The Two Components of International Portfolio Flows*

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Abstract

In empirical studies and policy discussions, capital flows are almost always described in terms that connote active portfolio reallocations. But measures of international portfolio flows, whether based on flows or changes in stocks, conflate two components. Flow-based measures conflate flows due to the placement of new savings (an income effect) with flows that actively reallocate between asset classes or countries (a switching effect). Portfolio-based measures combine a passive component (passive reallocations due solely to relative price changes) along with active portfolio reallocations. We form an easily constructed measure—relative weight—that isolates active portfolio reallocations and then, using a dataset on equity flows to EMEs and a set of simple graphs and regressions, show the importance of distinguishing between the active and passive components. The graphs suggest that the post-GFC surge of flows into EME equities was due more to the income effect and/or passive changes in portfolios rather than the active reallocations toward EMEs. The regressions suggest that analysis of the effects of QE, VIX and capital controls on EME capital flows depend importantly on the type of flow measure used. Different questions demand different measures of flows, but we must recognize that existing data typically conflate the focus of the researcher or policymaker (active decisions) with something more passive.

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1. Introduction

The notion that capital flows have two components—one active and the other more passive—figures prominently in the theoretical work on current account dynamics of Kraay and Ventura (2000, 2003). It is also an important feature of the Tille and van Wincoop (2010) theoretical model of international capital flows. But the distinction between these two components has been largely absent from the empirical literature on international portfolio flows.[1,2]

A failure to recognize that portfolio flows have two components can hamper many types of empirical analysis. Analyses of what drives portfolio flows that do not explicitly consider that flows have a passive "income effect" component are potentially misspecified. Any labeling of the motivations of international investors (for example, "returns-chasing behavior") that does not explicitly consider that some of the reallocation of portfolios is passive is also potentially misspecified. The passive portion of portfolio flows, strongly related to the flow of new savings, is likely procyclical; any discussion of the procyclicality of portfolio flows—see, for example, Broner et al. (2013)—should consider the two components. If policymakers in emerging market economies (EMEs), when considering potential policy responses to increased capital inflows, do not recognize that some potentially substantial portion of the flows is passive, misdiagnosis is the most likely outcome.

The empirical capital flows literature has blossomed over the past two decades, but is difficult to interpret in part because many measures of capital flows—some flow-based and others based on the change in stocks—have been used. As a dependent variable, capital flows have taken the following forms: the dollar amount of flows, flows normalized by average past flows, log changes in portfolio

[1] There are exceptions. Curcuru et al. (2011, 2014) explicitly consider both total capital flows and active reallocations defined as deviations from a buy-and-hold benchmark. See also Raddatz et al. (2014) on the benchmark effect.

[2] The concepts in this paper are most directly related to portfolio capital flows—that is, cross-border flows in bonds and equities. Sometimes we will refer specifically to portfolio flows and the applications we present are based on portfolio (equity) flows. Sometimes we will use the more general term capital flows, although some components (FDI and "other") are less related to the concepts we present.

positions, flows as a percent of lagged portfolio size, changes in the portfolio share, flows scaled by local market capitalization, and flows scaled by local GDP.

That there are many forms in which capital flows are measured in the empirical literature is not in itself problematic, as different questions may well require different measures. But the language used to describe the measures is remarkably consistent across studies, almost always connoting active portfolio reallocations, even though none of the above listed measures isolates active portfolio reallocations. Each one comingles an active component with a more passive one. The aim of this paper is to show that empirical analysis of international portfolio flows should recognize that flows have two components, one passive and one more active. It is a simple point, but one that can have profound implications for our understanding of portfolio flows.

In this paper we distinguish between the active and more passive components of capital flows—focusing on portfolio flows—that oft-used measures typically conflate. In flow-based measures, it is not entirely clear how to disentangle the two components, but one decomposition suggested by Tille and van Wincoop (2010) separates what we will call an income effect—new savings allocated based on past portfolio weights—from a switching effect aimed at altering portfolio allocations. In stock-based measures, the decomposition is more straightforward. With data on changes in portfolio weights, the components are passive (caused solely by relative valuation changes) and active portfolio reallocations (defined as changes in weights relative to buy-and-hold weights). Separating the two requires accurate measures of portfolio returns, something not always available, so we propose a more easily constructed stock-based measure: normalized relative weight. Relative weight is a country's share in investors' portfolios relative to its share in a global benchmark portfolio. Normalized relative weight controls for the degree of home bias on home securities and isolates active portfolio reallocations.

To distinguish between the components, we use a dataset of U.S. investors' flows to and portfolios in emerging market equities. The reader should note at the outset that our goal here is not to find the perfect estimated equation that explains capital flows—we leave that substantial and difficult undertaking for others—but rather to provide a way forward for the literature by illustrating the importance of distinguishing between active and passive components of flows.

Our analysis is through simple graphs and reduced-form regressions. Many researchers (e.g., Fratzcher et al (2012) and Moore et al (2013)) and policymakers have wondered if the Federal Reserve's quantitative easing (QE) programs prompted large EME inflows or, in the words of Brazilian President Rousseff, "a monetary tsunami." And, indeed, we show that measures that include both a passive and an active component show that around the time of QE programs (especially QE1), inflows to EMEs surged and the share of EMEs in US portfolios increased. But the relative weight measure that isolates active reallocations does not show the same increase, suggesting that post-GFC flows into EME equities were due more to an income effect and/or passive changes in portfolios rather than the active reallocations of equity portfolios towards EMEs. Measures that combine two components tell one story, while a measure that isolates the active component tells another.

Similar results come through simple reduced-form regressions that attempt to shed light on possible drivers of flows. Two variables of recent interest—the VIX and capital controls—have very different impacts depending on whether the flow measure includes both components or isolates the active portion. VIX is highly significant in regressions of flows (a measure that comingles portfolio growth with an active component), but less so for portfolio reallocations, suggesting that VIX is mainly capturing an income effect. Capital controls are significant when a measure that includes a passive component is used but not when active changes are isolated, suggesting that they are capturing valuation

changes rather than active reallocations. Conclusions about drivers of capital flows depend on whether the measure includes both components or isolates the active portion.

Our work rests on the long empirical literature on international capital flows that dates at least as far back as Calvo, Leiderman and Reinhart (1993, 1996). Other seminal contributions include Bohn and Tesar (1996), Brennan and Cao (1997), and Chuhan, Claessens, and Mamingi (1998). A short list of more recent papers includes Griffin, Nardari and Stulz (2004), Galstyan and Lane (2013), Broner et al. (2013), Fratzscher (2012), and Forbes, Fratzscher and Straub (2013).

The paper proceeds as follows. In Section 2 we discuss the wide variety of measures used in the literature. We illustrate the importance of differentiating passive and active reallocations through simple graphs of various measures in Section 3 and then through simple reduced-form regressions in Section 4. In Section 5 we briefly discuss a few additional points on the estimation of active flows might and the use our relative weight measure to assess active switching between asset classes. Section 6 concludes.

2. Measures of Capital Flows

Anyone setting out to conduct empirical analysis of capital flows must first decide exactly what form the capital flows measure should take. Of course, the exact measure of flows one uses should depend on the question being addressed. For example, recipient countries might care about the sheer volume of inflows (presumably relative to the size of their financial system), whereas a study of investors' motivations when they alter portfolios might focus on changes in portfolio allocations rather than the dollar amount of flows. One could turn to the existing empirical literature on capital flows for guidance, but capital flows as a dependent variable has been constructed in a myriad ways that are not always systematically linked to the type of question being addressed. Chuhan et al. (1998) use *the dollar amount* of US flows to EMEs. Brennan and Cao (1997) use *normalized flows* (current quarter's US flows normalized by the average flows over the previous four quarters). Galstyan and Lane (2013) use

log changes in portfolio positions as reported through the IMF's CPIS. Forbes, Fratzscher and Straub (2013) use quarterly *net portfolio inflows expressed as a percent of lagged total portfolio assets*, as reported through EPFR (and note that results are similar if not scaled by portfolio assets). Forbes et al. (2012) use a *portfolio share* measure (from EPFR data, the share of a fund group's portfolio allocated to country *i*). Ahmed and Zlate (2014) *scale net or gross BOP inflows by GDP*. Milesi-Ferretti and Tille (2012) use *scaled changes in flows* (scaled by GDP or the size of external positions). Griffin, Nardari and Stulz (2004) and Edison and Warnock (2008) use *net inflows scaled by local market capitalization*. The IMF uses EPFR *flows scaled by assets under management* (IMF 2014) and *net flows scaled by GDP* (IMF 2011).

As we will show in this section, many off-the-shelf measures of flows or changes in portfolio shares contain two components—one active and one that is more passive—as depicted in Box 1. At the same time, regardless of the measure used—and whether it speaks to portfolio growth or passive reallocations in addition to active reallocations (or active flows)—the language is remarkably consistent across papers and almost always connotes active portfolio reallocations.

Box 1. A Decomposition of Flow- and Stock-Based Measures of Portfolio Flows

		Passive Component	Active Component
Flow-based	Capital Flows	Income Effect *flows from passive allocation of new savings*	Switching Effect *active flows to change portfolio composition*
Stock-based	Change in Portfolio Weights	Passive Portfolio Reallocations *due to relative price changes*	Active Portfolio Reallocations *defined relative to buy-and-hold weights*

2.1 Portfolio Flows Have Active and Passive Components

While different questions require different measures, missing in the literature is an appreciation of a simple point raised in Tille and van Wincoop (2010): Capital flows (and, hence, the flows EMEs

experience) are the result of something passive—the allocation of new savings according to last period's portfolio weights—as well as active portfolio reallocation. Specifically, portfolio flows (CF) in period *t+1* to country *i* are due to two components. One is the *active flows* (AF_i) that occur when an investor actively sells one asset for another, such as selling Brazilian equities and using the funds to buy Mexican equities. But there is a second component: the investor's new savings (*S*) that is allocated passively based on existing portfolio weights (η_i). Tille and van Wincoop (2010), following Kraay and Ventura (2000, 2003), call this component "portfolio growth", but we will refer to it as income effect: Investors have new income, save some portion of it, and then allocate that new savings according to last period's portfolio weights.

In terms of countries, rather than individual investors, portfolio flows can be decomposed as follows:

$$CF_{i,t+1} = \eta_{i,t} * S_{t+1} + AF_{i,t+1} \quad (1)$$

Thus, when using flow data, to focus on the active flow to country *i* we could compute the following:

$$AF_{i,t+1} = CF_{i,t+1} - \eta_{i,t} * S_{t+1} \quad (2)$$

where $\eta_{i,t}$ is the weight of asset *i* in the investor country's entire financial portfolio.

Equations (1) and (2) pose at least two difficulties for capital flows research. One, most capital flows datasets, and thus most capital flow measures, do not disentangle the income effect ($\eta_{i,t} * S_{t+1}$) from active portfolio reallocations. And flows due to new savings can be large. For example, over the period 2011-2013, had U.S. investors just allocated new savings (which averaged $1100 billion) to foreign equities according to existing portfolio weights (a roughly 9 percent weighting), annual U.S. flows into foreign equities would have averaged $98 billion, about 76 percent of the recorded $128 billion in annual flows. Flows due just to allocating new savings according to existing portfolio weights can be a substantial portion of overall flows.

The second difficulty for capital flows research is that the passive component of (1) and (2)—allocating new savings according to existing portfolio weights—loses some meaning as the world evolves. For example, if foreign markets disappear, the passive component in (1) and (2) would assume investors still allocate based on last period's weights, something that would not be possible. So while we can separate flows into an active component and one that is more passive, the relevance of that separation is not entirely clear.

2.2 Flows Are Often Considered Identical to Portfolio Reallocations

A further complication is that in the capital flows literature stock-based measures (such as changes in portfolio composition) are often equated with capital flows. This goes back at least as far as the influential Bohn and Tesar (1996) study: "[i]f expected returns change over time and investors are heterogenous…portfolio weights will change and transactions can occur. Net purchases, or capital flows in the international context, will result" and "if these variables are good proxies for changes in the expected risk-return tradeoff, then they can explain changes in portfolio composition, i.e., capital flows." Subsequent papers readily equated flows and portfolio reallocations. Chuhan et al (1998) study "the factors motivating the large capital flows to a number of developing countries" and refer explicitly to the Bohn and Tesar (1996) framework. More recently, Fratzscher (2012) uses net capital flow to country *i* during week *t*, noting that "relatively little work so far has been undertaken on investment decisions and capital flows at the micro level of individual investors and funds", essentially equating investment decisions and flows. Edison and Warnock (2008) "assume that U.S. investors choose how to allocate their wealth…between U.S. equities and the equities of J emerging markets" and "the portfolio weight in emerging market *j* is given by" net U.S. purchases of stocks in country *j* scaled by country *j*'s market capitalization. Griffin, Nadari and Stulz (2004) note that "an intertemporal equilibrium model based on investors' portfolio decisions can explain the dynamics of high-frequency equity flows". The language

in Brennan and Cao (1997), which models flows, focuses explicitly on the active portfolio reallocations of home and foreign investors. Albuquerque, Bauer and Schneider (2009) use flows (specifically, US purchases scaled by local market cap) to test their model of global return chasing (measured as a positive comovement of US investors' net purchases with country returns).

As we will discuss below in Section 3, equating flows with active investment decisions presumes financial wealth is constant or, in the language of Tille and van Wincoop (2010), that portfolio growth is zero because there is no new savings to allocate. Zero portfolio growth (i.e., zero new savings) was explicitly assumed in Bohn and Tesar (1996) and Brennan and Cao (1997), but that assumption seems to have been forgotten in empirical capital flows research.

While the use of stock-based measures, such as changes in portfolio weights, complicates matters somewhat in that we have more measures to keep track of and understand, there is at least one benefit. Stock-based measures bypass the need to decompose using equations (1) and (2) in part because such measures are already defined relative to the size of the portfolio.

