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Financial Flows from the United States to Latin America

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Financial flows from the United States to Latin America: Basic patterns, causes, and implications

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Abstract

This paper analyzes the pattern, causes and implications of financial flows from the United States to Latin America. It shows that, while U.S. investors remain systemically important in some Latin American countries, the degree of this importance has declined since the Asian crisis. The analysis suggests that financial shocks are largely transmitted via prices and not necessarily via financial flows, implying that econometric models that exclude flows are not significantly misspecified. In particular, U.S. financial conditions, especially measures of risk aversion, have a major impact on the regions' macroeconomic and financial health. An exception is Chile, which has remained largely immune to changes in risk aversion, suggesting that while it may be difficult to "proof" domestic financial systems from U.S. macroeconomic developments, a long record of macroeconomic stability can help mitigate the pernicious domestic effects of changes in global risk sentiment.

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I. INTRODUCTION

While much research has shown the importance of U.S. financial conditions for the rest of the world (for a survey, see Bannister, Cerisola, Gelos, and Valencia, 2007), the literature analyzing the causes and impact of U.S. financial flows is much sparser. As financial globalization continues (World Economic Outlook, 2005), however, cross-border capital flows are becoming increasingly important, with changes in the pattern of such flows potentially having serious macroeconomic consequences.

With this in mind, this paper adds to the literature on the impact of U.S. financial conditions by analyzing the impact of *financial flows* from the United States to the major Latin American economies. We focus on flows from the United States given the limited data available from other countries and because U.S. flows can be regarded as a proxy for advanced capital market flows—which are highly integrated—to these countries.

In Section II, we document the basic patterns of financial flows to Latin America, using both Balance of Payments and Treasury International Capital (TIC) system data to look at both portfolio flows and foreign direct investment (FDI) from the United States and elsewhere. This helps us answer the question how financial flows have evolved over time, and whether the composition and exposure to the U.S. investors differs significantly across countries.

Next, having documented the relative importance of U.S. financial flows, we investigate what drives them and their impact on key domestic financial variables. To keep the analysis parsimonious and tractable, we focus on portfolio debt and equity flows, given that they should be the most responsive to unexpected changes in economic fundamentals. We estimate a series of VARs across countries, including as endogenous variables measures of U.S. financial conditions, U.S. equity and debt flows, domestic and external fundamentals, and measures of global risk aversion.

This allows us to investigate the following issues: (i) the effect of U.S. and domestic economic and financial conditions on financial flows; and (ii) taking into account financial flows, the effect of U.S. and domestic economic variables on domestic financial conditions. In the second point we are interested in comparing the responses of domestic financial variables to different shocks. But also, given that some argue that financial shocks are largely transmitted via prices and not necessarily via financial flows, we want to determine if financial flows have any role in the transmission of shocks. The exercise also helps determine if the previous literature, which has largely excluded analysis of flows, has misspecified econometric analyses.

Overall, we find that Latin American assets still make up an extremely small share of U.S. investors' portfolios, and, indeed, this share has fallen since the Asian crisis. Moreover, a significant portion of portfolio and FDI inflows to Latin America come from

other countries. Nonetheless, Brazilian and Mexican equity markets, and Colombian and Peruvian bond markets, have sizable exposures to U.S. investors. In determining U.S. flows and other financial conditions in Latin America, the VAR analysis points to a larger role for external factors, such as global risk aversion and U.S. interest rates, than for domestic fundamentals, such as domestic production, growth prospects and interest rates. Moreover, VARs with and without flows suggest that econometric analysis excluding flows is not misspecified. Overall, these results suggest that while U.S. investments in Latin America may not be as important as previously thought and have fallen since the Asian crisis, U.S. financial conditions still have a major impact on the region's financial health.

II. BASIC TRENDS ACROSS THE REGION

A. Data

For overall capital flows to the region, we use Balance of Payments data. For portfolio capital flows specifically from the United States, we use the Treasury International Capital (TIC) system. This records monthly transactions involving U.S. residents and foreigners, mainly reported by brokers and dealers. On the liabilities side, long-term securities are classified into equities, as well as corporate, agency, and treasury bonds. On the asset side (i.e. liabilities of Latin American residents to U.S. residents), they are only classified into equities and bonds. For U.S. FDI flows and stocks, we use Bureau of Economic Analysis data, which is available by country.

For overall equity and bond holdings of U.S. residents in Latin American countries, we use the TIC benchmark survey of U.S. holdings of foreign securities, which is now produced annually. As is well known, these surveys are more reliable than the monthly TIC capital flow data, as they do not suffer from custodial and financial center bias[2]. In particular, the monthly data indicate the country through which investors purchase securities and not necessarily the ultimate owner of securities.[3] However, as Warnock and Cleaver (2002) argue, such biases do not appear to be significant for Latin American countries, and are more important for U.S. equity flows to industrialized countries.

