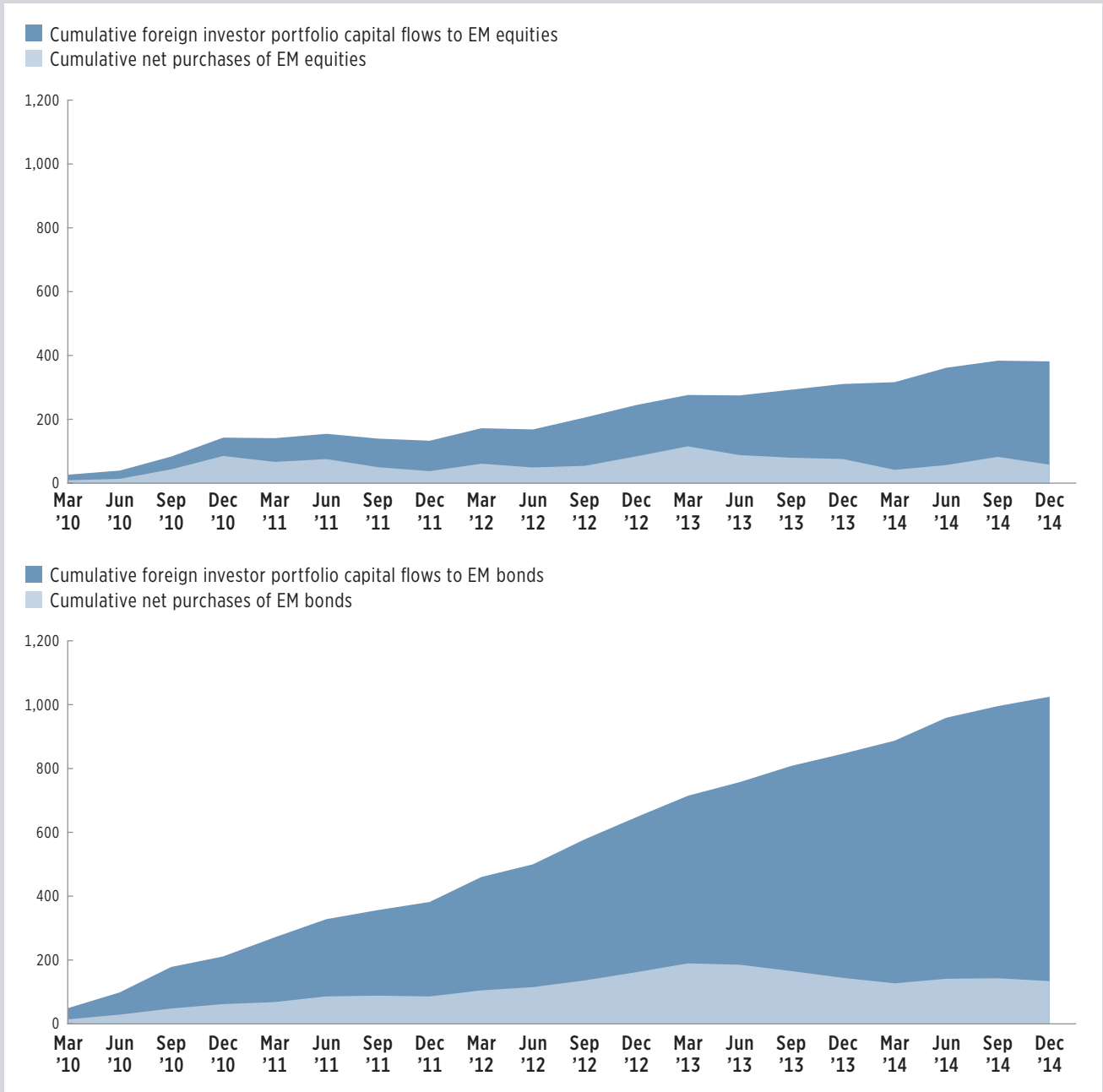
Figure 11 examines the variability of portfolio flows to the same 11 emerging market countries considered in Figure 9. The first column in the table presents a measure (standard deviation) of the total variability of portfolio capital flows to these countries, based on quarterly data. The measure shows, for instance, that roughly two-thirds of the time, quarterly portfolio capital flows to Brazil will be within \pm \$8.4 billion. The average across the 11 countries is \pm \$5.2 billion.

It is possible to separate the quarterly variability in portfolio capital flows into proportions arising from regulated funds, other investors, and a residual that captures the co-movement between the portfolio capital flows attributable to regulated funds and other investors.¹³ This is shown in the three remaining columns in the table. By definition, the sum of the three columns is 100 percent.

FIGURE 10

Cumulative Net Purchases of Emerging Market Securities Are a Small Share of Total Foreign Investor Portfolio Capital Flows to Emerging Markets

Billions of dollars; quarterly, March 2010–December 2014*



* Data for September 2014 and December 2014 are estimated.
Sources: Institute of International Finance and EPFR Global

FIGURE 11

Net Purchases of Emerging Market Securities Are Not the Primary Source of Variability of Portfolio Capital Flows

Quarterly data, 2005:Q1–2013:Q4

	Volatility measure:	Percentage of variance in net foreign portfolio capital flows due to:		
	Standard deviation of net foreign portfolio capital flows	Regulated funds	Other foreign portfolio investors	Residual ¹
	<i>Billions of US dollars</i>			
	(1)	(2)	(3)	(4)
Brazil	8.4	25.2	73.1	1.6
Chile	1.6	4.1	100.0	-4.1
China ²	7.8	48.4	48.2	3.3
India ²	5.6	10.8	64.8	24.5
Korea	8.2	7.6	74.7	17.7
Mexico	7.7	5.4	89.4	5.2
Poland	3.6	4.5	74.9	20.7
Russia	5.4	21.9	72.5	5.6
South Africa	3.0	10.8	91.9	-2.7
Thailand	2.2	13.2	66.1	20.7
Turkey	4.3	4.7	82.0	13.3
Simple average	5.2	14.2	76.2	9.6

¹ 'Residual' is due to the correlation between net purchases and portfolio capital flows from other foreign investors.

² In the IMF database, China's balance-of-payments data are only available from 2010:Q1 to 2012:Q4 and India's balance-of-payments data on debt flows are only available from 2009:Q2 to 2013:Q1.

Source: Investment Company Institute tabulations of EPFR Global and International Monetary Fund (IMF) balance-of-payments data (June 2014)

The analysis strongly suggests that regulated funds are not the primary source of the variability of portfolio capital flows to emerging markets. On average, less than 15 percent of the variance of foreign portfolio capital flows is attributable to regulated funds. By contrast, more than 75 percent is directly attributable to other foreign investors.¹⁴

Moreover, for each of the 11 countries, regulated funds are responsible for less than half—and in most cases, far less than half—of the variability of portfolio capital flows. In the case of Mexico, for instance, regulated funds account for just 5.4 percent of the variability in portfolio capital flows to that country from 2005:Q1 to 2013:Q4; other investors account for the vast majority of the variation (89.4 percent).¹⁵

In addition, regulated funds' contribution to the variability of portfolio capital flows is generally smaller than their contribution to total foreign portfolio holdings. For example, Figure 9 shows that regulated funds hold 39 percent of South African stocks and bonds held by foreigners. However, Figure 11 shows that they account for only 10.8 percent of the variability of portfolio capital flows to South Africa. As another example, regulated funds hold 30 percent of Mexican stocks and bonds held by foreigners, but account for only 5.4 percent of the variability of portfolio capital flows to Mexico. Indeed, the numbers in column (2) of Figure 11 are always less than their counterparts in Figure 9, indicating that with respect to the variability of portfolio capital flows to emerging economies, regulated funds 'punch under their weight.'

In fact, the analysis in Figure 11 highlights a feature of portfolio capital flows from regulated fund flows that is often overlooked: they may help *dampen*, rather than exacerbate, variability in stock or bond prices in emerging market economies. For two of the countries, Chile and South Africa, capital flows due to regulated funds tend to move inversely to capital flows arising from other investors, which is what a negative 'residual' in column (4) means. Thus, if other investors reduce their net holdings of Chilean and South African securities, that could put downward pressure on stock and bond prices in those countries. Yet, according to recent data, in those instances regulated funds were, if anything, likely to have been making net purchases of Chilean and South African securities, buffering any downside pressure arising from sales of portfolio securities by other investors.

A striking example of this phenomenon is Brazil's experience during the so-called Taper Tantrum in the summer of 2013, a period when US long-term interest rates rose sharply on market expectations that the US Federal Reserve would soon begin scaling back its programme of large-scale asset purchases and perhaps begin raising short-term interest rates (see page 18).