2.3 Changes in Portfolio Shares Avoid One Problem but Introduce Another

Often capital flows research is based on changes in portfolio shares. In contrast to flows, which conflate income and switching components, portfolio share measures have the desirable feature of being able to differentiate reallocations from growth in the size of the portfolio. But even portfolio share measures conflate two components: reallocations might be active but can also be passive (i.e., occurring without any trading, due solely to relative valuation changes that alter portfolio weights). That is,

$$\Delta\text{Portfolio Share}_{t+1} = \omega_{i,t+1} - \omega_{i,t} \quad (3)$$

where ω_i is weight of country *i* in the investors' portfolio. But some of this portfolio change is passive, due merely to changes in relative prices. Let $R_{i,t+1}$ and $R_{P,t+1}$ be gross returns on country *i* equities (for

example) and the entire portfolio, respectively. Then the passive change in portfolio weights is $\omega_{i,t}(R_{i,t+1}/R_{P,t+1} - 1)$ and the active change is $\omega_{i,t+1} - \omega_{i,t}(R_{i,t+1}/R_{P,t+1})$. The overall change in portfolio share has passive and active components:

$$\begin{aligned} \Delta\text{Portfolio Share} &= \text{Passive Change} + \text{Active Change} \\ &= \omega_{i,t}(R_{i,t+1}/R_{P,t+1} - 1) + \omega_{i,t+1} - \omega_{i,t}(R_{i,t+1}/R_{P,t+1}) \end{aligned} \quad (4)$$

which sums to $\omega_{i,t+1} - \omega_{i,t}$, as in (3).[3] As with capital flows data, off-the-shelf measures of changes in portfolio shares will conflate two components, in this case passive and active reallocations. But with portfolio share data, one can isolate active reallocations as long as R_i/R_P can be computed. In practice, as long as there is confidence that measures of R_i and R_p are accurate, this way of isolating the active portion is likely cleaner than doing so with flow data.

2.4 A Measure that Readily Isolates Active Portfolio Reallocations: The Normalized Relative Weight

A measure that readily isolates a set of investors' active reallocations is the normalized relative weight. Define relative weight as a country's share in the investors' portfolios relative to its share in a benchmark such as the global market portfolio. That is, for US investors the relative weight on country *i*'s equities can be expressed as

$$RW_i^{US} = \omega_i^{US}/(\frac{MC_i}{MC_{world}}) \quad (5)$$

where MC_i and MC_{world} denote the market capitalizations of country *i* and the world.

[3] The active change in eq. (4), which is the Ferson and Khang (2002) and Badrinath and Wahal (2002) refinement of Grinblatt, Titman, and Wermers (1995) measure, is the focus of Curcuru et al. (2011, 2014).

Equation (5) is a straightforward summary measure of the degree of over- or underweighting of country *i* in investors' portfolios.[5] But the first difference of (5) is influenced by relative price changes if portfolio and market capitalization weights differ, as they usually will.[6] A simple fix is to normalize relative weight by the home country's relative weight on its own securities. That is, define US investors' *normalized* relative weight on country *i* as their relative weight on country *i* securities—country *i*'s share in US investors' portfolios divided by its share in the global market—divided by US investors' relative weight on US securities:

$$NormRW_i^{US} = RW_i^{US}/RW_{US}^{US} \qquad (6)$$

Normalized relative weight—essentially, relative weight in which the degree of home bias on investors' home securities is controlled for—isolates active reallocations.

To see that normalized relative weight is not affected by passive reallocations due to relative price changes, assume for simplicity a two-country world.[7] Denote the *quantity* of Home investors' holdings of Home and Foreign equities by Q^H and Q^F. Denote supply with overbars; supply of Home and Foreign equities is $\overline{Q^H}$ and $\overline{Q^F}$. Let P^H and P^F be the prices of Home and Foreign equities. Therefore, the total value of Home investors' holdings of Home and Foreign equities is $P^HQ^H + P^FQ^F$; for simplicity call that X_1. The world market capitalization is $P^H\overline{Q^H} + P^F\overline{Q^F}$; call that X_2. The weight of Foreign equities in Home portfolios is P^FQ^F / X_1 and their weight in world market is $P^F\overline{Q^F}/ X_2$. Define Home

[5] The level of (5), a common measure of home bias defined relative to the global benchmark as used in Ahearne et al. (2004) and many others, assumes that the world portfolio is the benchmark.

[6] An example sheds light on why. Consider a situation in which there is a home bias, such as in U.S. investors' portfolios the fact that the weight on U.S. equities exceeds their weight in world markets. An increase in foreign country *i*'s prices would increase the numerator in (5) more than the denominator, causing the ratio to increase. Intuitively, since country *i*'s equities are underweight in U.S. portfolios, the price increase boosts the value of U.S. portfolios less than the world market capitalization. In turn, the value of country *i*'s equities rises more relative to the U.S. portfolios than to the world market capitalization, leading to an increase in RW_i^{US}.

[7] We thank Eric van Wincoop for pushing us toward this algebraic illustration.

investors' relative weight in Foreign equities—Foreign equities' weight in Home portfolios relative to their weight in the world market portfolio—as

$$RW_F^H = P^F Q^F / X_1 / (P^F \overline{Q^F} / X_2). \quad (7)$$

Similarly, Home investors' relative weight in Home equities is

$$RW_H^H = P^H Q^H / X_1 / (P^H \overline{Q^H} / X_2). \quad (8)$$

Define normalized relative weight as RW_F^H / RW_H^H:

$$RW_F^H / RW_H^H = (Q^F / \overline{Q^F}) / (Q^H / \overline{Q^H}). \quad (9)$$

As (9) shows, normalized relative weight—the share of Foreign equities owned by Home investors divided by the share of Home equities owned by Home investors—is not a function of prices.[8]

Box 2 compares the active and passive components of three different flow- and stock-based measures of portfolio flows.

Box 2. Another Decomposition of Flow- and Stock-Based Measures of Portfolio Flows

		Passive Component	Active Component
Flow-based	Capital Flows	Income Effect *flows from passive allocation of new savings*	Switching Effect *active flows to change portfolio composition*
Stock-based	Change in Portfolio Weights	Passive Portfolio Reallocations *due to relative price changes*	Active Portfolio Reallocations *defined relative to buy-and-hold weights*
	Change in Normalized Relative Weight		Active Portfolio Reallocations *defined relative to a benchmark*

[8] Continuing with the example with home bias in U.S. portfolios, an increase in foreign country *i*'s prices would cause the U.S. investors' relative weight on U.S. securities (RW_{US}^{US}) to also rise, pushing it in the same direction as the relative weight on country *i*'s securities (RW_i^{US}) discussed earlier. Intuitively, since country *i*'s equities are underrepresented in U.S. portfolios, the share of U.S. equities in U.S. portfolios declines less than their share in world market capitalization, which causes RW_{US}^{US} to rise. As a result, the increase in country *i*'s prices causes both the numerator and the denominator in equation (6) to rise, and so the passive changes due to relative asset prices do not affect $NormRW_i^{US}$.

3. Does It Matter? The Story Through Simple Pictures

We illustrate the importance of differentiating portfolio growth from passive and active reallocations first through simple graphs of various measures and then, in Section 4, through simple reduced-form regressions. Our goal here is not to provide a definitive explanation of what drives capital flows but rather to illustrate the need to understand exactly what various measures can speak to.

Throughout we will use a quarterly dataset that covers the time period 2002 – 2012 for a set of nineteen countries: India, Indonesia, Korea, Malaysia, Philippines, Taiwan, and Thailand; Argentina, Brazil, Chile, Colombia, and Mexico; Czech Republic, Hungary, Poland, and Romania; and Israel, Turkey, and South Africa. For ease of exposition and because we do not want to introduce a new acronym, we will refer to the group as EMEs, even though at least two are clearly developed countries.

The first picture flows-based research must confront is Figure 1. Empirical work focused on flows often assumes, whether stated or not, that financial wealth is constant. Bohn and Tesar (1996) and Brennan and Cao (1997) recognized this, making clear that portfolio choice was made with respect to the size of the portfolio (financial wealth). Both controlled for changes in financial wealth by including a measure of U.S. equity returns in their regressions, but such control is imperfect. Financial wealth (Figure 1, thick line) is far from constant, evolving because of new savings (Figure 1, thin line), which maps directly into the Tille and van Wincoop (2010) concept of portfolio growth, as well as valuation changes on existing assets. Flows-based empirical work must recognize this fact highlighted by Tille and van Wincoop (2010).

Keeping in mind that financial wealth changes through time—portfolio growth occurs and is driving at least some of the capital flows one might want to study—we next turn to a pictorial tour of flow measures. We focus on equity flows, not because we feel that equity flows are necessarily the most important type of flow, but because data availability for equities allows us to readily consider a range of

measures from those that combine active reallocations with a passive component (flows due to an income effect or passive reallocations) to some that can isolate active reallocations.

3.1. Measures that Combine an Income Effect and Active Reallocations

Figure 2a shows that for EMEs BOP equity inflows—that is, Rest of World inflows into recipient-country equities, whether scaled by recipient country GDP or market capitalization—surged after the GFC. This surge in flows occurred at the same time as the Fed's QE policies—shown as bars depicting the size of LSAPs as a percent of US GDP—and appeared to have abated somewhat during pauses in QE, prompting many to wonder if QE led to EME inflows (e.g., Fratzcher et al (2012) and Moore et al (2013)). The surge is also observable in the more restricted EPFR mutual fund data on net flows into EME equities (Figure 2b).

In most datasets it is difficult to assess how flow analysis is impacted by the Tille and van Wincoop (2010) point that flows are in part passive (due to portfolio growth) and in part active (due to active portfolio reallocations). One dataset, though, that can allow us to make these distinctions is on U.S. investors' flows to and portfolios in EME equities, about which we have very detailed information. So for the remainder of this section we will restrict our analysis to US flows. US flows to EMEs (Figure 2c) tell a similar story to the BOP flows. That is, whether one refers to BOP or US data, flows to EMEs seem to have increased during the QE period, suggesting that Fed policy led to massive switching from AEs to EMEs.

However, equity inflows are due not only to active portfolio reallocations but also to passive ones due to portfolio growth (changes in financial wealth), so we cannot actually say anything about "switching" just by observing flows.

3.2 A Measure that Combines Passive and Active Reallocations

Another measure, portfolio shares (*US Share*)—shown in Figure 3 as both changes (top graph) and levels (bottom graph)—is immune to changes in the size of the portfolio. The weight of EMEs in US equity portfolios increased during QE (especially during QE1). While immune to changes in the size of the portfolio, portfolio shares still combine two components—portfolio shares can change because of active or passive reallocations—so Figure 3 doesn't actually tell us whether US investors switched toward EME equities during QE1 or if this was just a passive increase in US portfolios (because EME equity markets outperformed).

3.3 A Measure that Isolates Active Reallocations

The relative weight measure can isolate active reallocations. In Figure 4 we depict the raw relative weight (eq. 5) and normalized relative weight (eq. 6) of EME equities in US investors' portfolios. The relative weight measures appear to indicate that the increase of EME equities in US portfolios was due not to active reallocations but to passive ones. EMEs' relative weight increased, but the normalized relative weight did not, indicating that the increase in raw relative weight was due to the strong performance of EME equity markets. The normalized relative weight measure suggests US investors did not actively increase portfolio allocations to EME equities (relative to the value-weighted benchmark).

In sum, different measures of capital flows measure different things. Flows show a surge of inflows into EME equities after the GFC, but flows conflate a passive component (from portfolio growth allocated according to existing portfolio weights) with active portfolio reallocations. Changes in portfolio shares are immune to portfolio growth and do indeed measure portfolio reallocations, but those reallocations can be both active and passive. The change in the normalized relative weight measure is

the cleanest measure, as it is function of only one thing—active portfolio reallocations. Notably, US normalized relative weights in EME equities have not increased since the GFC, suggesting that the robust equity inflows experienced by EMEs were due more to portfolio growth than active reallocations.

4. The Many Forms in Regressions

Figures 2-4 showed that flows, portfolio shares, and a measure that focuses on active portfolio reallocations (relative weight) tell very different stories. We next show in simple reduced form regressions that the measures also lead to different conclusions about factors that drive capital flows. We will include some traditional factors; see, for example, the long-standing empirical literature on capital flows that focuses on push (global) and pull (local) factors, including the seminal papers Calvo, Leiderman and Reinhart (1993, 1996) and Chuhan, Claessens, and Mamingi (1998). The reader should note that our goal is not to provide a definitive explanation of capital flows but to use our regression analysis to illustrate that different measures tell different stories.

4.1 Possible Drivers of Capital Flows

We next describe four types of explanatory variables: standard push/pull factors such as differentials in growth, returns, and rates; a measure of exchange rate valuation; unconventional monetary policy by the Federal Reserve; and capital controls.

4.1.1 Standard Push and Pull Factors

The push-pull literature suggests a short list of possible proximate causes of equity flows to EMEs such as differentials in economic growth, returns, and interest rates. These are depicted in Figures 5 and 6.

Economic growth differentials—measured as the difference between four-quarter real GDP growth rates in each EME and an aggregate of AEs (Australia, Canada, the euro area, Japan, Sweden, UK, US)—have been persistent and at times sizeable. Aggregate real GDP growth in EMEs (Figure 5a, top red line) has consistently outpaced that in the AEs (the lower blue line), with the growth differential (the bars) recently fluctuating between a high of over 6 percent in late-2009 and early-2010 (reflecting EMEs' faster pace of recovery from the crisis) and a low of less than 2 percent in early 2012 (when EME growth had slowed and AEs experienced a short-lived uptick in growth). Policy interest rate differentials (Figure 5b, bars)—computed as the difference between the nominal policy rate for each EME and the U.S. Federal Funds rate—have been positive but have fluctuated notably. During the post-crisis recovery, the differing cyclical positions of the EMEs and AEs called for different monetary policy settings, increasing the policy rate differential in 2010 and 2011.