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[2] As noted by Warnock and Cleaver (2002), for asset surveys (U.S. holdings of foreign securities), the reporters consist mainly of all large custodians and large institutional investors; smaller custodians and institutional investors were sampled, but 99 percent of the data was from the major reporters. The security-level data and associated identifiers (such as an ISIN or SEDOL number) provide information on the issuer's country of residence and, hence, ensure that the country attribution of the data is accurate.

[3] For example, if a U.S. resident instructed a private bank in the Caymans to buy a Mexican peso bonds from a Mexican resident, this may not show up in the TIC system.

B. Overall capital flows snapshot

Table 1 and Figure 1 provide a regional snapshot of the composition of capital flows over the last 15 years. While there are clear differences across countries, as a general rule, portfolio investment in the region has declined in recent years as a percent of GDP as current account deficits have turned into substantial surpluses. Regarding the composition of portfolio flows, before the Asian crisis, bond flows tended to dominate. In the last few years, this has changed with equity inflows increasing into the biggest Latin American economies, Brazil and Mexico. FDI flows have tended to be higher than net portfolio flows for all countries. FDI inflows have also increased or decreased as the current account position has improved depending on the country. On the individual countries:

- **Argentina**. Before the onset of the 2001 domestic crisis, with a current account deficit, Argentina was receiving bond inflows averaging around 4 percent of GDP per year. Equity and FDI inflows were much lower. During the crisis, first equity inflows reversed, and from 2001-2004, bond inflows also turned substantially negative. While FDI has yet to reach pre-crisis levels, there were significant bond inflows in 2006.

- **Brazil**. Portfolio flows, particularly bond flows, were at their highest before the Asian crisis. Since then, equity flows have averaged around ½ percent of GDP per year, and bond inflows have been negative. FDI has been on a steady decline since the turn of the century, and turned negative in 2006.

- **Chile**. Bond inflows have generally been higher than equity inflows. Chile has also built up significant portfolio equity assets abroad, which is likely linked to the liberalization of rules governing the foreign investments of pension funds.

- **Colombia**. FDI has been more or less steadily increasing and bond flows dominate equity flows as a source portfolio financing.

- **Mexico**. Like for Brazil, portfolio flows were at their highest before the Asian crisis, and mainly into bonds. In the last two years, admittedly from a low base, equity inflows have been picking up.

- **Venezuela**. As oil prices have risen, Venezuela's current account surpluses have ballooned and the need for financing has fallen. Reflecting this, FDI has been falling over time, and was indeed negative in 2006. Portfolio assets have been increasing and liabilities have been declining.

C. Systemic importance of the U.S. investors in Latin America

The benchmark surveys of U.S. holdings of foreign securities gives us a detailed picture of where U.S. residents invest. Based on the December 2001 survey, Burger and Warnock (2006) argue that, regarding bond purchases, U.S. residents invest overwhelmingly in industrialized countries rather than emerging market countries. Moreover, even toward industrialized countries bonds they show a remarkable level of home bias. They argue that the high variability and negative skewness of bond returns in emerging markets explain their extremely low weight in U.S. investors' portfolios.

Table 2 updates their analysis by looking at both equity and bond holding trends in the asset surveys through 2006. W_us and W_m are, respectively, the shares of the country concerned in U.S. investors' portfolio (including there holdings of U.S. assets) and in the global market. Thus, the ratio $\frac{w\_us}{w\_m}$ provides a measure of the degree to which U.S. investors are underweight in a particular country's assets relative to what an international capital asset pricing would predict (i.e. resembling the structure of the world market). A value less than one means that U.S. investors are underweight. Clearly, U.S. investors have remained massively underweight in all foreign assets—in industrialized countries as well as emerging market countries. This illustrates the large home bias of U.S. investors, particularly with respect to bonds.

Confirming the analysis of Burger and Warnock, the majority of foreign investments remain in industrialized countries (nearly 90 percent). Moreover, while U.S. investors have become less underweight in foreign assets overall, this is mostly driven by declining home bias with respect to industrialized country equities. While the degree to which U.S. investors are underweight in Latin America is lower than in Emerging Asia, recent trends are in favor of Emerging Asia. In particular, while U.S. investors have become slightly less underweight in Emerging Asian equities, they have become more underweight in Latin American equities and bonds relative to before the Asian crisis.