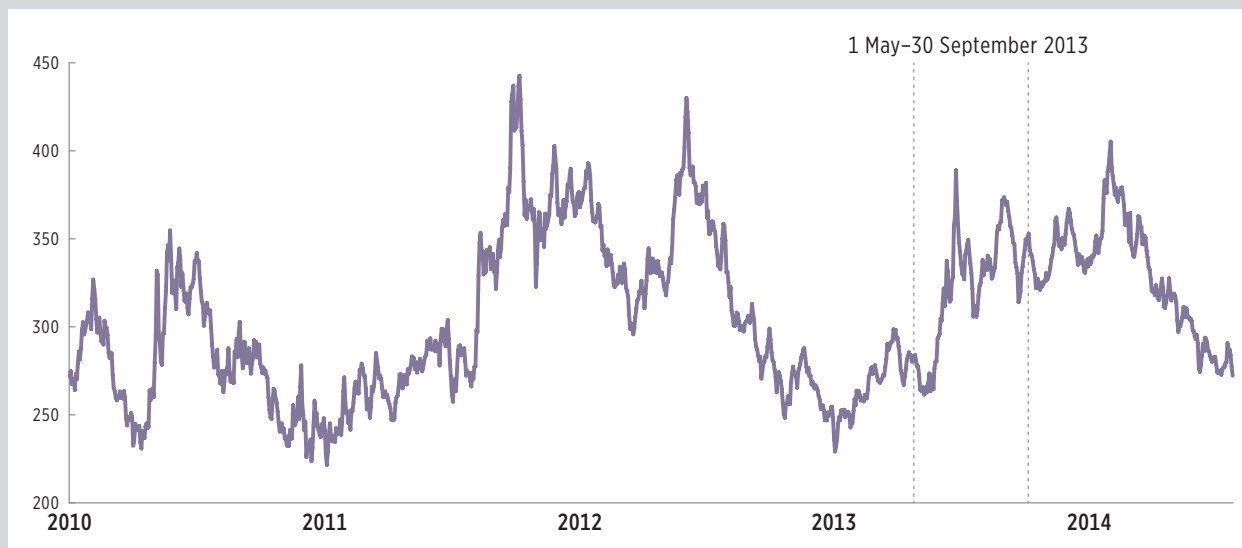
A Case Study in Portfolio Capital Flows from Regulated Funds: Brazil

In May and June 2013, US long-term interest rates spiked on expectations that the Federal Reserve would soon begin to reduce its large-scale purchases of bonds and perhaps begin to raise short-term interest rates. In tandem, yields rose on emerging market debt relative to yields on US Treasuries (Figure 12).

FIGURE 12

Yield Spread on Dollar-Denominated Emerging Market Sovereign Debt over Treasuries

Basis points; daily, 4 January 2000–24 July 2014



Source: Bloomberg

Concerns arose that these developments could create unhelpful pressures in the financial markets of emerging economies, particularly among those with large current account deficits. Private-sector analysts highlighted the so-called Fragile Five—Brazil, India, Indonesia, South Africa, and Turkey—as being especially vulnerable. In light of their large current account deficits, analysts were concerned that portfolio capital outflows could put upward pressure on interest rates in those countries and downward pressure on their exchange rates. Some commentators noted that emerging market funds were experiencing outflows over this period, apparently assuming that these outflows were creating the downward pressure on exchange rates and assets prices in emerging markets.

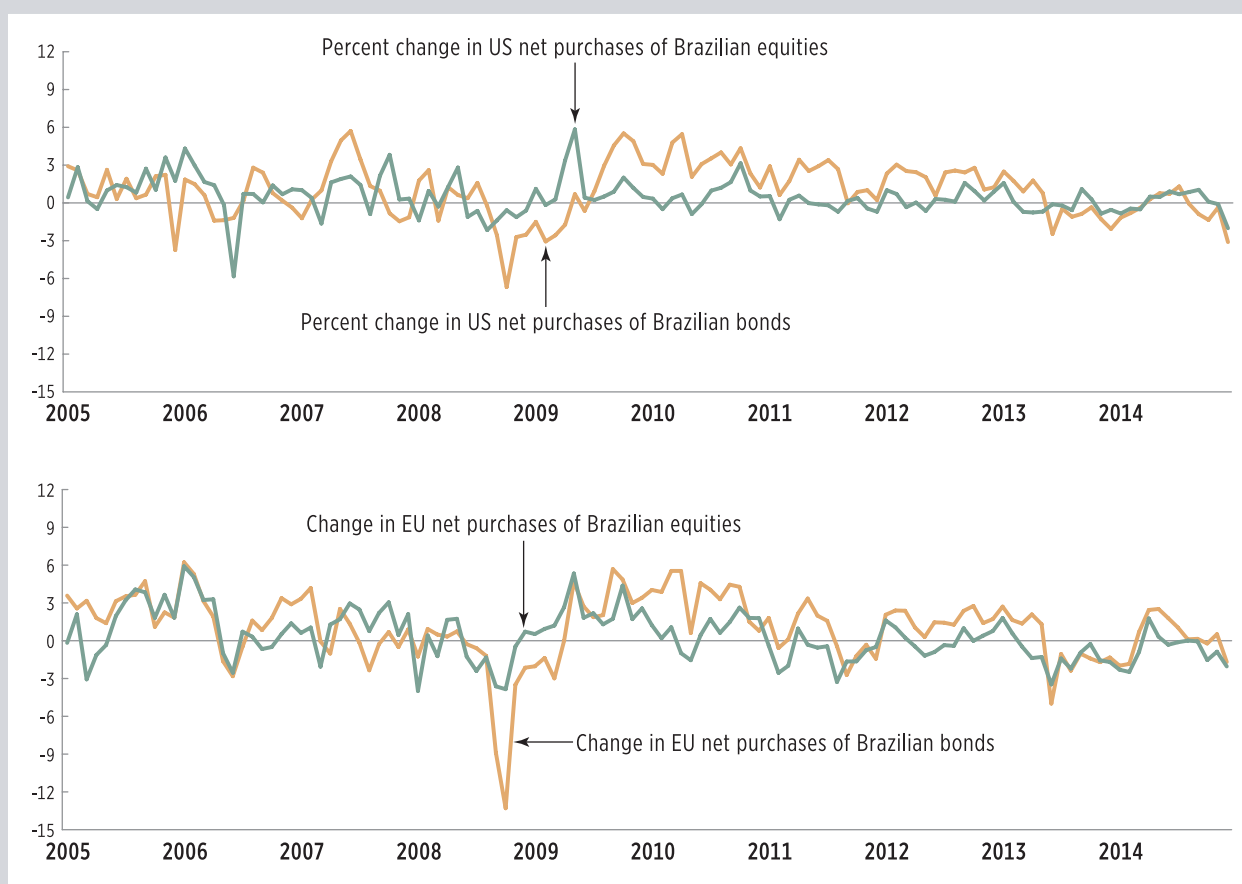
Brazil's experience, however, is edifying. During this period, regulated funds reduced their holdings of Brazilian debt and equity. It is unclear what effect, if any, this had on Brazilian financial markets.

One reason is that the reduction in regulated fund holdings of Brazilian financial market securities was relatively small compared to funds' holdings of Brazilian securities. Of the Fragile Five, Brazil experienced the largest estimated dollar reduction in regulated fund holdings of their bonds from June to December 2013—a \$5.3 billion cumulative outflow.¹⁶ Figure 13 shows, however, that this reduction was small compared to regulated fund holdings of Brazilian bonds and equity. For example, the estimated reduction in US-domiciled bond fund holdings of Brazilian debt never exceeded 2.5 percent of their assets in any month from June to December 2013, and averaged 1.2 percent over this period. EU-domiciled bond funds reduced their estimated holdings by somewhat more, on average 2 percent per month over this same period, but the overall decline was not especially sharp or large.

FIGURE 13

Changes in Regulated Net Purchases of Brazilian Securities

Net purchases as a percentage of previous period holdings; monthly, 2005–2014



Source: EPFR Global

Brazilian policymakers took preemptive and aggressive policy actions to mitigate any potential effect that rising US long-term interest rates might have had on Brazilian financial markets. From late May 2013 to late November 2013, the central bank of Brazil raised its policy interest rate from 7.5 percent to 10 percent.¹⁷ In addition, in early June 2013, the Brazilian government eliminated a 6 percent tax on foreigners' purchases of Brazilian government bonds that had previously been instituted to limit 'excessive capital flows.'¹⁸ Reflecting these changes, balance of payments data indicate that from June to December 2013, foreigners, on net, *purchased* \$18 billion of Brazilian bonds.¹⁹

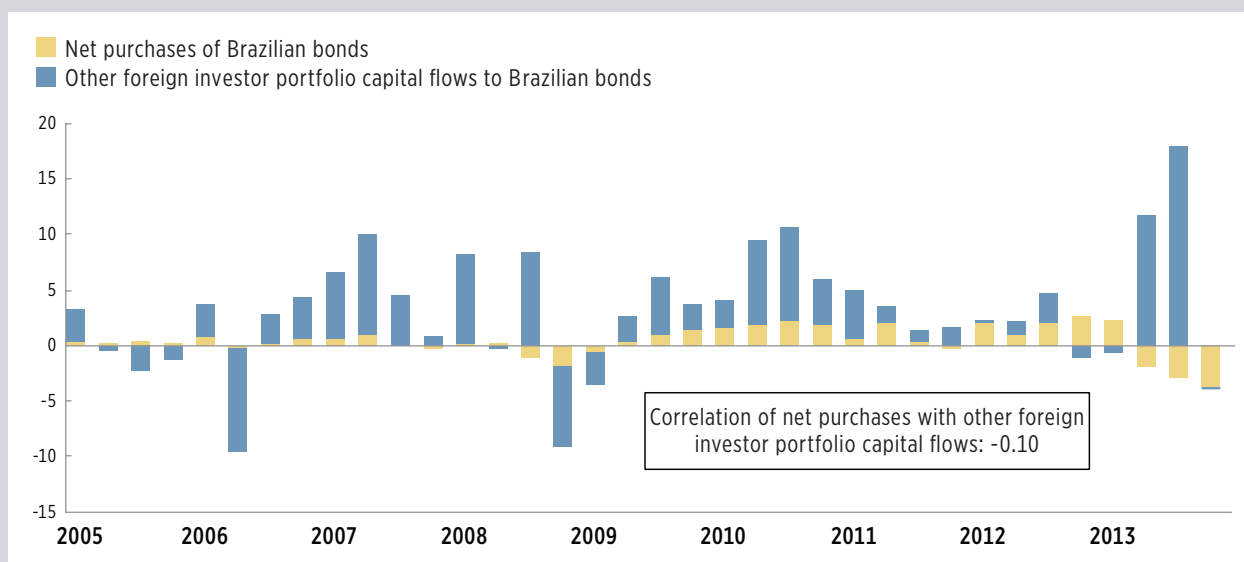
Arguably, in Brazil's case, the actions of regulated funds during the Taper Tantrum were not the determining factor in whether Brazil received portfolio inflows or outflows. Figure 14 illustrates this point. The figure plots the estimated change in regulated fund holdings of Brazilian bonds versus net purchases of Brazilian debt from other foreign investors from 2005 to 2013. Net purchases arising from other foreign investors account for most of the variability in foreign capital flowing to Brazil's bond market, and these flows do not always move in the same direction. More to the point, however, net purchases of Brazilian debt attributable to regulated funds and other foreign investors were inversely related in 2013. Thus, although regulated funds were reducing their holdings of Brazilian debt during the Taper Tantrum period, the reduction was more than offset by increased purchases by other investors.