Other possible proximate causes of equity flows to EMEs, shown in Figure 6a and 6b, are exchange rates and equity returns differentials, both measures of potential investment returns. Some studies use deviations from long-run real effective exchange rates as a measure of over/under valuation of a currency and have found that flows into a country increase when exchange rate measures suggest the currency is undervalued. The equity returns differential, the difference in the equity market return of the target country less that of the source country, is another measure of the relative attractiveness of a country. Because equity market returns have been found to be positively autocorrelated investors may expect that a past positive returns differential predicts future excess returns, increasing flows into that country.

An indicator of global risk appetite (or the lack thereof) is the Volatility Index (VIX) computed by the Chicago Board Options. The VIX, a measure of the implied volatility of the S&P 500 index, serves as a proxy for the combination of perceived risk and risk aversion. Indeed, Figure 6c shows that

at times BOP flows to EMEs (the red line) have been correlated with the VIX index (the blue line, plotted on an inverted scale so that a movement in the upper direction represents more appetite for risk and less risk aversion). Capital flows to EMEs plunged during the investor panic after Lehman Brothers in 2008 and again as the European situation worsened in the second half of 2011 and in May 2012, although since 2013 changes in flows to EMEs have not been accompanied by corresponding changes in the VIX.

4.1.2 Unconventional Monetary Policy

Another possible driver of EME flows are the large scale asset purchases (LSAPs) by the Federal Reserve, which can be measured many ways (Ahmed and Zlate, 2014). Indicator variables can be used to mark initial announcements and implementation periods of the first three rounds of LSAPs (Figure 7a). The LSAP *announcement indicator* variable is equal to 1 for quarters when the programs were first announced or when the amount of purchases was extended, using standard announcement dates documented by the literature (see Gagnon et al., 2011, Krishnamurthy and Vissing-Jorgensen, 2011, and Bauer, 2012). The *implementation indicator* variable is equal to 1 for the duration of each program. Yields on 10-year U.S. treasury bonds, either actual (depicted in Figure 7b) or as instrumented by actual net asset purchases (the bars in Figure 7b) by the Federal Reserve from 2003:Q1 to 2013:Q2, can also be used to try to capture the effect of unconventional monetary easing.[10]

4.1.3 Capital Controls

Capital controls, long viewed with disfavor in the official international community, have undergone a reassessment.[11] Their effectiveness is unclear—results based on the historical experience

[10] The net asset purchases are obtained as the change in the end-of-quarter total holdings of agency debt securities, mortgage-backed securities, and U.S. Treasury securities expressed in billions of U.S. dollars. For asset holdings, see http://www.federalreserve.gov/datadownload/, under Factors Affecting Reserve Balances (H.4.1).

[11] This reassessment has been led by the IMF, which now supports the use of controls when the domestic currency is not undervalued, when the level of reserves is already adequate, and when the economy is in danger of overheating, so that monetary easing to alleviate capital inflows would be undesirable (see, for example, IMF 2010, 2011, 2012; Ostry et al., 2011). The IMF emphasizes that controls should not be used to substitute for necessary macroeconomic policy adjustments.

prior to 2009 generally suggest that capital controls have been more successful in altering the composition of flows to a country than in changing the aggregate volume, except perhaps in the very short run—but capital controls have recently become an oft-adjusted policy tool for EMEs.[12]

Existing measures are not well suited for studying changes in capital controls because they are either available only at a low frequency (typically annually), or because they tend to be built from 0/1 indicators on whether controls exist or not, and thus do not capture much of the time variation in the *intensity* of restrictions. A standard example of the typical limitation is India, which has some sort of capital control across all categories and so would enter most measures as completely closed, whereas in reality (as we will show) India has steadily reduced its restrictions.

We create a new measure of capital flow management (CFM) restrictions—the number of CFM restrictions in place—that aims to address these limitations. We describe the measure in some detail in the appendix, but briefly our measure is a count, over the period from 2002 to 2012, of the number of steps countries undergo to put new restrictions in place, tighten or ease them, or remove them altogether.[13] The measure is available at a high frequency—it is entered as of implementation date and so can be used with daily data, if desired—and can be disaggregated by asset type (portfolio equity,

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This changing view of capital controls has also been accompanied by a growing theoretical literature that more rigorously models the gains and costs of capital-account restrictions; see, for example, Korinek (2011).

[12] In studies of individual country experiences, De Gregorio et al. (2000) focus on Chile over the period 1991-98; Cardenas and Barrera (1997) and Clements and Kamil (2009) focus on Colombia over the periods 1993-98 and 2007-08, respectively; Cardoso and Goldfajn (1998) focus on Brazil over the mid-1990s; and Coelho and Gallagher (2010) focus on Colombia and Thailand in the run-up to the 2008-09 crisis. In panel studies, Montiel and Reinhart (1999) use an index measuring the incidence and intensity of capital account restrictions for 15 EMEs over the period 1990-96, and Binici, Hutchison, and Schindler (2009) use a measure of capital account restrictions from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) database for 74 countries. Fernandez, Rebucci, and Uribe (2014) update the Schindler measure and find that capital controls are surprisingly acyclical (with respect to various macro measures). Miniane (2004) and Pasricha (2012) examine properties of capital control measures based on the IMF's AREAER classification of capital account restrictions. More broadly, Ostry et al. (2010) provide a survey on the effectiveness of capital controls prior to 2009. In contrast to the above studies, which do not find a persistent effect of controls on the volume of flows, a cross-country study, IMF (2007), suggests that episodes of capital inflow surges with tighter controls were associated with lower net private inflows. Magud, Reinhart, and Rogoff (2011) find that certain country-specific characteristics need to exist for capital controls to be effective and, thus, not surprisingly, some capital controls were effective and some not.

[13] To form our measure, the main source of information is the qualitative narrative description in the "Changes during year" section of the IMF's AREAER. We focus here on restrictions on non-residents' gross inflows into EMEs. Using the same methodology and data sources the measure could be extended to cover the residents' gross capital outflows.

portfolio bond, FDI, and banking/other). In terms of the Klein (2012) "gates and walls" distinction, our measure is of gates, in the sense that it captures the intensity of restrictions over time for a given country and instrument rather than the level of long-standing controls (and so is more suitable for panel studies in which the initial level might be captured by country fixed effects).

Figure 8 depicts, for 18 countries from 2002 through 2012, the cumulative number of measures in place in any given quarter (the blue solid lines) and its first difference (the number of new measures introduced in a quarter, the red dashed lines). The measure's ability to capture gates but not walls is readily apparent. That Malaysia, for example, had some level of controls at the beginning of the sample is not captured by our measure, but its subsequent steps to relax controls are evident. Another example is Brazil. The measure captures Brazil's imposition of a 2-percent tax on foreigners' investments in fixed income in October 2009, the subsequent two-step tightening (when the tax was raised to 4 percent and then to 6 percent by October 2010) and the removal of the tax in June 2013.[14] Details on the types of controls implemented by selected countries are in Table 1.

An important question for capital flow research is whether capital controls measures can be considered exogenous in regressions of flows. We do not aim to definitively answer this question here, but note that Fernandez, Rebucci, and Uribe (2014) find that annual capital controls measures are remarkably acyclical with respect to output, the current account or the real exchange rate. Our measure is higher frequency and thus perhaps better suited to pick up cyclicality, and policymakers may well be reacting to capital flows when altering capital controls, so as a check we regress the number of new measures implemented in a given quarter on current and lagged flow variables as well as other variables suggested by the literature (Table 2). There appears to be a structural break in the behavior of CFMs from pre- to post-crisis. In the full sample (Panel A), nothing is significant, similar to the Fernandez,

[14] Brazil's removal of the tax effectively reversed three tightening steps and is coded as such to maintain consistency over time for a given country.

Rebucci, and Uribe (2014) acyclicality result. Prior to the crisis (Panel B), EMEs implemented capital controls when their economic growth was low relative to AE growth. Post-crisis (Panel C), EMEs implemented capital controls amid currency appreciation pressures. But in no sample do we find that flows are leading to changes in CFMs, suggesting that at least for the purpose of this paper CFMs can enter flows regressions as exogenous factors.

4.2 Regression Results

The results of our regressions on the various capital flow measures are in Table 3, which we divide into four panels.

The dependent variables in Panels A (BOP equity inflows) and B (US equity inflows) are measures that combine the income effects with active reallocations. In those panels, the main story is of VIX. In all samples (full, pre-GFC, post-GFC), a lower VIX is associated with more equity inflows to EMEs. For BOP flows (Panel A), past returns differentials are also significant in many cases and LSAP is positive and significant in the full sample. The number of capital controls (CFM) has significant negative effect on BOP flows in the post crisis period, but not on US flows (Panel B).

The dependent variables in Panel C (changes in US portfolio shares and raw relative weight) are stock-based measures that omit portfolio growth but still have two components: active reallocations and passive reallocations (due to relative price changes). Note too that the portfolio shares in Panel C are defined in two ways. "Foreign" includes only the non-US equity portfolio and so captures changes within US investors' foreign equity portfolio (between, for example, EMEs and AEs). "Global" includes non-US and US equities and so also includes changes between the US and non-US components. With the measures that exclude portfolio growth, VIX is almost always insignificant; comparing this with the flows results of Panels A and B would suggest VIX is capturing more portfolio growth than

reallocations. The main story in Panel C is of equity returns differentials. After a quarter in which an EME experiences high returns its share in US portfolios increases. Notably, CFMs are negative and significant in the post-GFC period, suggesting that the tightening of capital controls was associated with decreasing shares in US portfolios. Whether the decreased shares associated with tighter capital controls was due to active trading away from the EME or just a passive reduction (due to relative price changes) is not discernable from Panel C's portfolio share results (or with any dependent variable that includes the passive reallocation component).

Panel D uses the normalized relative weight measure that isolates active reallocations. Lagged returns differentials lose much (but not all) of their significance, suggesting that the strong significance of lagged returns in Panel C could be due to some persistence in returns differentials, which would create passive changes in allocations. US Treasury yields are negative and significant in all samples.

The simple regressions in Table 3 highlight that different forms of flows yield different conclusions. We note here three variables of recent interest: the VIX, LSAPs, and capital controls. VIX is highly significant in flows regressions but less so for portfolio reallocations, suggesting VIX is mainly capturing equity portfolio growth. LSAPs are significant only in regressions with BOP flows and only over the entire sample period, suggesting they may have affected flows to EMEs through passive rather than active reallocations. For CFMs, that they are significant when a measure that includes a passive component is used but not when active changes are isolated suggests that CFM results are capturing valuation changes rather than active reallocations.

Summary of Results from Alternative Specifications

There is nothing sacred about the set of explanatory variables we used in Table 3. We have explored many combinations, starting from a parsimonious set of just Treasury yield, returns

differentials, real exchange rate and capital controls and then adding the other variables, omitting some, etc. For VIX, lagged return differentials, CFMs and LSAPs, what we have conveyed above and in Table 3 holds across the alternative specifications. Lagged return differentials are positive and significant except for US flows in Panel B. VIX is negative and significant only in panels A and B, suggesting it mostly affects portfolio growth, although it also has some effect on the change in RW in Panel C. LSAPs work mostly in Panels A and B -- which also looks like a portfolio growth story -- and to a smaller extent also in Panel C with US global portfolios. CFMs are significant in Panels A, B, C but not in Panel D, suggesting they have an effect on passive allocations through relative prices.

We also used other components of the CFM measure. The results for CFM are the same whether we use the total measure, the measure for equity inflows, or the measure for equities + bonds.

Notably, the effect of low US Treasury yields is significant for the full, pre and post samples in Panel D, even in specifications where LSAP is not included. One interpretation is that Treasury yields drive active reallocations, along with the return differentials, and that the effect of yields is the same with or without unconventional monetary policy (as in Bowman et al.).

The policy rate differential is positive and significant for US flows in the post-crisis period (panel B) and also for the change in normalized relative weight (panel D) in our reported results as well as alternative specifications.

5. A Few Additional Points

In this section we briefly mention a few additional points.

The reader might notice that in Section 4 we calculated the active component of a portfolio-based measure but not for capital flows. The reason is that we believe the separation of passive and active components is cleanest when using the portfolio-based measures and normalized relative weight.

There "active" is the deviation from a benchmark that emerges from theory (the international CAPM). In contrast, with flow-based measures the active portion is calculated as a residual that requires a stand on the exact measure of the passive portion. The passive portion could be calculated as this period's new savings – although to some extent saving involves an active decision – allocated according to last period's portfolio weights, but that decomposition does not seem to be based on theory. It would also ignore how markets are evolving (for example, the Raddatz et al (2014) benchmark effect); if a market disappeared, flows that followed the simple "allocate based on past weights" rule would not be feasible. Thus, while it is certainly possible to calculate a passive component of flows, cleaner is to start with a portfolio-based measure. For example, passive flows could be defined as those that for given changes in market size would maintain a constant relative weight.

Note that our analysis of active portfolio changes has been about within-asset-class reallocations. The benchmark was the global equity market and the portfolio considered was U.S. investors' global equity portfolio. As such, our analysis had nothing to say about the switching between asset classes (for example, from bonds to equities) or within other asset classes.[15] But the relative weight measure can be constructed using total financial assets as the benchmark. That is, while our focus here is still on EME19 equities, the comparators are the U.S. portfolio measured by all U.S. financial assets (line 9 of Flow of Funds table B.100) and global financial assets (provided by McKinsey Global Institute), such that normalized relative weight will capture US investors' active switching from EME19 equities to other equities and other asset classes. Figure 9 suggests that U.S. flows to EME equities have been in line with those markets' increased importance in the global market.

[15] Burger et al. (2015), a within-asset-class study of local currency bonds, shows that over the 2007-2011period U.S. investors switched out of US bonds and into EME local currency bonds.