Such trends suggest that U.S. investors reevaluated the risks associated with investing in emerging markets in general after the Asian crisis, and again in Latin America after the Argentine crisis. This result is consistent with the findings of Balakrishnan, Bayoumi, and Tulin (2007). They look at the U.S. net foreign asset position with respect to bonds in industrialized countries and emerging markets, and find that, with respect to emerging markets, U.S. purchases have been largely negative since the late 1990s. Moreover, when decomposing this into flows related to declining home bias, financial deepening and relative growth of bond markets, they find that there has been a large negative residual since the late 1990s, which they argue is consistent with some reassessment of the attractiveness of emerging market debt in general after the Asian crisis.

Given the size of U.S. investors' portfolios, the fact that Latin America only makes up a small share of their portfolios does not imply, however, that they are not systemically important in Latin American securities markets. Indeed, as table 3 shows, U.S, investors hold significant shares of equity markets in Brazil and Mexico, and bond markets in Chile and Peru. Overall, U.S. holdings are mainly in Brazil and Mexico, where equity holdings are over the double of bond holdings. The rapid ramping up of equity holdings in Brazil and Mexico, however, is not simply a story of increasing equity inflows, but also of big valuation gains as stock markets have soared. The changes in Argentine asset holdings show the impact of the 2001 crisis on foreign investments.

Regarding the stock of U.S. FDI assets, Figure 2 shows that as FDI has continued in the major Latin American countries, the share of the U.S. investors has generally fallen. In the early 1990s, in Brazil, Colombia and Mexico, the U.S. share of FDI was over 50 percent. It has since fallen to below a quarter for all countries considered, except Mexico where it remains around a third.

So far, to gauge the systemic importance of the U.S. investors, we have looked at size of U.S. holdings of bond and equity assets relative to the size of the respective bond and equity markets in the respective countries. Another way of measuring the systemic importance of the U.S. would be to look at the size of U.S. flows relative to total capital flows.

Regarding FDI flows, as Figure 3 shows, the picture is similar to that from looking at stocks. Namely, U.S. investors had a high share of FDI inflows in the early 1990s, but this share has declined over time, with the main exception of Mexico, where the share has remained between 30-60 percent. Regarding portfolio flows, as Figures (4-6) show, while U.S. inflows have been substantial, a significant portion comes from elsewhere. In recent years, however, the increase in equity flows to Brazil and Mexico appears to be driven by U.S. investors.

D. Link between equity and bond flows

One important aspect of portfolio flows is the extent to which bond and equity flows have been linked within countries and across countries. The extent to which bond and equity flows are linked within a country could be suggestive of common factors driving both types of flows, while the extent to which flows to Latin American countries are correlated could be suggestive of the importance of global or regional factors.

Table 4 estimates the variance-covariance matrix for both total balance of payments and U.S. flows to Brazil and Mexico. To provide more texture to the picture, we split the last 15 years into three sub-periods, 1991-1998 (pre Asian crisis but including the tequila crisis), 1999-2004 (post Asian crisis but including crises in Brazil), and 2005-06 (the most recent goldilocks period). It shows that, in general, equity and bond flows have been

positively correlated within countries. Interestingly, while total bond and equity flows are more correlated than U.S equity and bond flows to Brazil, the reverse is true for Mexico. Indeed, the correlation of total bond and equity flows to Mexico has been falling through time, and turned negative in 2005-06, possibly suggesting that foreign investors are becoming sophisticated in differentiating between asset classes in Mexico.

Regarding trends across countries, total and U.S. portfolio flows to Brazil and Mexico have tended to be positively correlated. In particular, both total and U.S. equity flows to Brazil and Mexico have become increasingly correlated over time, which could be consistent with global and regional factors dominating foreign equity investment allocations. While total bond flows to Brazil and Mexico have also become more correlated over time, U.S. bond flows do not show any clear pattern.

To look beyond correlations and focus on causality, we estimate VARs and perform Granger causality tests with U.S. bond and equity flows (normalized by debt and market capitalization, respectively) to Brazil and Mexico. Figure (7) shows the impulse responses from the bivariate VARs using a Choleski decomposition (the ordering does not matter). They show that U.S. bond and equity flows are complements rather than substitutes, although the results are not significant. The Granger causality tests (Table 5) suggest that equity flows cause bond flows in both countries but not vice-versa.

In sum, portfolio flows to Brazil and Mexico have generally been positively correlated, as have equity and bonds flows to each country, with the exception of equity and bond flows to Mexico during 2005-06. Overall, these results are suggestive of the importance of a global or regional factor in determining portfolio flows—something we will come back to in the next section.