Brazil's experience highlights the more general point that, from a public policy perspective, when it comes to portfolio capital flows, it is important to monitor portfolio capital flows arising from all foreigners, not just those of regulated funds in isolation.

FIGURE 14

Net Purchases of Brazilian Bonds Versus Brazilian Bond Portfolio Capital Flows from Other Investors

Billions of US dollars; quarterly, 2005–2013



Sources: EPFR Global and International Monetary Fund (IMF)

Regulated Fund Holdings of Emerging Market Securities Are Diffuse

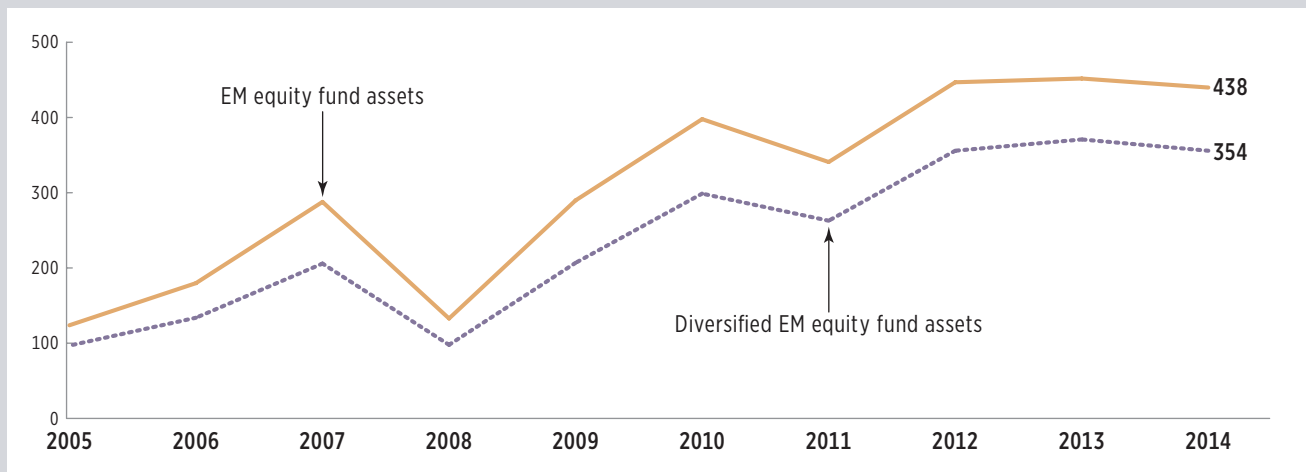
Households typically purchase regulated funds with the expectation that funds' holdings are diversified. Perhaps not surprisingly, emerging market funds,²⁰ especially those domiciled in the United States, tend to diversify their portfolios across a wide range of emerging market countries, rather than allocating their assets to just a few countries.

For example, as of December 2014, assets in US emerging market equity funds totaled \$438 billion. Of that, 81 percent was in funds classified as global emerging market equity funds, funds that seek to diversify their portfolios across a wide array of countries (Figure 15). At that same time, assets in US emerging market bond funds totaled \$83 billion, and essentially all of that (\$82 billion) was in global emerging market bond funds (Figure 16). Thus, broadly speaking, US-domiciled emerging market equity and bond funds tend to diversify their holdings across many countries, rather than concentrating them in a few.

FIGURE 15

Most US-Domiciled Emerging Market Equity Funds Are Diversified Across Emerging Markets

Billions of US dollars; year-end, 2005–2014

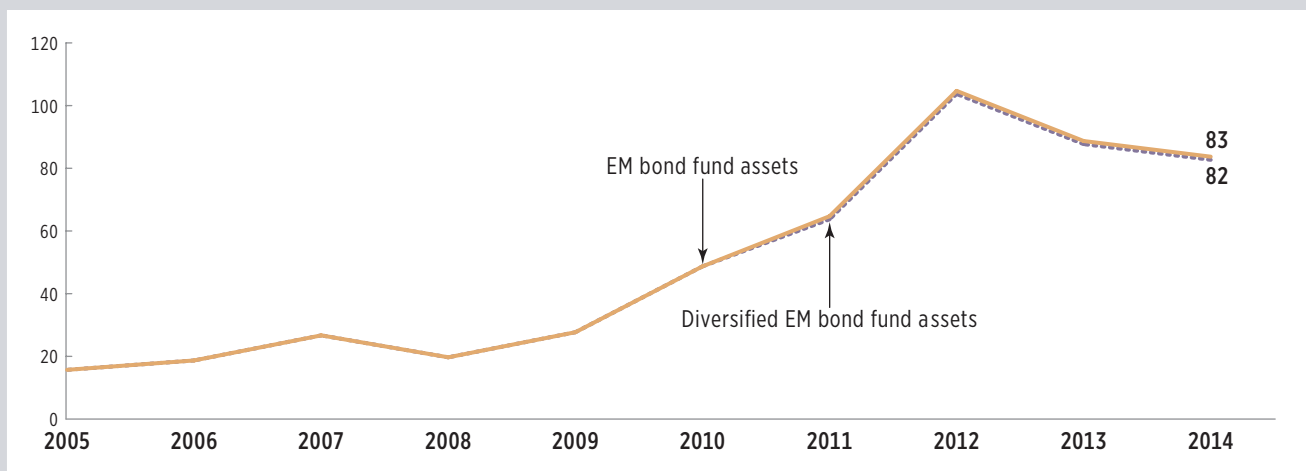


Source: EPFR Global

FIGURE 16

Most US-Domiciled Emerging Market Bond Funds Are Diversified Across Emerging Markets

Billions of US dollars; year-end, 2005–2014



Source: EPFR Global

US and European funds' holdings of emerging market bonds, more generally, do not tend to focus on specific regions or countries, and instead focus on obtaining diversified exposure to emerging market bonds. For example, Figure 17 depicts all US regulated fund holdings of emerging market bonds as of December 2014. In total, US regulated funds—which includes both emerging market funds and other funds—held \$134.5 billion of emerging market bonds. The majority, or 61 percent, was held by globally diversified emerging market bond funds. The remainder was held almost entirely by other (non-emerging market) funds, which are also likely to diversify their holdings widely, in some cases gaining broad exposure to emerging markets by investing in underlying mutual funds or ETFs that track globally diversified

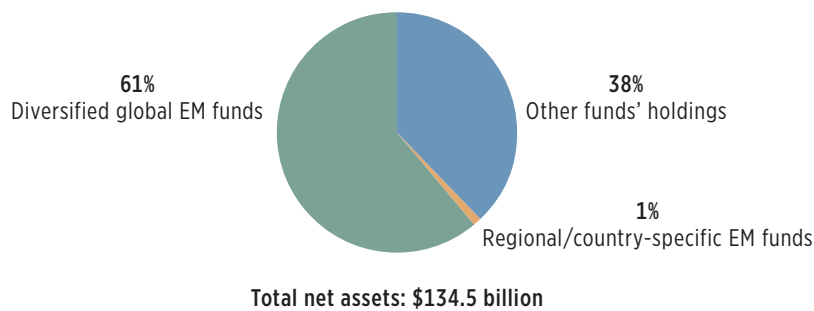
emerging market indexes. Regional- or country-specific emerging market funds held only 1 percent—about \$1 billion—of the emerging market bonds held by US regulated funds.

European regulated funds that focus on emerging markets also are primarily diversified funds, rather than region- or country-specific funds, although to a somewhat lesser degree than US regulated funds. European regulated funds held \$285.4 billion in emerging market bonds as of December 2014 (Figure 18). As with US regulated funds, the majority of this was held by globally diversified funds. Most of the rest (35 percent) was held by other (non-emerging market) funds, and only 10 percent was held in region- or country-specific funds.