6. Conclusion

Many forms of international capital flows are used in the literature. Underappreciated is that these different forms can conflate active portfolio reallocations with a passive component that is due to either the allocation of new savings according to old portfolio weights (in flows data) or passive portfolio reallocations from relative price changes (in portfolio shares data). We form a portfolio-based measure (normalized relative weight) that isolates the active portion and show in a series of simple pictures and reduced-form regressions that the different forms yield very different stories. Our results indicate that researchers should be exceedingly careful when selecting a flow measure to analyze the underlying drivers of flows. Our graphical results showed that the post-GFC surge in inflows into EME equities is apparent in flows and portfolio allocations (two measures that conflate a passive component with active reallocations) but not in the relative weight measure that isolates active portfolio reallocations. This suggests that the robust inflows experienced by EMEs were due more to equity portfolio growth than active reallocations between EME equities and other equities. Our simple regressions, which focus on the determinants of flows, suggest that the VIX is mainly capturing portfolio growth and CFM seems more related to valuation changes (and, hence, passive reallocations) rather than active reallocations.

While we are confident that the stock-based normalized relative weight measure isolates active portfolio reallocations, we are less sure that there is a clean way to differentiate between the active and passive components in flow-based measures. That said, an interesting path for future research is to take into account that flows have two components and revisit much of what we have learned about capital flows. For example, we hear that flows are procyclical and volatile. Overall flows may well be procyclical, but is that just due to the passive component? Is the active component procyclical? Is flow volatility due to the active portion (likely) or the passive component? EMEs on the receiving end of

flows should recognize that as a group they will receive about $20 billion of US equity flows per year just from new savings allocated according to last year's portfolio weights.[16] The sudden stops literature is likely by design picking up the active portion of flows, but any study of flows in normal periods comingle active and passive.

Flows data are capable of telling many stories. We need to be clear that the measure we use is consistent with the story we are telling.

[16] This calculation is for the 19 countries in our sample. For all foreign equities, passive US flows defined this way (new savings allocated at last year's weights) are running at about $100 billion annually.

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Data Appendix

Our working sample of 19 countries includes India, Indonesia, Korea, Malaysia, Philippines, Taiwan, and Thailand; Argentina, Brazil, Chile, Colombia, and Mexico; Czech Republic, Hungary, Poland, and Romania; and Israel, Turkey, and South Africa.

"LSAP" is the change in Federal Reserve holdings of securities (scaled by GDP) starting the in LSAP period of 2008Q3, zero otherwise. Fed securities holdings are from the Fed's H.4.1 release (http://www.federalreserve.gov/releases/h41/).

CFM measures are constructed by the authors, as described in the text and appendix. The data are posted at http://faculty.darden.virginia.edu/warnockf/ACWZ_CFM_Feb2015.xlsx.

Exchange rate valuation is computed as the percent deviation of the quarterly real effective exchange rate (REER) from the average level of the previous five years. Higher values are associated with a more overvalued exchange rate.

GDP growth differential is the difference in real GDP growth rates between the EME country and an aggregate of advanced economies.

The policy rate differential is the difference in policy rates between the EME country and the US.

Country level GDP and policy rates from Global Financial Data.

VIX is from Bloomberg. Higher values indicate increased expected volatility and/or increased risk aversion.

Flows vis-à-vis Rest of the World (ROW):

BOP flows, from the IMF, provide data on the dollar amount of flows (gross and net, by major flow type) between the reporting country and ROW. We scale BOP flows by either reporting country nominal GDP (in USD, from Global Financial Data) or local equity market capitalization. Note that the IMF's change from BPM5 to BPM6 required us splice the now discontinued BPM5 series with the new BPM6 (which only begin in 2006).

US flows to and positions in EME equities:

US investors' equity positions in and flows to EME equity markets are created from Bertaut and Tryon (2007) data, available through 2010 on http://www.federalreserve.gov/PUBS/ifdp/2007/910/default.htm, with estimates since end-2010 constructed by the authors using a modified Thomas, Warnock and Wongswan (2004) technique (the technique Bertaut and Tryon modified). (Total foreign holdings of US equities, necessary to form the relative weight measure, is from Bertaut and Tryon (2007) through June 2011, and thereafter from the new monthly data on holdings of U.S. long-term securities by foreign residents (http://www.treasury.gov/resource-center/data-chart-center/tic/Pages/ticsec2.aspx).

Equity market capitalization data are from Bloomberg and Datastream and http://www.world-exchanges.org/.

We use the following eight flow measures as dependent variables:

BOP Equity Inflows: BOP Gross Equity Inflows, scaled by local GDP or local market capitalization.

USEqFlows: US flows into local equities, scaled by local GDP or local market capitalization.

USPortShare_Global: The share of local equities in the US global equity portfolio (first differenced)

USPortShare_Foreign: The share of local equities in the US foreign equity portfolio (first differenced)

RelWgt_Global: The weight of local equities in US investors' global equity portfolio divided by their weight in global market capitalization (first differenced)

Normalized RelWgt_Global: RelWgt_Global normalized by the relative weight on home equities (first differenced)

Appendix on Capital Controls

As noted in Schindler (2009), most measures of capital controls face a trade-off, whereby it is difficult to describe the nature of restrictions consistently across a broad set of countries and over long time interval. For example, the index of capital account openness in Chinn and Ito (2008) covers as many as 182 countries from 1970 to 2006, but relies on binary indicators provided in the summary tables of IMF's Annual Report on Exchange Agreements and Exchange Restrictions (AREAER). The measure does not capture time-varying changes in the intensity of restrictions nor distinguish by asset type, resident status, or the direction of flows. Also using binary data from the AREAER summary tables, Schindler (2009) constructs a measure of capital controls for 91 countries over 1995-2005 and distinguishes by asset type, resident status, and the direction of flows; however, conditional on restrictions being in place, the measure does not capture the time-varying intensity of such restrictions. The Quinn (1997) and Quinn, Schindler, and Toyoda (2011) measure does captures the time-varying intensity of restrictions, albeit only at the annual frequency. Covering 122 countries over almost six decades, the authors augment binary data from the AREAER summary tables with qualitative descriptions from the report to summarize restrictions and gauge their intensity for six types of international transactions, although the measure does not distinguish by asset type or the direction of capital flows. A recent effort that extends and codifies the Schindler (2009) measure is Fernández et al. (2015).

All of the above mentioned are annual and most do not capture the time-varying intensity of capital controls, limiting their usefulness in studies of capital flows. Ahmed and Zlate (2014) presents for a small set of countries and short time span a higher frequency (quarterly) measure that aims to capture the time-varying intensity of CFM restrictions. Our measure builds on Ahmed and Zlate (2014), extending it across a number of dimension (time, number of countries, and number of asset classes).

Our measure—a count of the number of steps that countries undergo put new restrictions in place, tighten or ease them, or remove them altogether—is built from the qualitative narrative descriptions in the "Changes during year" sections of the IMF's AREAER. Steps to impose or tighten restrictions are entered with a positive sign and those to ease or remove restrictions are entered with a negative sign. The cumulative count of the number of steps undertaken by each country since the beginning of the sample measures "the number of CFM restrictions in place," with higher values indicating greater restrictiveness. We construct the measure by asset type for 19 countries for the period 2002-2012 and, while we focus on gross capital inflows, a measure for gross capital outflow restrictions could be readily constructed.

The measure is designed to account for the time-varying incidence and intensity of capital flow management (CFM) restrictions at a higher frequency. In terms of the Klein (2012) gates and walls, our measures are of gates, in a sense that we account for the time-varying intensity of restrictions rather than for long-standing controls on capital flows for each country. The new measures are entered as of implementation date and so can be used with daily data, if desired. For our purposes we focus on a quarterly frequency. The measure is also disaggregated by asset type (portfolio equity, portfolio bond, FDI, and banking/other) and so can be used for a wide range of purposes.

Two caveats apply to our measure. While it allows to compare the intensity of capital controls over time for a given country and instrument, it is less able to compare intensity across countries due to the heterogeneity in capital control instruments. Also, the cumulative measure of CFM restrictions is dependent on the initial level of restrictiveness in each country, so it is more suitable for panel studies in which the initial level can be captured by country fixed effects.

For capital inflows, our methodology for coding CFM measures considers measures that tighten or loosen:

- Restrictions on FDI, which may be sector-specific or not.
- Taxes on FDI, portfolio, or banking inflows, or on the profits that foreigners obtain from such investments.
- Restrictions on the asset types that foreigners can purchase (e.g., restrictions on foreigner's purchases of certain types of government bonds, or on purchases of bonds beyond a certain fraction of the total issuance, etc.).
- Minimum stay requirements for foreign investments, or penalties on the early sale of assets or redemptions of profits.
- Restrictions on foreigners' purchases of foreign exchange for the repatriation of investments and profits, and restrictions on residents' purchases of foreign exchange for the repayment of loans and interest to non-residents (e.g., the approval requirement from Argentina's central bank).
- Reserve requirement (RR) on FDI or portfolio inflows to be held at the central bank for a minimum period of time, with penalty for early withdrawal.
- Taxes, restrictions, or RR on banks' or firms' FX liabilities, or on foreigners' bank deposits denominated in local currency, which may be differentiated by maturity.
- Taxes, restrictions, or RR on banks' FX derivative positions (e.g., caps on banks' short/oversold, long/overbought, or net open positions in the FX market relative to capital, which affect the size of the FX portion of banks' balance sheet, and hence the capital inflows).
- Remuneration on RR for banks' FX deposits, or RR on foreigners' bank deposits denominated in local currency (more remuneration encourages inflows).
- Restrictions on residents' borrowing or issuance of bonds denominated in FX (e.g., a ban on FX borrowing if the intent is to convert the proceeds in local currency in Korea).
- Taxes, restrictions or RR on firm's FX derivatives (e.g., caps firms' use of FX derivatives relative to export revenues).

Examples of actions we do not consider CFM events include macroprudential measures for the banking sector, such as capital requirements, risk weights, etc.; RR on banks' local currency deposits that do not discriminate against foreigners' deposits; measures addressing banks' maturity mismatches between FX assets and liabilities (e.g., banks must match a minimum fraction of their long-term FX assets with long-term FX liabilities), setting higher loss provisioning requirement for FX loans, or setting lower caps for the loan-to-value or debt-to-income ratios for FX loans; and restrictions on foreigners' ability to purchase real estate..

Types of measures vary by country (Table 1). First, authorities in a number of countries have modified their treatment of inward foreign direct investment (FDI) over time, with most of them having loosened restrictions at least in recent years (column 1).

Second, among the measures restricting portfolio inflows (column 2), authorities have recently imposed or adjusted taxes on investments by foreigners. Such taxes apply to the total volume of inflows (Brazil) or to the foreign investors' income from holding local government bonds (Korea and Thailand).

Third, authorities have imposed a number of restrictions on foreign investments in certain types of asset classes or maturities, as well as on foreigners' ability to repatriate the principal or profits from such investments (column 3). These measures can take the form of caps on the share of foreigners' own portfolios that can be invested in certain types of assets (e.g., Taiwan in 2009 and 2010, for holdings of time deposits and government bonds), caps on the share of outstanding domestic assets that can be held by foreign investors (e.g., Colombia in 2002), or strict reporting requirements for foreign investors in

certain asset classes (e.g., Israel in 2011, for holdings of short-term bills issued by the government or the central bank). In addition, measures restricting the repatriation of foreign investments or profits include outright bans on the purchases of foreign currency (e.g., Argentina) or minimum holding requirements (e.g., Colombia in 2004 banned foreigners from repatriating portfolio investments within one year from the date of investment; Argentina in 2005 required foreigners to hold incoming capital in the country for up to one year; Indonesia in 2010 and 2011 required investors to hold their short-term central bank bills for up to six months).

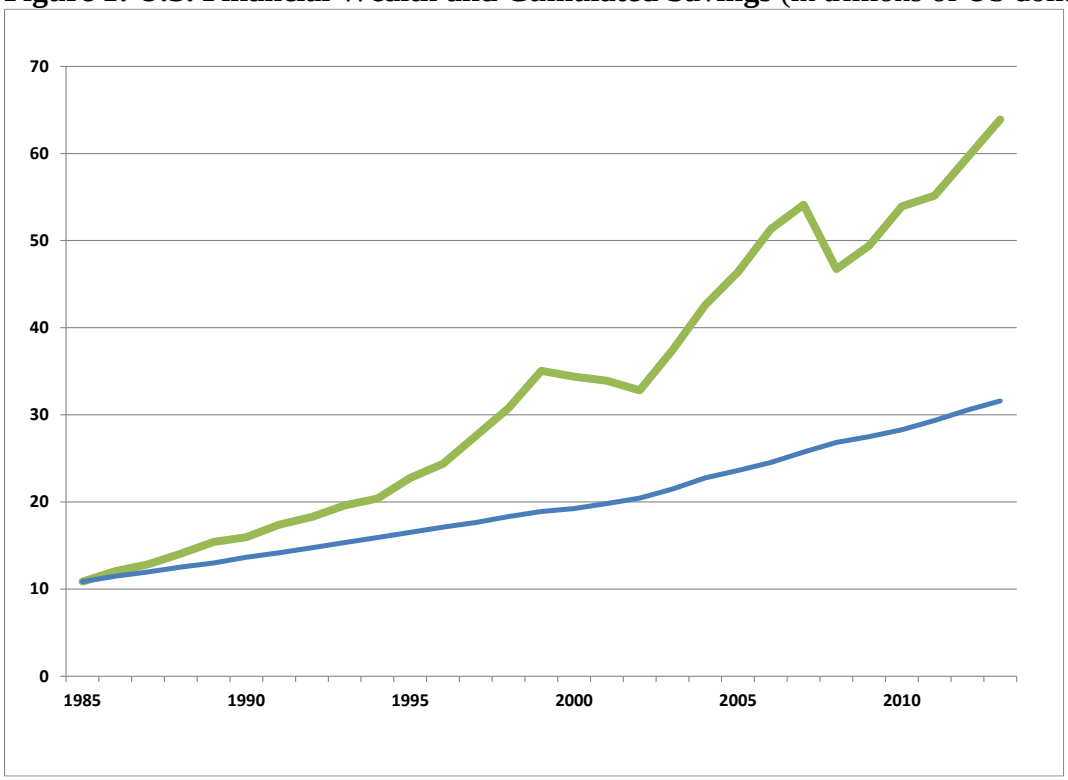
Fourth, some countries—for example, Argentina in 2005, Colombia in 2007, and Thailand in 2006—instituted reserve requirements that force foreigners to hold a certain fraction of their portfolio investments at the central bank, often in unremunerated accounts and with penalty for early withdrawal (column 4). Most of these restrictions were subsequently reversed (although not Argentina's).