III. VAR ANALYSIS

Given that Brazil and Mexico have significant exposures to the United States, and are also the biggest economies in Latin America, we include them in our country sample. To these, we add (i) Chile, as it is considered by many to be the "poster child" for macroeconomic stability in Latin America; and (ii) Colombia, as it is a large country where bond flows have dominated equity flows. While the previous section provides a good snapshot of capital flows between the United States and Latin America, it doesn't really shed light on what drives such flows and their impact on the macroeconomies of Latin America. To do so, we build on the approach of Bekaert, Harvey, and Lumsdaine (BHL, 2002), who estimate VARs for a variety of emerging markets, using world interest rates, equity flows, dividend yields, and equity returns. Before describing our approach, we next provide a summary of the literature in this area, which will help put our results in context.

A. Related Literature

Bannister, Cerisola, Gelos and Valencia (2007) provides a good survey of the literature on the impact of U.S. and global conditions on financial conditions in emerging markets. The literature is vast and the use of a VAR approach is common.

For example, Canova (2005) uses a VAR approach on U.S. and 8 Latin American countries. He finds that U.S. monetary policy and supply disturbances induce large and significant responses in several macroeconomic variables, whereas demand shocks in the United States do not induce strong responses. Between 23 percent and 53 percent of the variability in macro variables in Latin America is explained by U.S. shocks. There is also an important fraction of variability (27-70 percent) explained by external, non-US shocks. On average, U.S. shocks explain 43 percent of the variance of domestic interest rates, while non-U.S. external shocks explain 29 percent.

Taking a different approach, Ehrmann and Fratzscher (2006) look at panel regressions across 50 countries, including the United States, Canada, and seven Latin American countries. They find that the response of local equity markets to U.S. monetary policy shocks crucially depends on degree of financial integration, the degree of response of U.S. short term rates to shocks, and the response of local interest rates and exchange rates to U.S. monetary policy shocks. Equity markets fall by around 3.8 percent in response to a 100 bps tightening of US monetary policy. The response is twice as large when U.S. short term rates respond strongly to monetary policy shocks. They also find that a 1 percent increase in US equity returns is on average associated with a 0.30 percent change in foreign equity returns.

Overall, as concluded by Bannister, Cerisola, Gelos and Valencia (2007), the existing literature suggests that even during calm times, there are statistically significant spillovers from mature markets (mostly the United States) to Latin American markets. However, these spillovers are small. For example, Ehrmann and Fratzscher (2006) estimate that a 25 bp change in the Fed Funds rate leads to a 1 percent decline in Brazilian equities and a 0.25 percent decline in Mexican equities.

The main message during calm times is that while spillovers exist, the main drivers of Latin American equity returns are country specific or global factors. The difficulty, of course, is separating U.S. from global shocks. Moreover, there has been little consensus in the literature, on the relative importance of global versus domestic factors. Some papers (Arora and Cerisola, 2000; Grandes, 2002) emphasize the direct relationship between short-term US interest rates and emerging market spreads; others (Eichengreen and Mody, 1998) have found a negative relationship. Most papers (Diaz Weigel and

Gemmill, 2006; Gonzalez Rozada and Levy Yeyati, 2005) have attributed more importance to global rather than domestic factors.

B. VAR with Financial flows

While the literature is vast, there are few papers which analyze the impact of cross border financial flows on macroeconomic conditions in Latin America. Most focus on the impact of foreign financial prices—such as U.S. interest rates and equity prices. The implicit logic is that flows are the way that changes in industrialized country financial prices, for example, spillover to emerging market financial conditions. Thus, if one is already considering such prices, there is no need to explicitly add flow variables to the analysis. However, little if any research has tested this proposition. Especially in a world of ever increasing financial globalization, trying to explain cross border financial flows and if they have any impact on macroeconomic conditions above and beyond that implied by changes in financial prices seems like a worthwhile endeavor. In particular, if the results are very different from the prevailing literature by including flows, this would suggest that excluding flows is an important source of misspecification in econometric models.

One paper that does analyze financial flows is Bekaert, Harvey, and Lumsdaine (BHL, 2002). They estimate VARs for a variety of emerging markets, using a measure of the world interest rate, equity flows, dividend yields, and equity returns. They follow Froot et. al. (2001) and order flows before returns, but also add the world interest rate (ordered first) and the dividend yield (ordered between equity flows and returns). This allows them to test the effects of the world interest rate on flows, returns, and dividend yields; the impact of flows on returns and dividend yields; and the effect of past returns and dividend yields on flows.

The low level of US interest rates has often been cited as an important reason for increased capital flows to emerging markets in early 1990s as it led to a chase for higher yielding assets (e.g., Calvo et. al, 1993). The inclusion of the interest rate in the VAR permits the assessment of the role of international liquidity as an exogenous “push” factor for capital flows into Latin America.