FIGURE 17

Estimated Holdings of Emerging Market Bonds by Type of Regulated US Fund

Year-end 2014

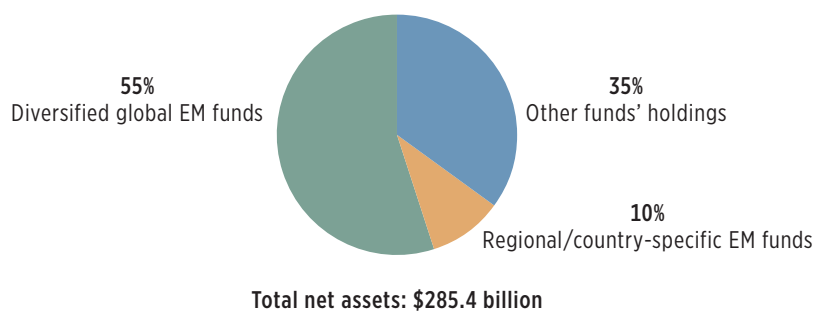


Source: EPFR Global

FIGURE 18

Estimated Holdings of Emerging Market Bonds by Type of Regulated EU Fund

Year-end 2014



Source: EPFR Global

Thus, in both the United States and Europe, regulated fund holdings of emerging market securities are apt to be dispersed across many countries. Figure 19 demonstrates this by summarising regulated fund holdings of emerging market securities by the issuer's domicile.²¹ In total, US and European regulated funds—both emerging market funds and other funds—held \$1.7 trillion in

emerging market securities as of December 2014. Of that, \$1.3 trillion was in emerging market equities and the balance, \$431 billion, was in emerging market bonds. These holdings were spread across more than 85 different countries, although most of the holdings were in the top 22 countries.²²

FIGURE 19

US- and European-Domiciled Regulated Fund Holdings of Emerging Market Securities

31 December 2014

Country	Total holdings	Equity holdings		Bond holdings	
	Millions of US dollars	Millions of US dollars	Percentage of total	Millions of US dollars	Percentage of total
China	\$309,230.2	\$290,374.3	22.82%	\$18,855.9	4.37%
South Korea	143,642.8	128,093.2	10.07	15,549.6	3.61
India	141,629.5	132,370.7	10.40	9,258.8	2.15
Brazil	131,502.5	91,644.0	7.20	39,858.5	9.25
Taiwan, Province of China	107,329.5	107,104.8	8.42	224.7	0.05
Hong Kong	97,233.7	90,477.6	7.11	6,756.1	1.57
Mexico	86,001.3	38,084.4	2.99	47,916.9	11.11
South Africa	71,779.9	53,540.8	4.21	18,239.1	4.23
Russia	56,816.1	38,434.2	3.02	18,382.0	4.26
Indonesia	52,858.4	29,479.4	2.32	23,379.0	5.42
Singapore	44,081.9	39,638.5	3.12	4,443.4	1.03
Other Europe	43,573.6	21,995.7	1.73	21,577.9	5.01
Poland	39,941.0	10,592.5	0.83	29,348.5	6.81
Thailand	38,689.4	32,733.3	2.57	5,956.1	1.38
Turkey	38,067.7	21,418.4	1.68	16,649.3	3.86
Malaysia	33,443.1	21,784.5	1.71	11,658.6	2.70
Israel	26,635.6	22,727.8	1.79	3,907.8	0.91
Philippines	23,169.2	16,276.3	1.28	6,892.9	1.60
Colombia	19,552.7	4,528.4	0.36	15,024.3	3.49
Chile	18,950.6	11,861.5	0.93	7,089.1	1.64
Peru	15,800.5	5,844.5	0.46	9,956.0	2.31
Hungary	13,724.2	2,325.2	0.18	11,398.9	2.64
All other EM countries	149,723.2	60,937.0	4.79	88,786.3	20.59
Total	1,703,376.6	1,272,266.9	100.00	431,109.8	100.00

Note: Equity and bond holdings may not add to the total because of rounding. Countries listed represent those with total holdings greater than \$10 billion US dollars. This table includes the newly industrialised countries of Hong Kong, Singapore, South Korea, and Taiwan (Province of China) for illustrative purposes.

Source: EPFR Global

China, South Korea, and India received the highest equity allocations, each exceeding 10 percent, which is not surprising given the size of their economies. No other country received more than 10 percent of the total assets that regulated funds allocated to emerging market equities.

For bond allocations, Mexico, Brazil, and Poland received the highest allocations, each exceeding 6 percent; no other country received more than 6 percent of the total assets allocated by regulated funds to emerging market bonds. For example, funds allocated \$6.9 billion to bonds issued by Philippine entities, which amounted to just 1.6 percent of the total \$431 billion in emerging market debt securities held by regulated funds.

In sum, regulated fund holdings of emerging market securities are widely diversified across developing countries. This finding suggests that if there were investor outflows from US and European regulated funds, funds would likely accommodate them by selling a small amount of securities from a wide range of emerging market countries, which should help alleviate concerns about destabilisation. Also, the countries where regulated funds allocate more assets to equity markets—such as China, South Korea, and India—have much larger economies and stock market capitalisation with very large domestic investor bases, which help limit the impact of relatively small fund inflows and outflows. Also, for China, much of the equity investment by regulated funds occurs outside of China's domestic equity market, limiting the potential impact of funds' actions on its domestic markets.

Regulated Funds' Net Purchases of Emerging Market Securities and Returns

In monthly data, regulated funds' net purchases of emerging market securities are correlated with returns on those securities.²³ For example, Figure 20 plots regulated funds' net purchases of emerging market stocks against a measure of the returns on those securities. Funds' net purchases tend to move in the same direction as (or in other words, are positively correlated with) returns in emerging stock markets. The same correlation is apparent between regulated funds' purchases of emerging market bonds and the returns on emerging market bonds (Figure 21).

It is an axiom of statistics, however, that correlation is not the same as causation. The relationships apparent in Figures 20 and 21 could arise for many reasons. For example, fund portfolio managers and other market participants could be reacting to a common influence, such as changes in monetary policy or the release of a gross domestic product (GDP) report indicating that economic growth has been stronger in emerging economies than previously anticipated.

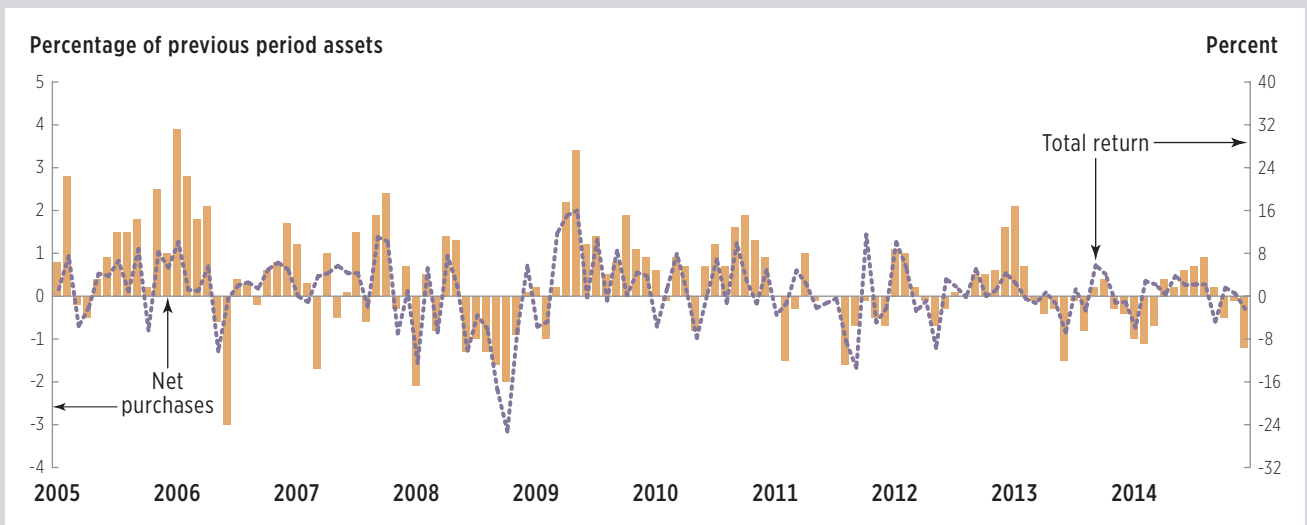
As discussed earlier, there has been a fair bit of research exploring whether investors' redemptions from regulated funds *cause* stock and bond prices to change to a degree that could be destabilising. The evidence of this, however, is mixed to absent.

This section summarises new research on this issue, the full details of which are in the appendix. This new research improves on earlier work in three important ways. First, the new research assesses the influence of regulated funds' activities on emerging financial markets by studying their monthly net purchases of emerging market securities, rather than investors' flows to emerging market funds only. Second, the new research distinguishes the influence regulated funds may have on emerging markets independently from the influence of other (non-fund) investors. Third, the research provides new evidence based on weekly data on whether regulated funds' net purchases of emerging market securities amplify returns in the financial markets of emerging countries.