Fifth, to restrict banking inflows, countries have used taxes on external borrowing, often with higher rates imposed on shorter-term loans (column 5). For example, this was the case in Brazil in 2008; the tax was revived in 2011 and 2012, but has since been partially reversed.

Sixth, there are limits on banks' exposure to external liabilities (column 6). Among these, a special type of measure limits banks' and firms' exposure to foreign exchange derivatives, in part to reduce the short-term external debt that banks would use to hedge these derivatives. This type of measure was imposed in Colombia, Indonesia, Korea and Thailand even before the GFC.

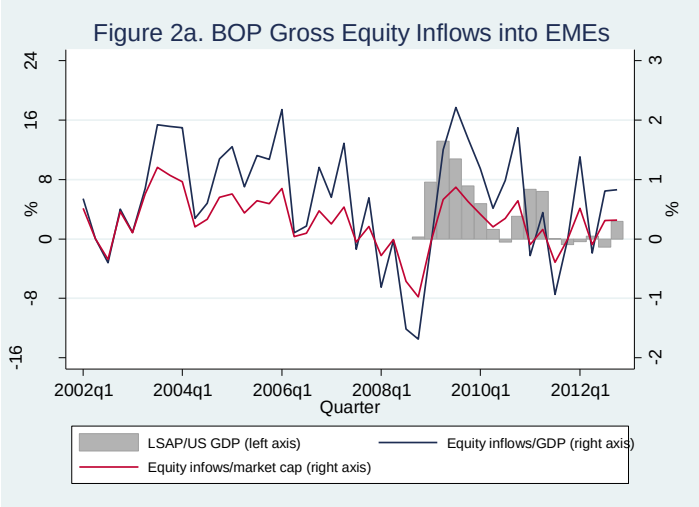
Finally, a number of EMEs have increased the required reserves on banks' liabilities denominated in foreign currencies or on external liabilities disproportionately more than otherwise (column 7).

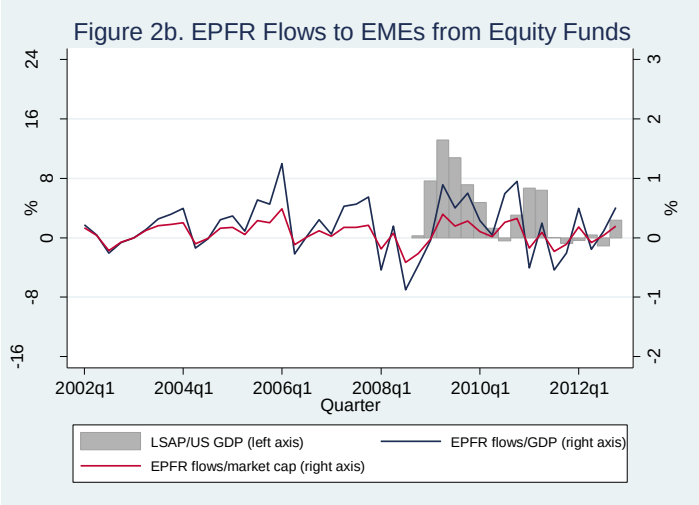
Figure 1: U.S. Financial Wealth and Cumulated Savings (in trillions of US dollars)

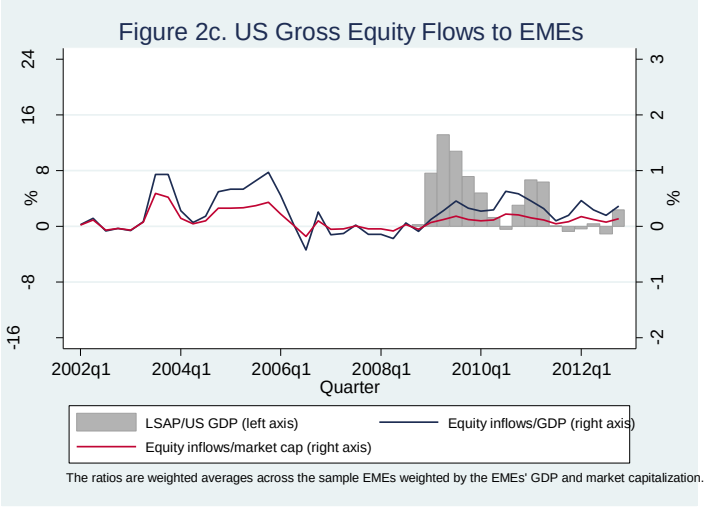


Note: Cumulated savings (the thin lower line) are cumulated starting from the 1985 level of financial wealth. Source: FRB's Financial Accounts of the United States (Z.1 report)

Figure 2. Equity Flows to EMEs

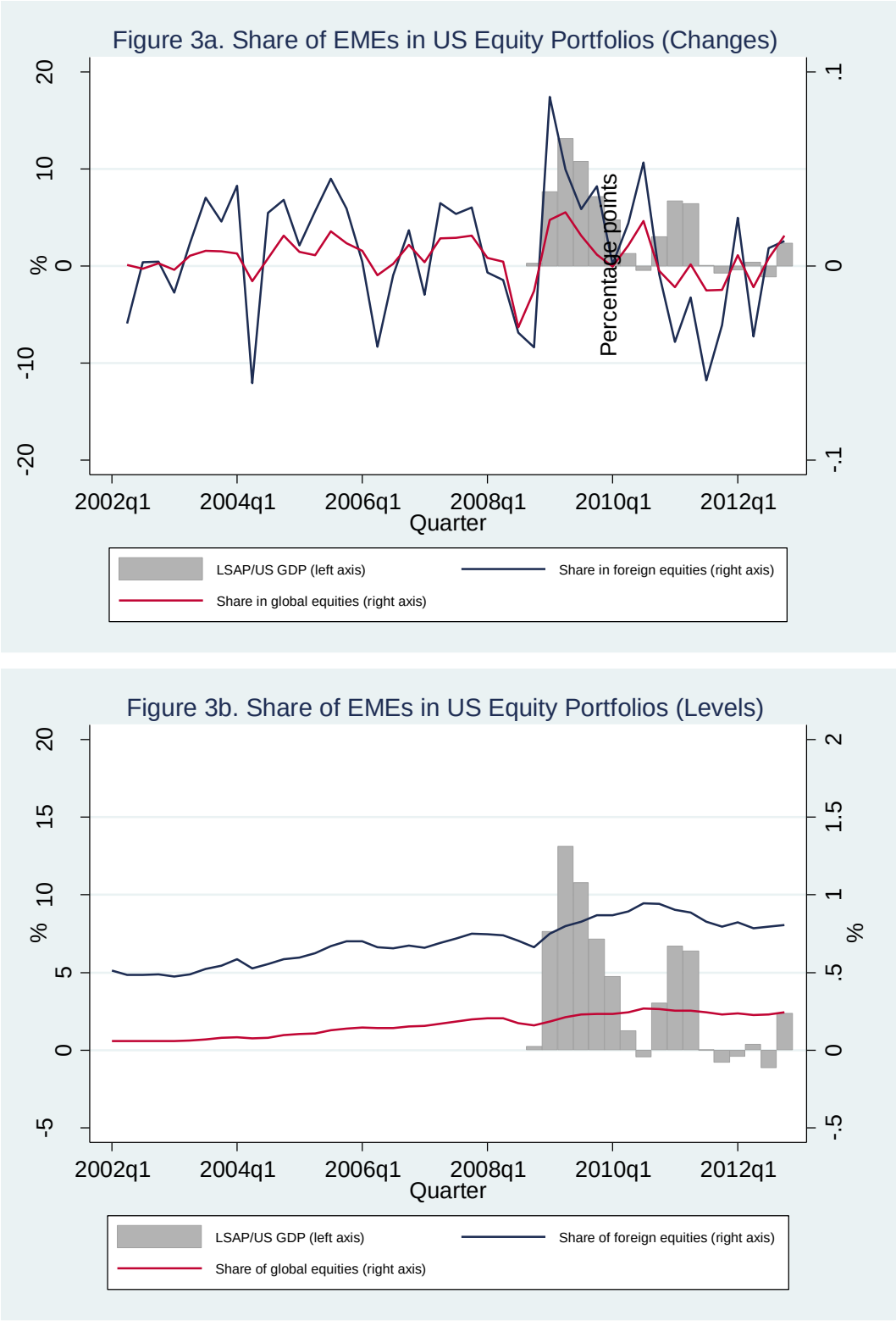






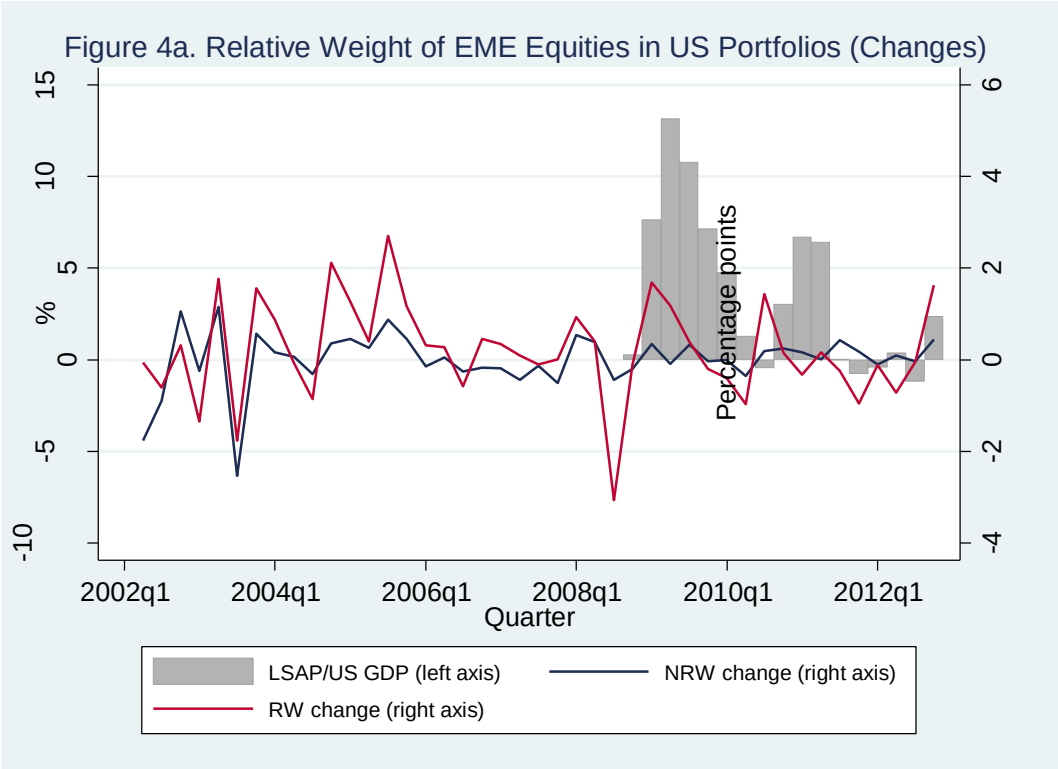
Notes: See the Data Appendix for variable definitions.

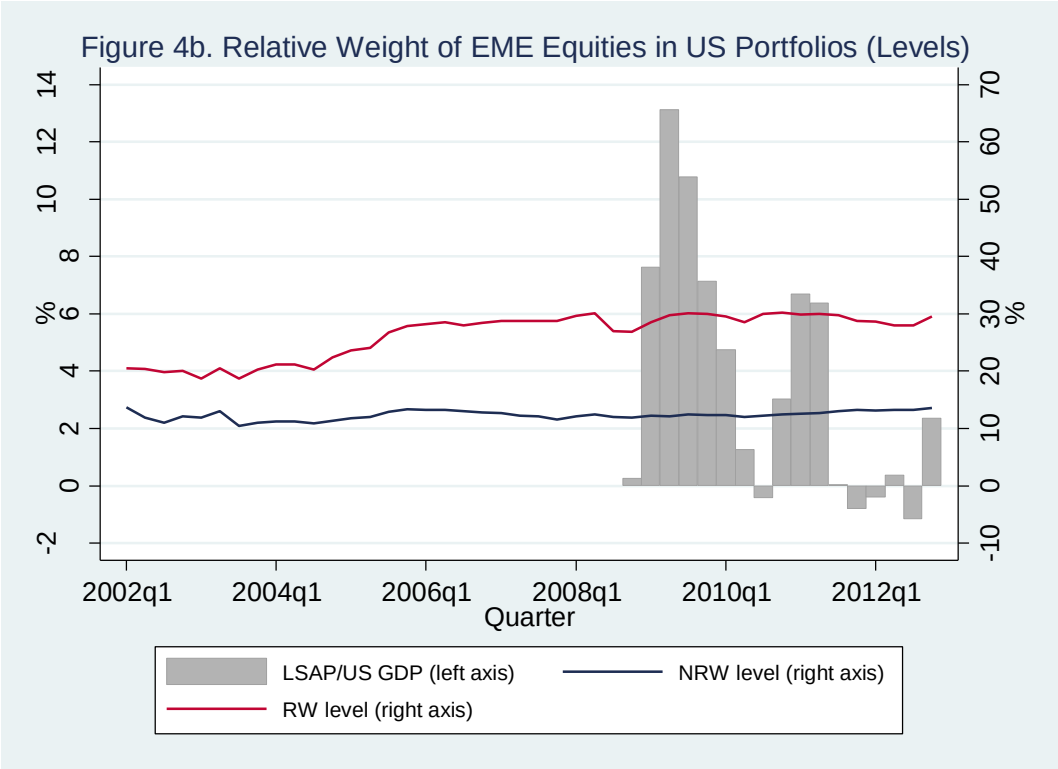
Figure 3. Share of EME Equities in US Equity Portfolios (in percent) and QE



Notes: See the Data Appendix for variable definitions.