FIGURE 20

Net Purchases of Emerging Market Equities Are Related to Emerging Market Equity Returns

Monthly, 2005–2014

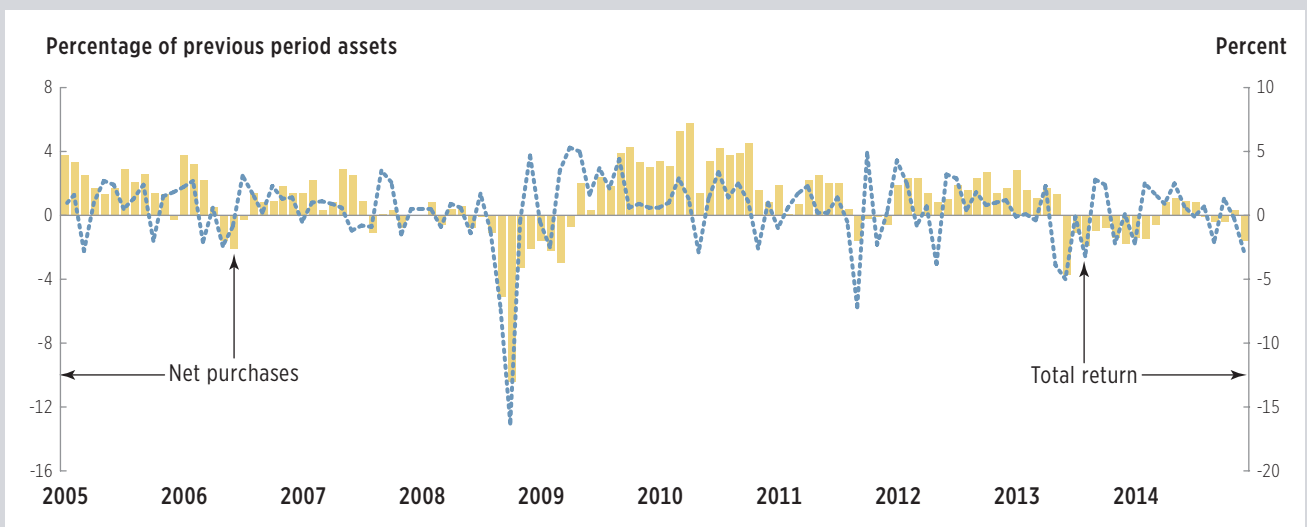


Note: Total return is the asset-weighted average total return for all EM equity funds.
Sources: EPFR Global and Bloomberg

FIGURE 21

Net Purchases of Emerging Market Bonds Are Related to Emerging Market Bond Returns

Monthly, 2005–2014



Note: Total return is the asset-weighted average total return for all EM bond funds.
Sources: EPFR Global and Bloomberg

Evidence from Monthly Data on Links Between Emerging Market Returns and Regulated Funds' Net Purchases of Emerging Market Securities

Analysis in the appendix uses monthly data to examine the relationship between the returns on emerging market securities and regulated funds' net new purchases of emerging market securities. Regulated funds' net purchases of emerging market securities are estimates for all regulated funds in the United States, Europe, Canada, Japan, and include emerging market funds and all other funds.²⁴

The results show, as might be expected given earlier research, that there is a strong, positive statistical relationship between regulated funds' purchases of emerging market stocks and bonds and returns on those securities. Taken at face value, this could be interpreted as indicating that when regulated funds sell emerging market bonds, that puts downward pressure on their prices.

But the analysis also indicates that returns on emerging market securities are influenced by a range of other fundamental factors, such as US financial market developments. Not surprisingly, shocks to financial markets in developed countries have a significant effect on financial markets in developing economies. Returns on emerging market securities, for instance, are heavily influenced by gains or losses in US stock and bond markets. Returns on emerging market securities also tend to fall when volatility in US equity markets increases.

More significantly, though, the analysis indicates that regulated funds' net purchases are a poor proxy for the actions of other (non-fund) investors. The statistical link between returns on emerging market securities and regulated funds' net purchases of such securities vanishes when allowance is made for the fact that many investors other than regulated funds also buy and sell emerging market securities. While this finding does not rule out the possibility that the actions of regulated funds could significantly affect the financial markets of emerging economies, it does suggest that regulators should focus on portfolio capital flows to emerging market countries from all foreign investors, rather than focusing narrowly on those from regulated funds.

Evidence from Weekly Data on Links Between Emerging Market Returns and Regulated Funds' Net Purchases of Emerging Market Securities

Conclusions based on monthly data about the potential for regulated funds to amplify shocks to emerging markets must be tempered by the recognition that there is an inherent 'lead-lag' issue. Suppose, for instance, that the stock market in Chile jumps early in the month owing to new data pointing to a stronger economy. Also suppose that later in the month, in view of the stronger economy, regulated funds add to their holdings of Chilean equities. In monthly data, regulated funds' additional purchases of Chilean stocks will be correlated with returns on Chilean stocks. This creates the possibility that an analyst who looks only at monthly data on Chilean stock market returns and funds' net purchases—without considering other factors or data—might incorrectly conclude that funds' purchases were *causing* Chilean stock prices to rise.

Although not eliminating the lead-lag issue, weekly data can ameliorate it, allowing for a better understanding of how funds' purchases of securities respond to past returns and whether they drive future returns. In the Chilean example, for instance, one could tell from weekly data that funds purchased additional securities late in the month, well after Chilean stock prices had risen, allowing one to conclude that the rise in Chilean stock prices had caused funds' purchases to rise and not the opposite.

Broadly, the results indicate that regulated funds' net purchases of emerging market securities respond gradually to unexpected changes in returns on emerging market securities. In contrast, the results provide no statistical evidence that regulated funds' net purchases of emerging market securities drive future returns on those securities.²⁵

Results for Emerging Market Bonds

The appendix presents a statistical model that relates returns on emerging market bonds and funds' weekly net purchases of emerging market bonds to past values of these variables (Figure A3).²⁶ The model explains funds' net purchases of emerging market bonds well, explaining more than 60 percent of the weekly variation in funds' net purchases. The model does not explain returns on emerging market bonds as well, accounting for only 33 percent of weekly variation.

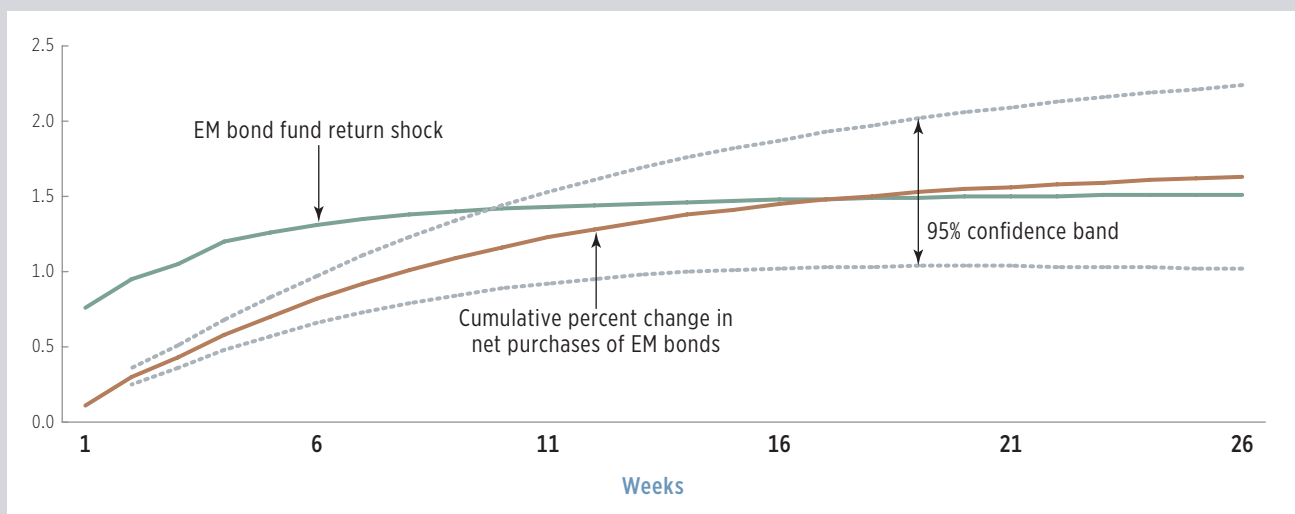
By and large, the model's ability to track the data arises from inertia—to a limited extent from inertia in emerging market bond returns but primarily from inertia in funds' net purchases of emerging market securities. If funds have recently been purchasing emerging market bonds, they are more likely to continue doing so in coming weeks. Alternatively, if funds have recently been selling, they are more likely to continue selling in the near future. In addition, as US financial markets become more volatile (as measured by the VIX index), returns on emerging market bonds decline and funds appear to somewhat reduce their purchases of those bonds. Funds' net sales of emerging market bonds have, at most, a small, transitory effect on emerging market bond returns. Figures 22 and 23 summarise these results.

Figure 22 illustrates how funds' net purchases of emerging market bonds respond to unexpected changes in emerging market bond returns, which might occur if central banks in emerging market countries unexpectedly lowered interest rates (bond prices and interest rates are inversely related).²⁷ The green line plots a plausible scenario in which emerging market bond returns unexpectedly rise by 0.75 percent this week. Because past returns influence future returns, bond returns continue to rise in future weeks, with a rise of more than 1 percent after 3 weeks, and 1.5 percent after 20 weeks. Funds respond by increasing their net purchases of emerging market bonds by 0.11 percent in the first week, with purchases eventually increasing to 1.55 percent after 20 weeks (solid brown line). These results, although statistically significant, are economically muted: less than half of the adjustment occurs in the first five weeks after the initial increase in emerging market bond returns. If, rather than rising, emerging market bond returns had initially fallen, which might happen if emerging market central banks raised interest rates, the results would be exactly inverted: emerging market bond returns would fall, and in response, funds would cumulatively sell emerging market bonds; however, those sales would be quite muted.

FIGURE 22

Cumulative Response of Net Purchases of Emerging Market Bonds to Typical Shock to Emerging Market Bond Returns

Percent



Source: Investment Company Institute tabulations of EPFR Global data

Figure 23 illustrates how emerging market bond returns react to unexpected changes in funds' net purchases, a scenario more relevant for assessing whether regulated funds pose financial stability concerns for emerging economies. According to the new research, funds' net purchases of emerging market bonds (which, for simplicity, are not shown in the figure) initially jump unexpectedly by 0.37 percent and, having inertia, eventually rise to a total of 1.3 percent of funds' assets after 20 weeks. Returns on emerging market bonds initially fall slightly, then rise very modestly in coming weeks, cumulatively rising by 0.16 percent after 20 weeks (solid brown line).

The relationship in Figure 23, however, is not statistically significant. As seen, a 95 percent 'confidence band' encompasses the horizontal axis at zero, indicating that the rise in emerging market bond returns (solid brown line) is not statistically different from zero. If, rather than rising, funds purchases of emerging market bonds had initially fallen, the results would be exactly inverted: there would be a small, statistically insignificant decline in emerging market bond returns.

In short, these new results do not support conjectures that regulated funds pose concerns for emerging bond markets. Regulated funds may sell emerging market bonds, but there is no statistical evidence that those sales alone would meaningfully depress emerging market bond prices.

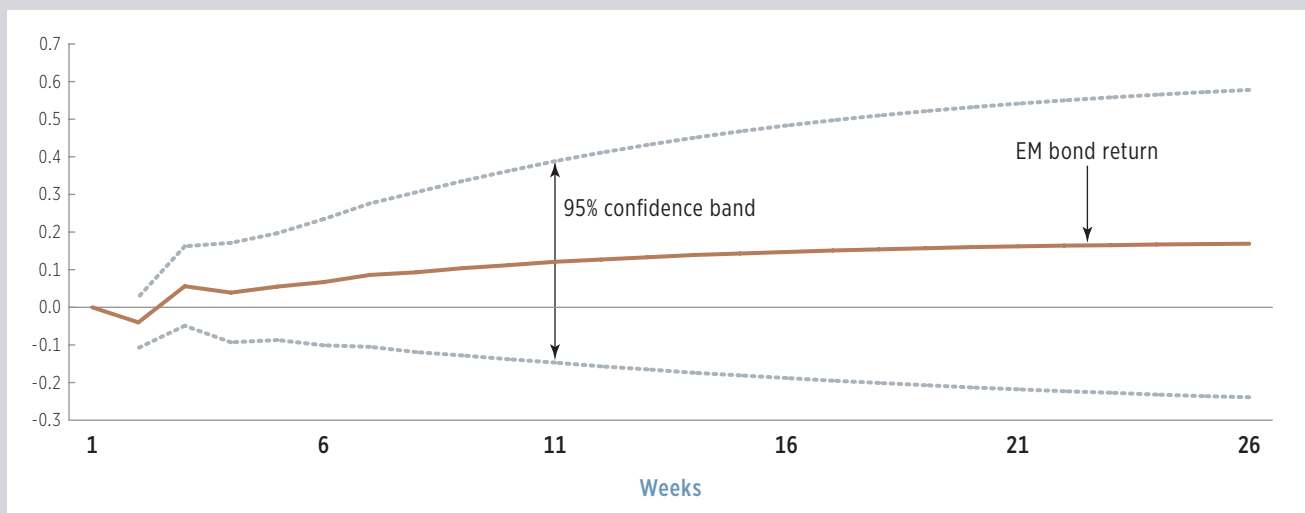
Results for Emerging Market Equities

The appendix presents a statistical model that relates returns on emerging market stocks and funds' weekly net purchases of emerging market stocks to past values of these variables (Figure A4).²⁸ The results are very similar to those for emerging market bonds. Briefly, the model does a reasonably good job of tracking the variation in funds' weekly net purchases of emerging market equities, but has more difficulty tracking emerging market stock returns. As with emerging market bonds, the model's tracking ability mostly arises from inertia in fund purchase or stock returns. For emerging market equity fund returns, almost all of the explanatory power is due to the negative effect of stock market volatility, but some is due to past emerging market equity fund returns. Virtually none is due to net fund purchases of emerging market equities.

FIGURE 23

Cumulative Response of Emerging Market Bond Returns to Typical Shock to Net Purchases of Emerging Market Bonds

Percent



Source: Investment Company Institute tabulations of EPFR Global data

Conclusion

During the past decade, regulated fund holdings of emerging market securities have grown significantly. In light of this growth and regulators' increased concerns about systemic risk, policymakers and academics have questioned whether certain kinds of fund-level behavior might increase volatility in capital markets of emerging economies. While these concerns are understandable, they are unjustified for many reasons.

First, regulated fund holdings of emerging market securities remain a small portion of the total value of the stocks and bonds of emerging market countries. Second, regulated funds are a stable source of foreign investment in emerging market countries. Even though they represent a sizeable part of the foreign investor base that buys emerging market stocks and bonds, they account for less than 15 percent, on average, of the quarterly variance of foreign portfolio capital flows to emerging markets from 2005 to 2013. Third, regulated fund holdings are diversified across a wide number of emerging economies, which limits the effects of their portfolio transactions on any particular country.

Although these three reasons address many of the concerns held by regulators, they do not address a key issue: whether regulated funds may amplify changes in emerging market securities prices. Some studies since 2009, which often used monthly or even quarterly data, have posited that they do. New evidence suggests otherwise. An analysis of both monthly and weekly data reveals that monthly returns on emerging market securities are explained by factors other than funds' net purchases of emerging market stocks and bonds—most significantly by capital flows from other (non-fund) foreign investors. The analysis also demonstrates that while funds' net purchases of emerging market securities respond to returns on emerging market securities, they do not have a persistent influence on the future returns of those securities.

This new evidence has important implications, not only about the role regulated fund holdings play in emerging economies, but also about how regulators study the effects of fund flows on emerging markets. Indeed, as this new analysis shows, it is critical for regulators to consider all the economic factors affecting emerging markets and the portfolio capital flows from all foreign investors, rather than simply focusing on regulated funds and their activities.

Appendix: Regression Analysis of Monthly and Weekly Data

To more comprehensively examine the relationship between regulated funds' net purchases of emerging market securities and returns, the statistical analysis in this appendix uses monthly and weekly estimates of regulated fund holdings and net purchases of emerging market securities. These data are provided by EPFR Global and primarily reflect regulated funds in the United States, Europe, Canada, and Japan. Unless otherwise specified, the analysis occurs from January 2005 to December 2014. In previous work, ICI has used ICI and Lipper flow data to analyse the relationship between net new cash flows (flows) to regulated funds in the United States and returns for specific fund categories, therefore excluding regulated funds in Europe and elsewhere.²⁹ Also, the research did not discuss net purchases of securities, only net new cash flows. In contrast, this report uses the broadest possible measure of net purchases of emerging market securities for all available fund domiciles—the 'country

flows' database in the EPFR Global online database. The database includes US, European, Canadian, and Japanese funds and estimates all fund holdings and net purchases of emerging market securities.

The monthly regressions estimate the potential impact of monthly net purchases of emerging market bonds and equities on emerging market returns. That is, they illustrate the contemporaneous relationship by assuming that net purchases of emerging market bonds or equities drive these category returns and by ignoring the fact that much of the positive correlation is likely due to fund investors responding to returns. This basic regression is then compared to regressions that contain other potential influences on category returns, namely the monthly percent change in the total return index for US Treasuries for bond fund regressions, the monthly percent change in the S&P 500 index for equity fund regressions, and the monthly measure of stock market volatility (the VIX) for both bond and equity fund regressions (Figure A1).

FIGURE A1

Potential Factors Affecting Emerging Market Returns: Regression Results

Sample data: monthly, 2005–2014

Independent variable	Dependent variable				
	Equation 1 Bond return	Equation 2 Bond return	Equation 3 Equity return	Equation 4 Equity return	Equation 5 Equity return
Intercept	-0.111 (0.359)	-0.206 (0.293)	-0.34 (0.59)	-0.076 (0.466)	-0.257 (0.314)
Return _{t-1}		0.085 (0.107)			
Net purchases _t	0.645 (0.216)	0.507 (0.162)	3.039 (0.49)	2.494 (0.333)	1.852 (0.261)
Treasury bond index return _t		0.547 (0.175)			
Percent change in equity volatility _t		-0.076 (0.012)		-0.143 (0.022)	
S&P500 return _t					0.901 (0.084)
R-squared	0.271	0.547	0.461	0.642	0.772
Durbin-Watson statistic	1.731	2.079	1.879	1.787	1.939

Note: **Bolded and italic** coefficients denote statistical significance at the 1 percent level. Standard errors are represented by the values in parentheses.

Source: Investment Company Institute tabulations of EPFR Global and Bloomberg data

The basic regression explores the contemporaneous relationship between net purchases of emerging market bonds or equities, C_t , and the relevant category returns, R_t . Because net purchases of emerging market bonds and equities, C , grow over the sample period, C_t is divided by the estimated fund holdings (or assets) of emerging market securities at time $t-1$, A_{t-1} . Note that C_t does not necessarily equal ΔA_t .

Equation 1 specifies the first regression to be estimated on monthly data (shown in columns 1 and 3 in Figure A1),

$$R_t = \alpha + \beta * C_t / A_{t-1} \quad (1)$$

where R_t is either the emerging market bond or equity fund return (the weighted average return on all emerging market bond or equity funds in the EPFR Global fund database), α is the intercept (or average return) of that fund category, and β is the estimated impact of a 1 percent increase in net purchases of emerging market securities relative to total fund holdings of those securities (or assets held in those securities). This regression assumes that there is only a contemporaneous relationship between net purchases and returns, and does not allow for other variables to affect returns or net purchases.

The more general specification in Figure A1 includes the following variables

$$R_t = f(R_{t-1}, C_t / A_{t-1}, \Delta \ln(USTR_t), \Delta \ln(SP_t), \text{ or } \Delta \ln(VIX_t)) \quad (2)$$

where $\Delta \ln$ denotes the rate of change in the natural log (the percent change), $USTR_t$ is the total return index from holding US Treasuries at time t , SP_t is the percent change in the S&P 500 index at time t , and VIX_t is an index measuring the volatility of the S&P 500 at time t . To focus on short-term movements, both variables enter the regression as monthly percent changes.