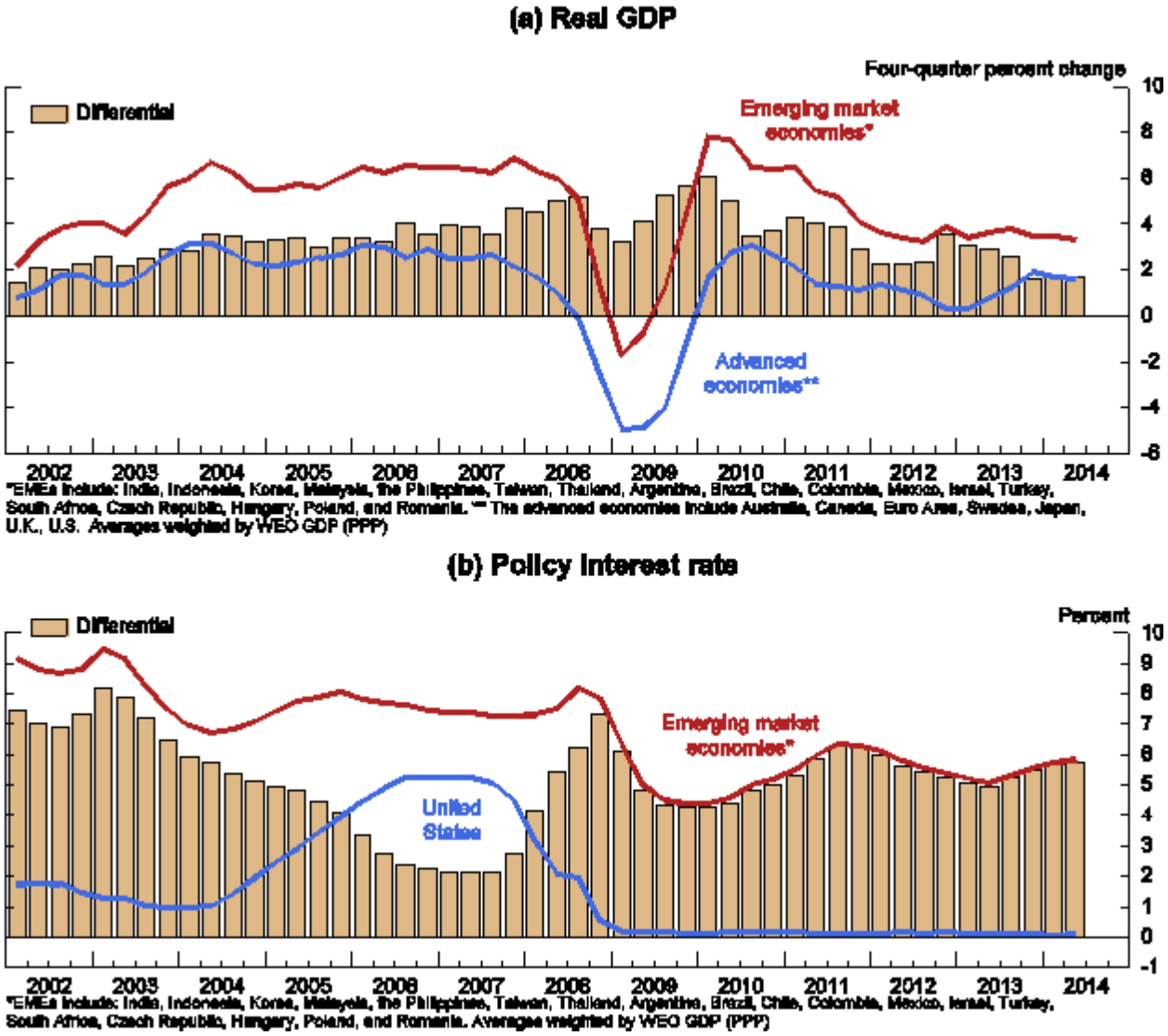
Figure 4. Relative Weight of EME Equities in US Portfolios





Notes: See the Data Appendix for variable definitions.

Figure 5: Possible determinants of flows to EMEs (I)



Sources: Haver Analytics for quarterly real GDP (expressed as the 4-quarter percent change) and the nominal policy interest rates; IMF for flows; and Bloomberg for VIX.

Figure 6: Possible determinants of flows to EMEs (II)

Returns differentials and ER measure

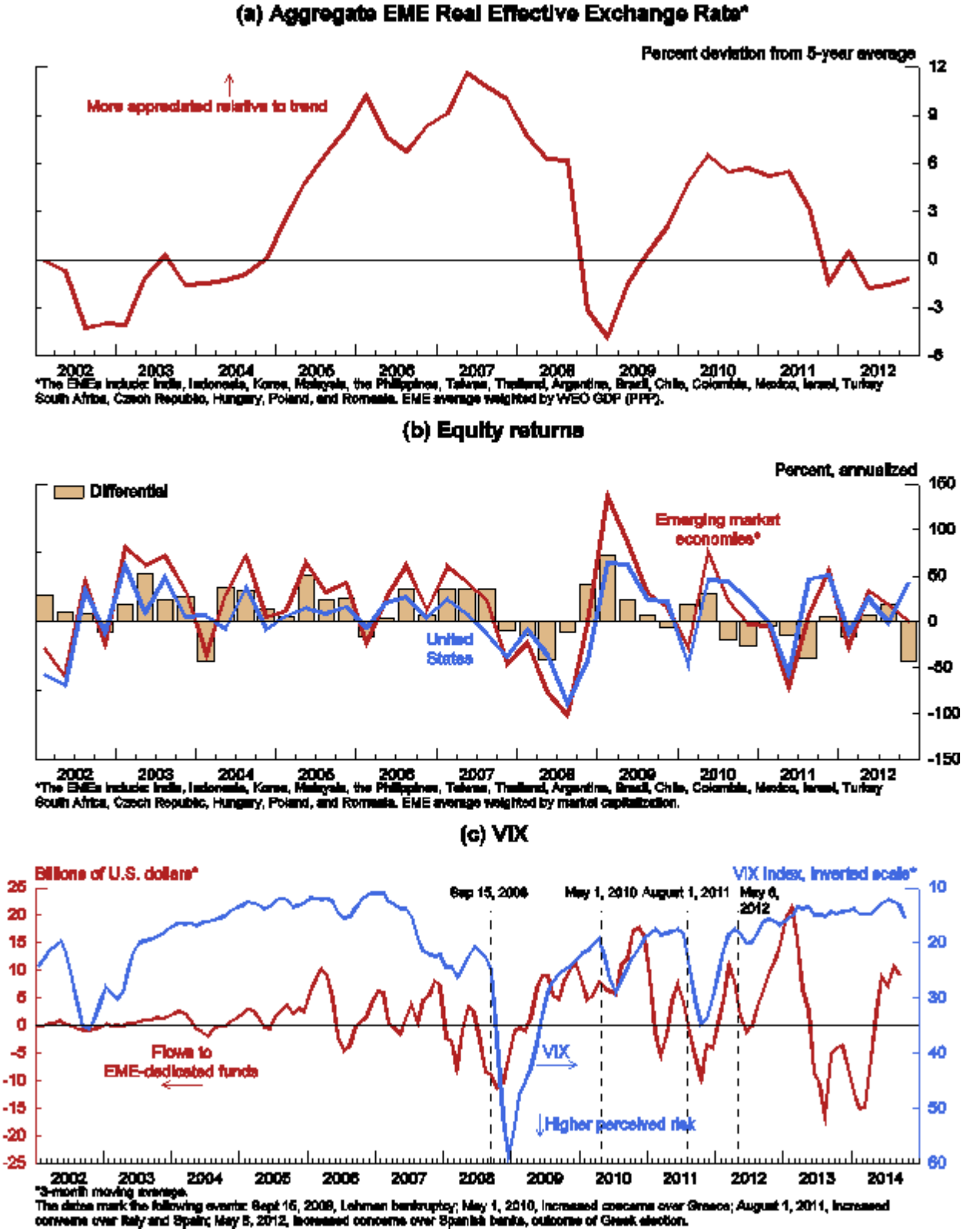
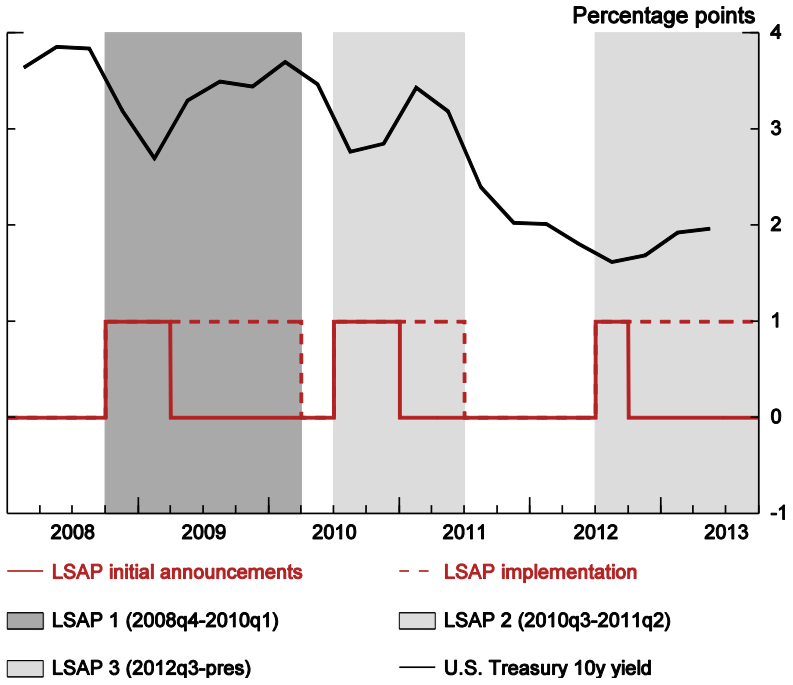
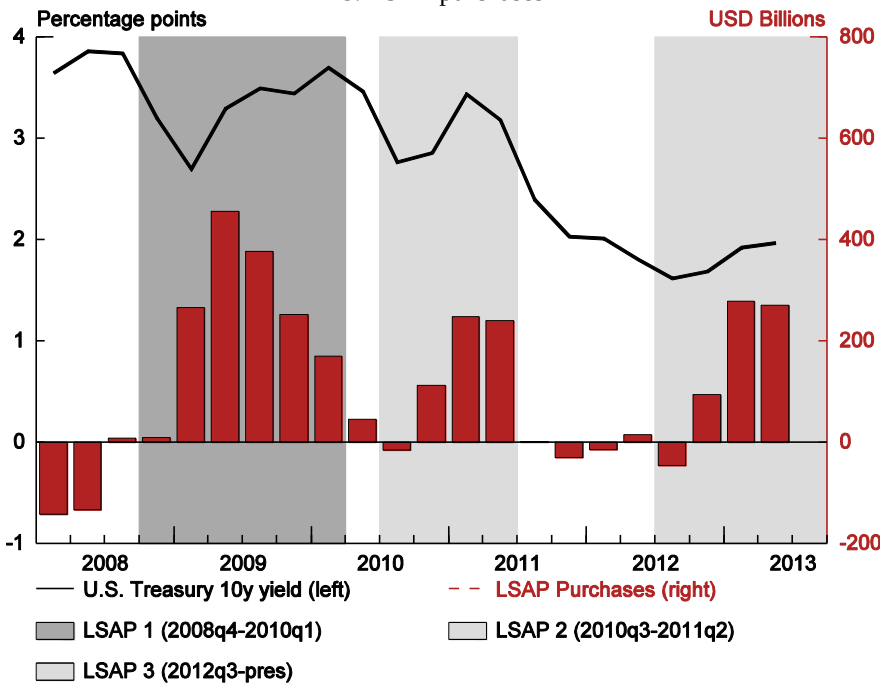


Figure 7: LSAPs

a. Indicator variables for LSAP events



b. LSAP purchases



Notes: In Panel A, the "initial announcements" variable equals 1 in 2008:Q4 and 2009:Q1 for LSAP1, in 2010:Q3 and 2010:Q4 for LSAP2, and in 2012:Q3 for LSAP3, when the corresponding programs were announced or extended. The "implementation" variable equals 1 for 2008:Q4-2010:Q1, for 2010:Q3-2011:Q2, and for 2012:Q3-2013:Q2. In Panel B, net asset purchases are obtained as the change in the end-of-quarter total holdings of agency debt securities, mortgage-backed securities, and U.S. Treasury securities by the Federal Reserve.
Sources: Bloomberg (for the Treasury bond yield) and the Federal Reserve (for asset purchases).