As noted in the paper, monthly net purchases of emerging market bonds are positively correlated (0.52) with

emerging market bond fund returns contemporaneously, but it is unclear whether this association represents returns causing movements in future net purchases or vice versa. In equation 1, net purchases are able to explain 27 percent of the monthly variation in returns. This weak association between net purchases and returns at the monthly frequency could very well reflect the effect of news on market prices, or some other economic variable that might simultaneously encourage net purchases and increase returns.

For emerging market bond returns, the monthly movements in the VIX and the return on US Treasuries can explain a significant amount of the variation in the monthly returns on emerging market bond funds from January 2005 to December 2014. These two factors combined are able to explain more than one-third of the variation in the monthly returns on emerging market bond funds if net purchases are excluded from the regression, and double the R-squared when combined with net purchases.

For emerging market equity returns, the monthly percent changes in the VIX or the S&P 500 index can explain a significant amount of the variation in the returns on emerging market equity funds from January 2005 to December 2014. The percent change in the VIX can explain more than one-third of the variation in the returns on emerging market equity funds, and the percent change of the S&P 500 index can explain more than 60 percent of the returns in emerging market equity funds if net purchases are excluded from the regression. Both variables significantly increase the R-squared when combined with net purchases (see columns 4 and 5 of Figure A1). These regressions strongly suggest that other factors have a large effect on returns in both emerging market bond and equity markets.

As discussed in this report, a wider measure of foreign investors' net purchases of emerging market securities may be a better indicator of the portfolio capital flows that emerging market economies receive than reliance on net purchases of emerging market securities alone. The Institute for International Finance (IIF) produces a monthly indicator of foreign portfolio capital flows to 30 emerging market countries based on high-frequency balance of payments data for a subset of these countries. This statistic is called the emerging market portfolio flows tracker, and it tracks all foreign investor flows to emerging market equity and bonds. This broader indicator of portfolio capital flows does not always align well with funds' net purchases of emerging market securities, especially for bonds.³⁰ The emerging market portfolio tracker is available from January 2010 to December 2014, so the statistical analysis is limited to this sample period.

Using the emerging market portfolio tracker, the statistical results indicate that it dominates net purchases of bonds and equities in terms of being more closely aligned to movements in the returns on emerging market bonds and equities (Figure A2). As the results show, the emerging market portfolio tracker is able to explain more of the variation in emerging market returns on both bonds and equities. It also causes the coefficient on net purchases to attenuate towards zero and become insignificant statistically for both bonds and equities. These results are not surprising given the evidence presented in this report that other foreign investors play a larger role in determining the variability of portfolio capital flows to emerging markets. In addition, they suggest that policymakers should pay more attention to broader indicators of foreign investor flows to emerging markets.

FIGURE A2

Foreign Investor Portfolio Capital Flows and Emerging Market Returns: Regression Results

Sample data: monthly, 2010–2014

Independent variable	Dependent variable			
	Equation 1 Bond return	Equation 2 Bond return	Equation 3 Equity return	Equation 4 Equity return
Intercept	-0.219 (0.334)	-0.804 (0.420)	0.018 (0.456)	-1.574 (0.467)
Net purchases _t	0.513 (0.123)	0.119 (0.157)	2.446 (0.522)	0.074 (0.477)
IIF EM portfolio flows tracker _t		0.171 (0.066)		2.688 (0.591)
R-squared	0.186	0.257	0.302	0.444
Durbin-Watson statistic	2.303	2.310	2.249	2.556

Note: **Bolded** coefficients denote statistical significance at the 5 percent level and ***bolded and italic*** coefficients denote statistical significance at the 1 percent level. Standard errors are represented by the values in parentheses.

Source: Investment Company Institute tabulations of EPFR Global and Institute of International Finance data

Exploring the Lead-Lag Relationship with Weekly Data

The weekly regressions explore the lead-lag relationship between net purchases of emerging market bonds or equities and the relevant category returns.

To investigate the dynamic relationship between net purchases and category returns, a vector autoregression (VAR) is estimated that uses lags of both variables to explain future movements of net purchases and category returns. The general specification is as follows,³¹

$$R_t = \alpha_0 + \alpha_1 * R_{t-1} + \dots + \alpha_{t-k} * R_{t-k} + \beta_1 * C_{t-1}/A_{t-2} + \dots + \beta_k * C_{t-k}/A_{t-1-k} \quad (3)$$

$$C_t/A_{t-1} = \rho_0 + \rho_1 * C_{t-1}/A_{t-2} + \dots + \rho_k * C_{t-k}/A_{t-1-k} + \delta_1 * R_{t-1} + \dots + \delta_{t-k} * R_{t-k} \quad (4)$$

where k is the number of lagged regressors used to explain current movements in category returns and net purchases of either emerging market bonds or equities. This specification allows us to see whether net purchases have any impact on future returns and whether returns have any impact on future net purchases. For the emerging market bond VAR, the Hannan-Quinn information criterion selected $k = 4$ as the appropriate number of lags. For the emerging market equity VAR, the Hannan-Quinn information criterion suggested $k = 3$, but four lags were estimated for comparability purposes. The VARs also treat the change in equity market volatility, or the percent change in the VIX at time t , as an exogenous variable.³² The statistical results are in Figures A3 (emerging market bonds) and A4 (emerging market equities).

The first column of Figure A3 seeks to explain the average return of emerging market bond funds. The first and third lags of the return on emerging market bond funds are positive and statistically significant at the 1 percent level; the second lag of net purchases is positive and statistically significant at the 1 percent level; and the current percent change in equity market volatility is negative and statistically significant at the 1 percent level. The R-squared is 0.337. Most of the explanatory power comes from the negative effect of equity market volatility and lagged returns (positive serial correlation). While one of the lagged values of net purchases is positive and statistically significant (the second lag), the sum of the coefficients on the four lags is not statistically different from zero. These results indicate that weekly net purchases do not have a persistent effect on the return on emerging market bond funds, which is consistent with the impulse response function shown in Figure 23.

The second column of Figure A3 seeks to explain the net purchases of emerging market bonds. The first and third lags of the return on emerging market bond funds are positive and statistically significant at the 1 percent level; the first, second, and fourth lags of net purchases are positive and statistically significant at the 1 percent level; and the current percent change in equity market volatility is negative and statistically significant at the 1 percent level. The R-squared is 0.621. Most of the explanatory power comes from lags of net purchases (positive serial correlation), but some is also due to lagged returns. The current percent change in equity market volatility explains very little of the variation in net purchases. These results indicate that the return on emerging market bonds helps explain the future net purchases of emerging market bonds, which is supported by the impulse response function shown in Figure 22.

FIGURE A3

Weekly Bond Fund Returns and Net Purchases: Regression Results

Sample data: weekly, 9 February 2005–31 December 2014

Independent variable	Dependent variable	
	Return _t	Net purchases _t
Return _{t-1}	0.257 (0.040)	0.221 (0.020)
Return _{t-2}	0.055 (0.044)	0.021 (0.022)
Return _{t-3}	0.106 (0.045)	0.047 (0.022)
Return _{t-4}	-0.004 (0.043)	-0.025 (0.022)
Net purchases _{t-1}	-0.110 (0.091)	0.218 (0.045)
Net purchases _{t-2}	0.317 (0.093)	0.266 (0.046)
Net purchases _{t-3}	-0.146 (0.092)	0.033 (0.046)
Net purchases _{t-4}	0.017 (0.083)	0.178 (0.041)
Percent change in equity volatility _t	-0.036 (0.003)	-0.004 (0.001)
Intercept	0.042 (0.036)	0.025 (0.018)
R-squared	0.337	0.621

Note: **Bolded and italic** coefficients denote statistical significance at the 1 percent level. Standard errors are represented by the values in parentheses.

Source: Investment Company Institute tabulations of EPFR Global data

The first column of Figure A4 seeks to explain the average return on emerging market equity funds. The first and third lags of the return on emerging market equity funds are positive and statistically significant at the 1 percent level, the third lag of net purchases is negative and statistically significant at the 5 percent level, and the current percent change in equity market volatility is negative and statistically significant at the 1 percent level. The R-squared is 0.348, with almost all of the explanatory

power arising from the negative effect of equity market volatility, and a little from lagged returns on emerging market equity funds (positive serial correlation). While one of the lagged values of net purchases is negative and statistically significant (the third lag), the sum of the coefficients on the four lags is not statistically different from zero. These results indicate that net purchases do not have a persistent effect on the return on emerging market equity funds.

FIGURE A4

Weekly Equity Fund Returns and Net Purchases: Regression Results

Sample data: weekly, 9 February 2005–31 December 2014

Independent variable	Dependent variable	
	Return _t	Net purchases _t
Return _{t-1}	0.160 (0.044)	0.075 (0.006)
Return _{t-2}	-0.052 (0.049)	0.007 (0.007)
Return _{t-3}	0.163 (0.049)	-0.008 (0.006)
Return _{t-4}	-0.010 (0.046)	-0.005 (0.006)
Net purchases _{t-1}	-0.205 (0.384)	0.097 (0.051)
Net purchases _{t-2}	0.394 (0.378)	0.261 (0.050)
Net purchases _{t-3}	-0.859 (0.375)	0.098 (0.050)
Net purchases _{t-4}	0.525 (0.315)	0.046 (0.042)
Percent change in equity volatility _t	-0.138 (0.009)	-0.007 (0.001)
Intercept	0.173 (0.113)	0.029 (0.015)
R-squared	0.348	0.467

Note: **Bolded** coefficients denote statistical significance at the 5 percent level and ***bolded and italic*** coefficients denote statistical significance at the 1 percent level. Standard errors are represented by the values in parentheses.

Source: Investment Company Institute tabulations of EPFR Global data

The second column of Figure A4 seeks to explain the net purchases of emerging market equities. The first lag of the return on emerging market equity funds is positive and statistically significant at the 1 percent level; the first, second, and third lags of net purchases are all positive and statistically significant at the 5 percent level (second lag is significant at 1 percent level); and the current percent change in equity market volatility is negative

and statistically significant at the 1 percent level. The R-squared is 0.467. Most of the explanatory power comes from the lags of net purchases (positive serial correlation) and lagged returns. Some of the variation is also explained by the current percent change in equity market volatility. These results are consistent with the view that net purchases of emerging market equities respond to past market returns, but not the reverse.

Notes

- ¹ See International Monetary Fund (IMF) for data on gross capital flows to emerging market countries.
- ² Regulated funds are defined as pooled investment products that are substantively regulated, that invest in transferable securities (e.g., publicly traded stocks and bonds) and money market instruments, and that are redeemable.
- ³ For the United States, the report defines regulated funds as comprising mutual funds and exchange-traded funds (ETFs) registered with the Securities and Exchange Commission under the Investment Company Act. For Europe, the report defines regulated funds primarily as European-domiciled UCITS.
- ⁴ The rise of regulated fund holdings in emerging market equities in the rest of the world in early 2013 was primarily caused by the addition of Japanese funds into the EPFR Global database, rather than by a surge of inflows from funds outside the United States and Europe. Also, the addition of Indian-domiciled funds in 2014 led to a \$35 billion increase in assets invested in Indian equity. In general, some of estimated increase of fund investment in emerging market equities by US- and European-domiciled funds will also be due to fund asset coverage ratios improving over time.
- ⁵ The rise of fund investment in emerging market bonds in the rest of the world in early 2013 was primarily caused by the addition of Japanese funds into the EPFR Global database, rather than by a surge of inflows from funds outside the United States and Europe. Also, the addition of Indian-domiciled funds in 2014 led to a \$50 billion increase in assets invested in Indian debt. In general, some of estimated increase of fund investment in emerging market bonds by US- and European-domiciled funds will also be due to fund asset coverage ratios improving over time.
- ⁶ Stock and bond market capitalisation are sourced from the statistical appendix of the IMF's *Global Financial Stability Report* from 2010 to 2014.
- ⁷ The relatively small share held by funds is consistent with a recent IMF working paper showing that the government debt of emerging markets is held by a diverse base of investors; see Arslanalp and Tsuda (2014).
- ⁸ See Reuters blog that cites JP Morgan index of emerging market debt market capitalisation at \$2.8 trillion at the end of 2014, <http://blogs.reuters.com/globalinvesting/2014/01/08/market-cap-of-em-debt-indices-still-rising/> or see BlackRock (2014) Viewpoint 'Who Owns the Assets? A Closer Look at Bank Loans, High-Yield Bonds, and Emerging Markets Debt,' www.blackrock.com/corporate/en-us/literature/whitepaper/viewpoint-closer-look-selected-asset-classes-sept2014.pdf, which says investable emerging market debt stands at \$2.7 trillion.
- ⁹ NASDAQ defines ADRs as 'certificates issued by a US depository bank, representing foreign shares held by the bank, usually by a branch or correspondent in the country of issue. One ADR may represent a portion of a foreign share, one share, or a bundle of shares of a foreign corporation. ADRs are subject to the same currency, political, and economic risks as the underlying foreign share.' The Bank for International Settlements defines international debt securities as debt issued by nonresidents in all markets, which contrasts with the old definition that classified debt securities as international if they were targeted at international investors. Read more about ADRs and international debt securities at www.nasdaq.com/investing/glossary/a/american-depository-receipts#ixzz3UCkylhP and www.bis.org/publ/qtrpdf/r_qt1212h.pdf.
- ¹⁰ MSCI does not currently include China A-shares in its emerging market indexes. A recent MSCI piece, 'China A-Shares: Too Big to Ignore,' discusses the potential diversification benefits of China A-shares and whether MSCI should include A-shares in its emerging market indexes. See MSCI website at www.msci.com/resources/research_papers/research_insight_-_china_a-shares_too_big_to_ignore_-_september_2014.html and www.msci.com/resources/pdfs/ChinaA_Roadmap_Consultation_Mar2014_updated.pdf, respectively.
- ¹¹ These fund shares assume that 100 percent of estimated assets invested by funds in a particular country are cross-border. In the case of China, this assumption is clearly incorrect for equities since EPFR Global estimates fund investment in Chinese equities at \$265 billion at the end of 2012, yet international investment position data from the IMF suggest that all foreigners hold just \$262 billion in Chinese equities at the end of 2012. This peculiar result may be explained by significant fund investment in Chinese ADRs and H-shares; see page 11.
- ¹² This figure shows cumulative IMF balance of payments data for 30 of the largest emerging markets tracked by the Institute for International Finance (IIF) from March 2010 to June 2014, and then uses the IIF's emerging markets portfolio tracker as an estimate of flows received in the last six months of 2014. IIF's emerging markets portfolio tracker uses high-frequency indicators of all foreign investor flows to both emerging market equities and bonds, and appears to be a much more reliable indicator of flows to emerging markets than fund flows alone; see www.iif.com/publications/portfolio-flows-tracker.
- ¹³ The variance of two correlated variables X and Y, or variance (X+Y) equals the variance (X) plus the variance of Y plus 2 times the covariance of (X, Y). The residual term in the table is simply 2 times the covariance of X and Y, and shows the effect of any underlying correlation between these two variables.

- ¹⁴ The remaining 9.6 percent reflects the effect of the covariance between regulated fund flows and portfolio capital flows from other foreign investors.
- ¹⁵ The remaining 5.2 percent reflects the effect of the covariance between regulated fund flows and portfolio capital flows from other foreign investors.
- ¹⁶ EPFR's estimate of the net fund purchases of Brazilian bonds is based on flows to all funds with an allocation to Brazilian bonds and any reported change in that allocation by these funds.
- ¹⁷ See Central Bank of Brazil's website for history of the policy interest rate, called the SELIC, at www.bcb.gov.br/?INTEREST.
- ¹⁸ See Bloomberg story announcing elimination of tax on foreign investor purchases of domestically traded Brazilian debt at www.bloomberg.com/news/reports/2013-06-04/brazil-scraps-foreign-investment-tax-as-real-hits-four-year-low.
- ¹⁹ The IIF kindly shared their monthly indicator of Brazilian portfolio capital flows based on higher frequency Brazilian balance of payments data. The IIF publicly posts their aggregate monthly indicator of emerging market portfolio capital flows based on higher frequency balance of payments data from national authorities, see www.iif.com/content/portfolio-flows-tracker-data.
- ²⁰ Some analysts refer to emerging market funds as 'dedicated emerging market funds.' For the United States, it is redundant to call an emerging market fund 'dedicated.' Under the SEC's 'fund name rule,' if a fund refers to itself as an 'emerging market fund,' at least 80 percent of its assets must be invested in securities of emerging markets; therefore, the fund is by definition 'dedicated.'
- ²¹ This table includes all US and European funds' estimated allocations to emerging market equity and bonds, whether or not the primary investment objective of the fund is to invest in emerging market equities and bonds.
- ²² The figure shows all the countries plus one regional category that received more than \$10 billion combined in fund investment from US- and EU-domiciled funds, ranked in order of total fund holdings of those countries' securities.
- ²³ The term net purchases of emerging market securities is used in the section, and should be thought of as a proxy for the net cash flow to emerging market countries for all regulated funds. Net purchases of emerging market securities will be equal to the estimated net new cash flow to emerging market funds multiplied by their overall emerging market allocation plus any estimated net purchases from non-emerging market funds that receive inflows or outflows multiplied by their overall emerging market allocation. This definition would correspond to the country flow database in EPFR Global's database.
- ²⁴ Returns on emerging market equities are proxied by the return measure shown in Figure 20, which is an asset-weighted average of the percent change in the net asset value (NAV) of emerging market equity funds, adjusted to include the effects of dividends and capital gains paid by funds. Returns on emerging market bonds are proxied by the corresponding return measure in Figure 21.
- ²⁵ Returns are ordered first and net purchases second in the VAR. A positive and statistically significant effect was found if net purchases are ordered first and returns second; however, these results are not reported since it was not robust to VAR ordering. See Collins and Plantier (2014) for a discussion of the impact of VAR ordering.
- ²⁶ The model uses four lags, and treats the percent change in the VIX index as an exogenous variable to control for any impact it might have on returns and net fund purchases.
- ²⁷ A typical shock is defined as a one standard deviation exogenous shock.
- ²⁸ The model uses four lags, and treats the percent change in the VIX index as an exogenous variable to control for any impact it might have on returns and net fund purchases.
- ²⁹ See Plantier (2013) on commodity mutual funds and Collins and Plantier (2014) on certain bond fund categories for US regulated funds.
- ³⁰ The IIF's emerging markets portfolio tracker uses high-frequency indicators of all foreign investor flows to both emerging market equities and bonds; see www.iif.com/publications/portfolio-flows-tracker.
- ³¹ Returns are ordered first and net purchases second in the VAR. See Collins and Plantier (2014) for a discussion of the impact of VAR ordering.
- ³² Collins and Plantier (2014) estimated three variable VARs, which include the return on US Treasury bonds, to demonstrate that shocks to the return on US Treasuries can affect the return on emerging market bonds, and hence, emerging market bond fund flows. For simplicity, this appendix does not show similar three variable VARs, although the results for these variables show that unexpected changes in long-term US interest rates can affect emerging market returns, and hence, net purchases of emerging market bonds.

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