Figure 8: Number of capital control measures introduced in EMEs since 2002

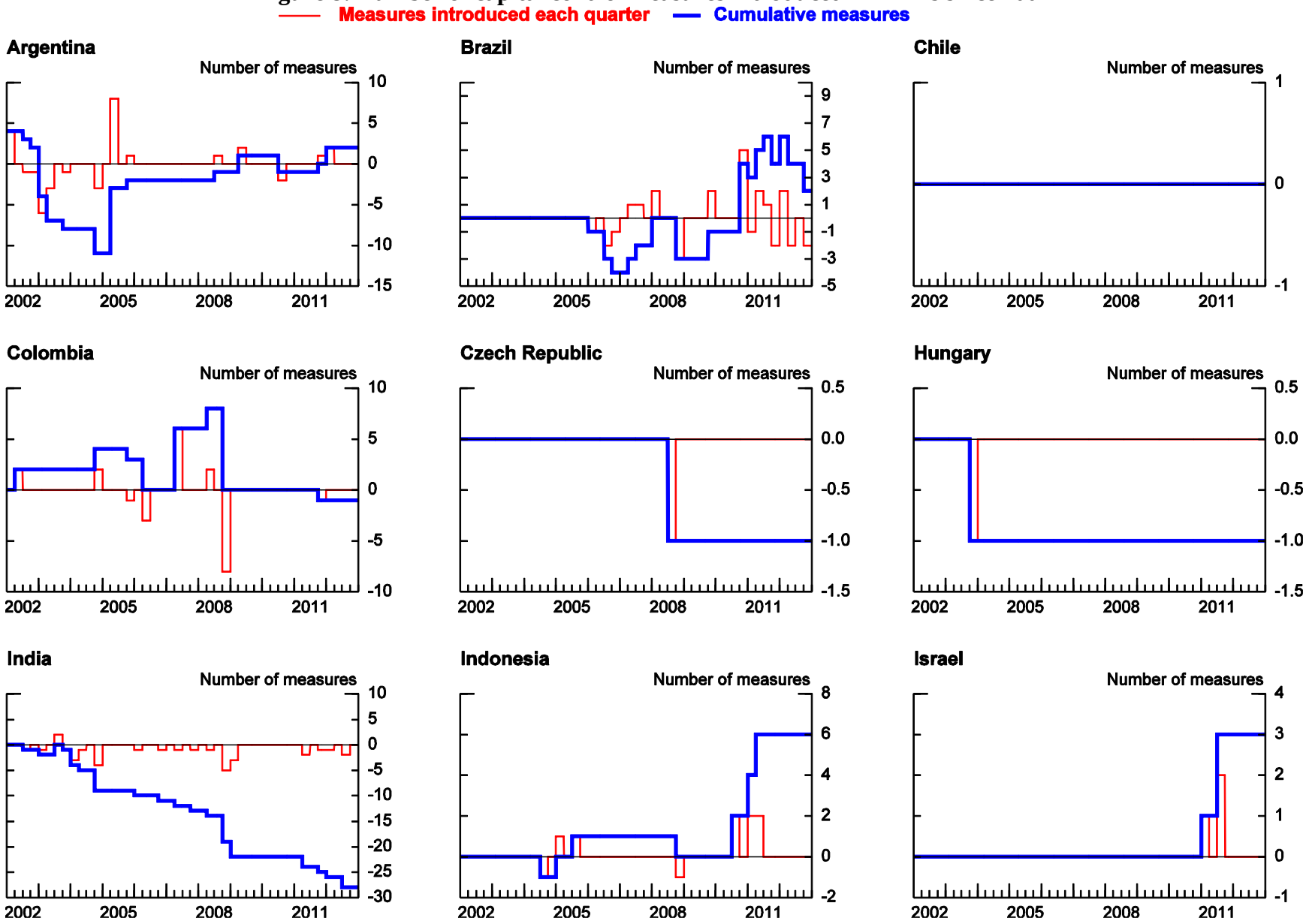


Figure 8 (cont.): Number of capital control measures introduced in EMEs since 2002

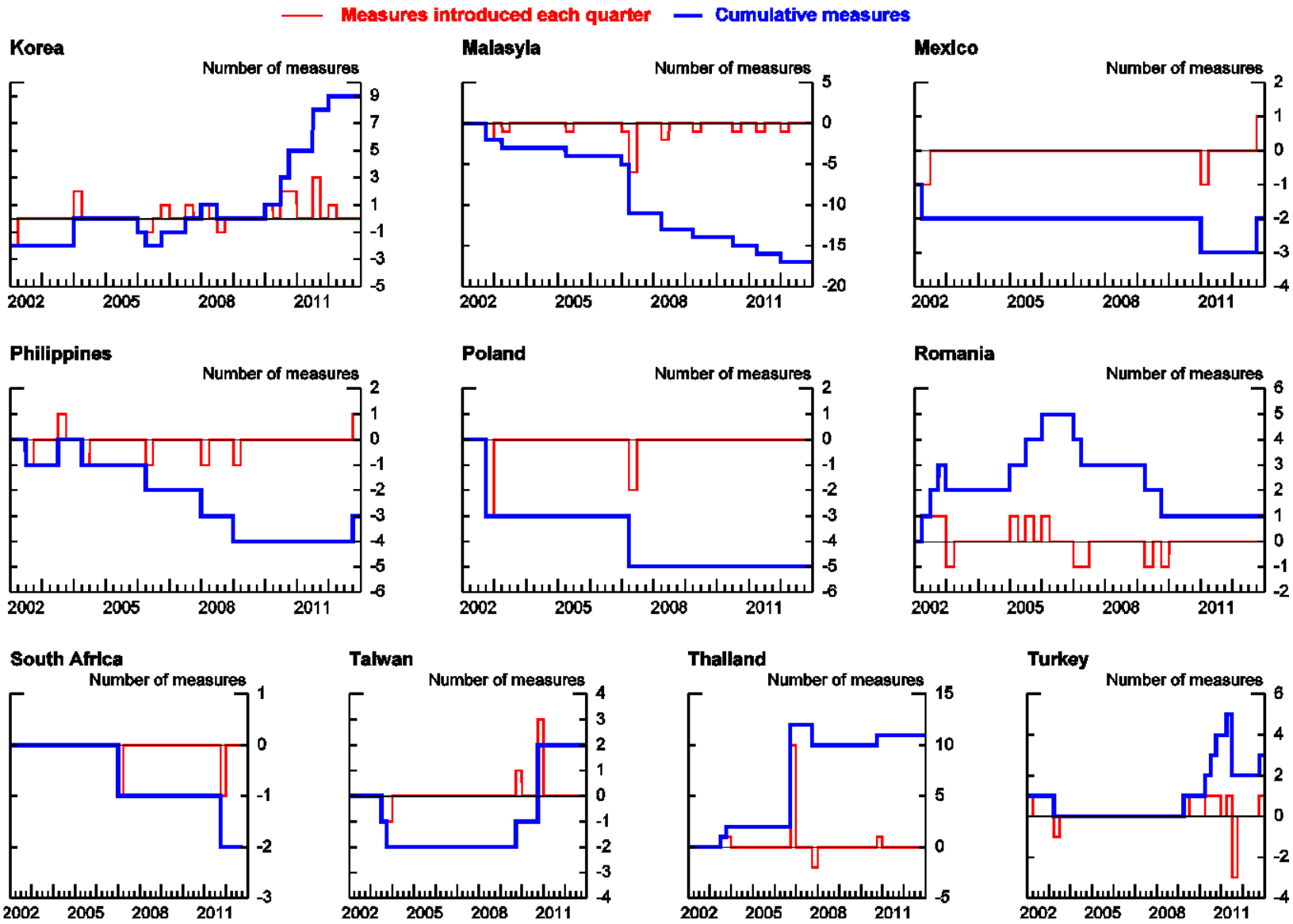


Figure 9: U.S. Relative Weight for EME19 Equities based on All Financial Assets

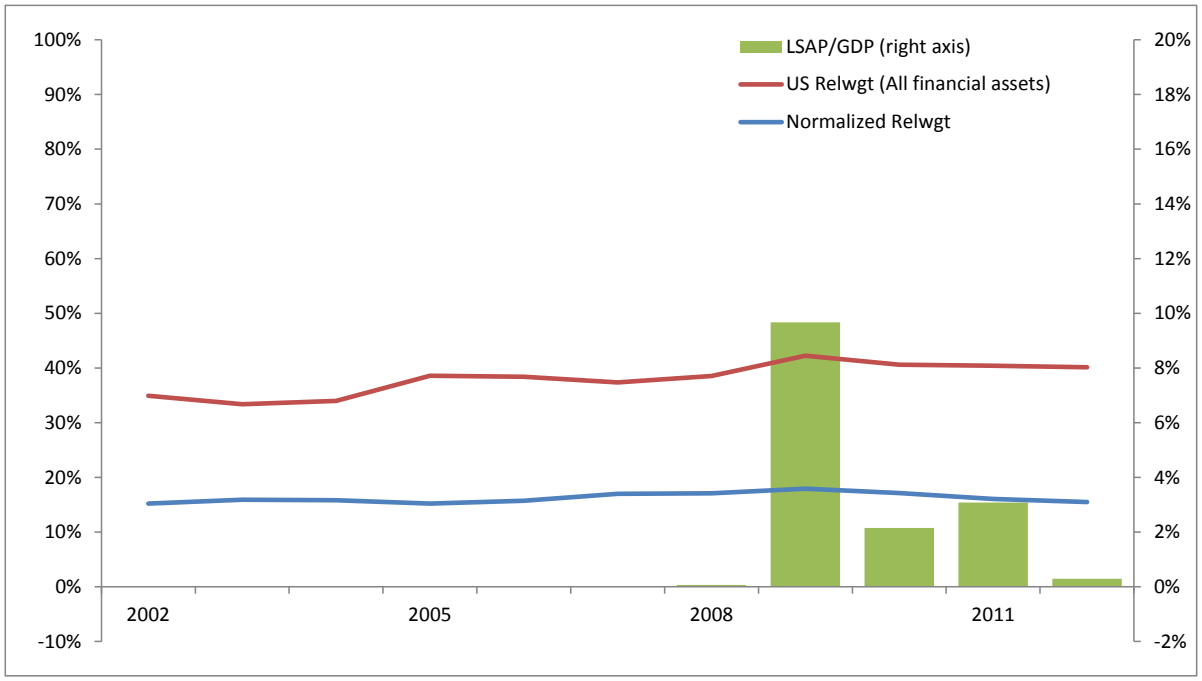


Table 1: CFM measures introduced in EMEs since 2002

	Restrictions on FDI	Restrictions on portfolio flows			Restrictions on banking flows		
Country		**Tax on foreign investments**	**Restrictions by asset, maturity, holding period, or repatriation**	**Required reserves on foreign investments**	**Tax on external borrowing**	**Quantitative limits on banks/firms' FX exposure**	**Required reserves on FX liabilities**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Argentina	2003 Dec 2004 Dec **2011 Oct**		**2002 Feb** 2003 Jan, Feb, Mar, May 2004 Dec, **2005 May, Jun** **2009 May, 2010 Sep** **2012 Jan**	**2005 Jun, Nov**		**2002 Feb**, Aug, Dec 2003 Jan, Feb, May, Jun **2003 Jun**, 2005 Oct **2008 Jul, 2010 Sep** **2012 Jan**	
Brazil		**2008 Mar**, Oct **2009 Oct** **2010 Oct** 2011 Jan, Dec	2006 Sep		**2008 Jan,** Oct **2011 Mar, Apr** **2012 Feb, Mar** 2012 Jun, Dec	2006 Dec (D) **2007 Jun, Jul**	2006 Jan (D) **2011 Apr, Jul (D)** 2012 Dec (D)
Chile	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Colombia	**2008 May** 2008 Oct		**2002 Jun** **2004 Dec** 2006 Jun	**2007 May** **2008 May** 2008 Oct		2005 Oct (D), 2006 May (D) **2007 May (D)** 2008 May (D), 2011 Oct	**2007 May** 2008 Oct
Czech Rep.	2008 Sep						
Hungary						2003 Nov (D)	
India	**2003 Sep** **2004 Jan** 2006 Feb, Dec 2007 Apr 2012 Sep	2013 Apr	**2003 Sep** 2004 Oct, Nov 2007 Mar, Sep, Dec 2008 Jun, Oct 2009 Jan 2011 Apr, Nov, 2012 Jan		2012 Sep	2002 Sep 2003 Mar, Sep (D), Nov 2004 Feb, Mar, May **2007 Jan, Aug** 2008 Oct, 2009 Jan 2011 May, 2013 Aug	2009 Jan
Indonesia			**2010 Jul** **2011 May**			**2004 Jul (D)** **2005 Jan, Jul (D)** 2008 Oct **2010 Jul (D), 2011 Jan**	**2011 Mar, Jun**
Israel			**2011 Jul**			**2011 Jul (D)**	**2011 Jan (D)**
Korea		**2010 Nov** **2012 Jan**	**2011 Jul**		**2011 Aug**	2002 Feb (D) **2004 Jan (D)** 2006 Mar, May (D) **2007 Aug, 2008 Jan** 2008 Aug (D) **2010 Jan (D), Jul, Aug (D), Oct (D)** **2011 Jul (D)**	**2006 Dec**
Malaysia	2003 Jun		2002 Dec			2005 Apr	

	Restrictions on FDI	Restrictions on portfolio flows			Restrictions on banking flows		
Country		**Tax on foreign investments**	**Restrictions by asset, maturity, holding period, or repatriation**	**Required reserves on foreign investments**	**Tax on external borrowing**	**Quantitative limits on banks/firms' FX exposure**	**Required reserves on FX liabilities**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2009 Apr		2007 Apr			2007 Jan, Apr (D) 2008 May, 2010 Aug 2011 Jun, 2012 Jan (D)	
Mexico	2002 Jan 2011 Jan					2002 Apr (D) **2012 Oct**	
Philippines	**2007 May**		2002 Aug (D) 2004 May			2003 Jan, **Mar (D), Sep (D)** 2006 Apr, 2007 Apr (D) 2008 Jan, 2009 Mar **2012 Dec (D)**	
Poland			2002 Oct, 2007 Apr (D)			2002 Oct, 2007 Apr	
Romania						2003 Jan **2005 Sep** 2007 Jan, Jun (D)	**2002 Apr, Aug, Nov** **2005 Feb** **2006 Mar** 2009 Jun, Nov
South Africa						2007 Feb (D) 2011 Oct (D)	
Taiwan		2010 Jan	2003 Jul, Oct **2009 Nov** **2010 Nov**			**2010 Dec (D)**	**2010 Jan, Dec**
Thailand		**2010 Oct**	**2006 Dec**	**2006 Dec**, Dec 2007 Dec 2008 Mar		**2003 Sep, Oct** **2006 Nov, Dec (D)** **2008 Mar (D)**	**2006 Dec** 2007 Dec 2008 Mar
Turkey	2002 Jun					**2002 Feb (D)** **2009 Jun**	**2002 May**, May 2008 Dec, **Dec** **2010 Apr, Aug, Oct** **2011 Apr**, Jun, Aug, Sep, **2012 Dec**

Source: Authors' calculations from the IMF's AREAER reports. Notes: For each country and type of measure, the dates in red/bold denote the introduction of new restrictions on inflows, whereas dates in black/regular denote measures that remove such restrictions. "(D)" denotes measures affecting banks' FX derivatives positions.

Table 2. Capital Flow Management Measures

Dependent variable is the cumulative amount of capital flow management measures. Other variables, and the 21 EMEs included, are listed in the Data Appendix. Regressions include country fixed effects. Standard errors, computed using clustering at the country level, are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10* level, respectively.

a. Full Sample Period (2002q1-2012q4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Flow variable:	Total Net Inflows	Portfolio Net Inflows	Other Net Inflows	Total Gross Inflows	Portfolio Gross Inflows	Other Gross Inflows	Bond+Bank Inflows
Flow Variable	0.016	-0.011	0.133	0.001	0.017	-0.515	-0.367
	(0.018)	(0.020)	(1.937)	(0.008)	(0.022)	(1.365)	(1.914)
Flow Variable (lagged)	0.016	-0.016	1.570	-0.006	0.011	-0.619	0.397
	(0.016)	(0.025)	(2.384)	(0.006)	(0.018)	(1.345)	(1.772)
ER deviation from PPP	-3.344	-2.992	-3.180	-0.724	-3.195	-0.738	0.410
	(4.912)	(4.728)	(4.838)	(3.737)	(4.814)	(3.720)	(3.312)
Growth Differential	-0.083	-0.070	-0.075	-0.073	-0.073	-0.072	-0.024
(EME-AE)	(0.056)	(0.050)	(0.054)	(0.059)	(0.052)	(0.060)	(0.039)
Policy Rate Differential	-0.032	-0.034	-0.034	0.021	-0.035	0.021	0.047
(EME-US)	(0.069)	(0.069)	(0.070)	(0.049)	(0.070)	(0.048)	(0.050)
LSAP	-0.031	-0.031	-0.031	-0.036	-0.034	-0.036	-0.013
	(0.020)	(0.020)	(0.020)	(0.024)	(0.021)	(0.024)	(0.013)
VIX	-0.004	-0.008	-0.007	-0.018	-0.002	-0.018	-0.013
	(0.007)	(0.011)	(0.009)	(0.013)	(0.009)	(0.013)	(0.013)
N	919	917	919	903	919	903	872
adj. R-sq	0.638	0.638	0.638	0.624	0.638	0.624	0.713

b. Pre-Crisis (2002q1-2008q2)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Flow variable:	Total Net Inflows	Portfolio Net Inflows	Other Net Inflows	Total Gross Inflows	Portfolio Gross Inflows	Other Gross Inflows	Bond+Bank Inflows
Flow Variable	-0.004	0.031	-3.826	-0.005	0.025	-2.707	-3.046
	(0.016)	(0.029)	(2.387)	(0.006)	(0.028)	(2.342)	(2.150)
Flow Variable (lagged)	-0.004	-0.015	-0.305	-0.009	-0.020	-0.690	-1.694
	(0.015)	(0.039)	(2.665)	(0.008)	(0.046)	(2.628)	(1.705)
ER deviation from PPP	-2.706	-2.770	-2.246	-2.181	-2.769	-1.771	-3.640**
	(2.304)	(2.071)	(2.262)	(2.226)	(2.073)	(2.559)	(1.540)
Growth Differential	-0.113**	-0.117**	-0.110**	-0.111**	-0.115*	-0.109*	-0.085*
(EME-AE)	(0.052)	(0.054)	(0.047)	(0.053)	(0.056)	(0.053)	(0.042)
Policy Rate Differential	-0.007	-0.007	-0.006	-0.006	-0.007	-0.003	-0.015
(EME-US)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.026)	(0.018)
LSAP	0.058	0.058	0.056	0.060	0.058	0.063	-0.018
	(0.105)	(0.106)	(0.105)	(0.106)	(0.105)	(0.108)	(0.083)
VIX	0.041	0.043	0.044	0.041	0.043	0.042	0.018
	(0.029)	(0.029)	(0.030)	(0.028)	(0.029)	(0.029)	(0.018)
N	546	545	546	546	546	546	519
adj. R-sq	0.618	0.620	0.622	0.619	0.619	0.620	0.605

c. Post-Crisis (2009q3-20128q4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Flow variable:	Total Net Inflows	Portfolio Net Inflows	Other Net Inflows	Total Gross Inflows	Portfolio Gross Inflows	Other Gross Inflows	Bond+Bank Inflows
Flow Variable	-0.036*	-0.025	-1.810	-0.004	-0.029*	-0.649	-1.970*
	(0.021)	(0.017)	(1.577)	(0.007)	(0.014)	(1.201)	(1.042)
Flow Variable (lagged)	-0.030	-0.023	-1.662	-0.011	-0.028*	-1.364	-1.857*
	(0.021)	(0.017)	(1.327)	(0.007)	(0.015)	(1.269)	(1.060)
ER deviation from PPP	17.123**	15.942**	15.817**	14.782**	16.194**	14.896**	15.666**
	(7.674)	(7.430)	(7.536)	(6.686)	(7.500)	(6.800)	(7.023)
Growth Differential	-0.066	-0.063	-0.074	-0.077	-0.062	-0.080	-0.076
(EME-AE)	(0.049)	(0.046)	(0.052)	(0.051)	(0.048)	(0.053)	(0.051)
Policy Rate Differential	-0.156	-0.141	-0.171	0.070	-0.168	0.056	0.041
(EME-US)	(0.225)	(0.224)	(0.215)	(0.174)	(0.214)	(0.173)	(0.166)
LSAP	0.007	0.002	0.002	-0.011	0.005	-0.011	-0.007
	(0.014)	(0.015)	(0.017)	(0.015)	(0.016)	(0.014)	(0.013)
VIX	-0.005	-0.011	-0.002	-0.033*	-0.013	-0.031*	-0.031*
	(0.020)	(0.021)	(0.023)	(0.017)	(0.021)	(0.017)	(0.016)
N	289	289	289	273	289	273	273
adj. R-sq	0.970	0.970	0.969	0.960	0.970	0.960	0.960

Table 3. Equity Flows to EMEs

Reported are results from OLS regressions of various flow measures. The measures in Panels A and B are flow-based and include an income effect with a more active switching component. The stock-based measures in Panel C do not include portfolio growth but still have passive and active components. The stock-based measure in Panel D isolates active portfolio reallocations. The working sample of 19 countries includes India, Indonesia, Korea, Malaysia, Philippines, Taiwan, and Thailand; Argentina, Brazil, Chile, Colombia, and Mexico; Czech Republic, Hungary, Poland, and Romania; and Israel, Turkey, and South Africa. Regressions estimated from 2002:Q1 to 2012 Q4 and include country fixed effects. See the Data Appendix for variable definitions. Robust standard errors, computed using clustering at the country level, are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10* level, respectively.

	A. ROW Flow-based Measures that Combine Income and Switching Effects						**B. US Flow-based Measures that Combine Income and Switching Effects**					
	BOP Equity Inflows / GDP			BOP Equity Inflows / Market Cap			US Equity Inflows / GDP			US Equity Inflows / Market Cap		
	Full	Pre	Post	Full	Pre	Post	Full	Pre	Post	Full	Pre	Post
GDP diff	-0.035	-0.123**	-0.007	-0.021*	-0.039*	-0.016	0.006	0.001	0.007	0.009	0.007	0.012
	(0.037)	(0.056)	(0.053)	(0.012)	(0.021)	(0.012)	(0.017)	(0.032)	(0.016)	(0.008)	(0.014)	(0.009)
VIX	-0.054***	-0.089***	-0.076***	-0.030***	-0.036***	-0.033***	-0.014***	-0.033***	-0.024**	-0.005**	-0.012***	-0.008
	(0.010)	(0.021)	(0.024)	(0.004)	(0.009)	(0.008)	(0.005)	(0.011)	(0.010)	(0.002)	(0.004)	(0.005)
10-year US Treasury	-0.011	-0.457	0.004	-0.056	-0.399***	-0.066	-0.061	-0.068	0.135	-0.028	-0.052	0.068
	(0.106)	(0.305)	(0.253)	(0.042)	(0.127)	(0.079)	(0.055)	(0.154)	(0.109)	(0.025)	(0.059)	(0.066)
Lag equity returns diff	0.458***	0.499***	0.304**	0.225***	0.115	0.111	0.044	0.118	-0.007	-0.012	0.031	-0.067
	(0.109)	(0.174)	(0.144)	(0.062)	(0.088)	(0.079)	(0.045)	(0.079)	(0.058)	(0.029)	(0.039)	(0.056)
REER dev	0.001	0.017*	-0.010	0.002	0.007*	0.005	-0.000	-0.001	-0.014	0.002	0.001	-0.005
	(0.008)	(0.009)	(0.028)	(0.003)	(0.004)	(0.008)	(0.004)	(0.005)	(0.016)	(0.003)	(0.003)	(0.008)
Policy diff	-0.010	0.003	0.001	0.004	0.002	-0.009	0.004	0.001	0.178***	0.007	0.006	0.076***
	(0.014)	(0.020)	(0.077)	(0.008)	(0.011)	(0.028)	(0.008)	(0.011)	(0.051)	(0.006)	(0.008)	(0.023)
Total CFM	-0.042*	-0.077*	-0.169**	-0.012	-0.013	-0.071***	0.002	0.010	0.010	0.004	0.002	-0.004
	(0.024)	(0.044)	(0.073)	(0.008)	(0.018)	(0.021)	(0.012)	(0.024)	(0.040)	(0.006)	(0.011)	(0.017)
LSAPs	0.063**		0.046	0.024**		0.010	-0.006		-0.036*	-0.002		-0.016
	(0.028)		(0.048)	(0.011)		(0.015)	(0.013)		(0.022)	(0.006)		(0.011)
N	758	434	252	758	434	252	801	459	266	801	459	266
R-sq	0.121	0.219	0.159	0.114	0.124	0.230	0.066	0.107	0.161	0.038	0.065	0.100

Table 3 (cont.). Equity Flows to EMEs

	C. Stock-based Measures that Combine Passive and Active Reallocations										D. Isolating Active Reallocation		
	US Portfolio Share (Foreign)			US Portfolio Share (Global)			US RelWgt (Global)				Normalized US RelWgt (Global)		
	Full	Pre	Post	Full	Pre	Post	Full	Pre	Post		Full	Pre	Post
GDP diff	-0.0007	-0.0007	-0.0015	-0.0005	-0.0001	-0.0005	-0.0104	-0.0348	0.0639*		0.0177	-0.0009	0.0253*
	(0.0014)	(0.0023)	(0.0018)	(0.0004)	(0.0005)	(0.0005)	(0.0283)	(0.0550)	(0.0333)		(0.0150)	(0.0340)	(0.0141)
VIX	-0.0001	-0.0006	-0.0011	-0.0001	-0.0002	-0.0002	-0.0049	-0.0427**	-0.0446*		-0.0020	-0.0185	0.0115
	(0.0004)	(0.0008)	(0.0013)	(0.0001)	(0.0002)	(0.0004)	(0.0100)	(0.0204)	(0.0247)		(0.0056)	(0.0129)	(0.0108)
10-year US Treasury	-0.0076*	-0.0259**	-0.0088	-0.0013	-0.0036	-0.0067*	-0.0687	-0.1208	-0.2703		-0.1850***	-0.5768***	-0.1882*
	(0.0045)	(0.0115)	(0.0131)	(0.0013)	(0.0025)	(0.0039)	(0.1000)	(0.3127)	(0.2515)		(0.0561)	(0.1973)	(0.1088)
Lag equity returns diff	0.0835***	0.0993***	0.0549***	0.0209***	0.0200***	0.0176***	0.9910***	0.7905***	0.8590***		0.2360***	0.1569	0.1792*
	(0.0061)	(0.0081)	(0.0079)	(0.0017)	(0.0018)	(0.0024)	(0.1532)	(0.2293)	(0.2455)		(0.0838)	(0.1407)	(0.1002)
REER dev	0.0003	0.0009	0.0031	0.0001	0.0004**	0.0012	0.0035	0.0030	0.0097		0.0033	0.0030	0.0009
	(0.0006)	(0.0006)	(0.0029)	(0.0002)	(0.0001)	(0.0008)	(0.0083)	(0.0114)	(0.0313)		(0.0045)	(0.0072)	(0.0140)
Policy diff	-0.0003	-0.0008	-0.0112	-0.0003	-0.0004	-0.0041*	-0.0039	-0.0068	0.1229		0.0000	-0.0123	0.0836**
	(0.0010)	(0.0009)	(0.0081)	(0.0003)	(0.0002)	(0.0024)	(0.0175)	(0.0231)	(0.0941)		(0.0094)	(0.0142)	(0.0418)
Total CFM	-0.0013	0.0002	-0.0202***	-0.0006*	-0.0002	-0.0065***	-0.0101	0.0020	-0.0202		0.0032	0.0024	0.0126
	(0.0012)	(0.0017)	(0.0076)	(0.0004)	(0.0004)	(0.0023)	(0.0163)	(0.0353)	(0.0648)		(0.0088)	(0.0220)	(0.0294)
LSAPs	0.0009		-0.0007	0.0007*		0.0004	0.0238		-0.0056		0.0020		0.0190
	(0.0012)		(0.0026)	(0.0003)		(0.0008)	(0.0273)		(0.0472)		(0.0153)		(0.0208)
N	801	459	266	801	459	266	801	459	266		801	459	266
R-sq	0.164	0.273	0.210	0.166	0.333	0.234	0.065	0.088	0.136		0.043	0.066	0.078