The impact of flows on returns and dividend yields can be used to assess whether flows have a temporary or permanent effect on stock prices. In fact, while U.S. flows are expected to increase stock market prices, this effect may be due to flows temporarily driving prices away from fundamentals (“price pressure” hypothesis) or may reflect a permanent decrease in the cost of capital due to risk sharing benefits from the opening of capital markets (“permanent impact” hypothesis). The price pressure hypothesis would suggest that an increase in capital flows temporarily induces high equity returns which are reversed afterwards as prices come back to fundamentals levels. The permanent

impact hypothesis would imply that the dividend yield would permanently decrease due to a permanent drop in prices.

The effect on flows of shocks to equity returns and dividend yields can be used to assess whether investors are momentum traders or return chasers (Bohn and Tesar 1996, 1997). If momentum is important for U.S. investors' decisions, flows would respond to past equity returns. If, on the other hand, investors' decisions reflect updated expectations about future returns, then flows would chase expected returns. As pointed out by BHL, in the short term, a positive shock on the dividend yield may simply reflect a negative unexpected return, which may lead to short-term outflows if investors are momentum-driven. However, higher dividend yields may indicate higher long-term expected returns, implying that a positive shock on dividend yield would lead to inflows after a few periods if the return chasing hypothesis is correct.

We build on their VAR approach by adding a global risk aversion measure, the VIX, measures of U.S. and domestic fundamentals besides interest rates; and not just considering equity flows, but also bond flows, which as shown in Figures 1 and 6 have often been larger and more volatile than equity flows in many countries. Those additions allow us to address a number of questions not considered by BHL. First, what is the role of risk aversion and real developments in the U.S. as additional exogenous push factors? Second, how do risk aversion and real factors compare to liquidity (measured by the U.S. interest rate) as a determinant of flows?[4] Finally, what is the role of domestic variables ("pull factors") ?

C. Choice and Ordering of Variables

The endogenous variables included in the VAR can be divided in four types:

- U.S. variables: the VIX, Fed Funds effective interest rate and U.S. industrial production growth;
- Domestic macroeconomic variables: Domestic industrial production growth and domestic short-term interest rate;

[4] As pointed out by BHL, a potentially good reason for an inverse link between U.S. interest rates and capital flows to emerging markets is that "low U.S. interest rates may have increased the Americans' wealth and therefore increased their risk tolerance, leading them to rebalance towards riskier emerging market securities." By including a measure of risk aversion it is possible to distinguish between interest rate effects that are a consequence of liquidity tightening from those that result from increased risk aversion.

- Financial flows variables: net bond and equity flows from U.S. to Latin American countries (as a shares of debt and market capitalization, respectively)

- Domestic financial variables: the dividend yield and equity returns minus the S&P500 return.

We also include new cross border listings (as a share of a country's market capitalization) in a given month as an exogenous variable, as such listings are often thought to influence the attractiveness of foreign equities to U.S. investors (Edison and Warnock, 2003).

Short-term interest rates and industrial production growth quantify liquidity conditions and real developments in the United States and domestically. The degree of risk aversion of investors is measured by the VIX. While the VIX is considered a measure of global risk aversion, it is actually the volatility of a range of S&P 500 options. Thus, the extent to which it is a global rather than U.S. factor is not clear—this is a common problem when trying to separate global from U.S. factors.

In preliminary analysis (not reported) we experimented with alternative variables, which are listed in the appendix. In particular, the high-yield (HY) spread was considered as an alternative measure of U.S. investors' risk aversion. As shown in figure 8, the VIX and the HY spread have become highly correlated in the 2000s (the coefficient of correlation for the period January 2000 - June 2006 is above 0.9). Unsurprisingly, this implies that the results are similar for the two variables, but those for the VIX are slightly more significant in general, justifying our choice.

Besides the federal funds rate, other U.S. interest rates were also considered, such as the 3-month federal funds future, the 3-month Treasury bill and the 10-year Treasury bond. The correlation between these rates and the federal funds rate is typically very high, except for that on 10-year Treasury bond.[5] Even though results proved to be qualitatively similar regardless of the interest rate choice, given that our goal is to capture liquidity conditions in the United States, the federal funds rate seemed to be the more logical choice.

Real developments both in the U.S. and in Latin American countries were proxied by industrial production growth, although alternatives, like growth consensus forecasts and the output gap (obtained from an HP filter), were also tried but led to poorer results. As a general measure of domestic fundamentals, the ICRG risk ratings were also considered, but produced less than satisfactory results, probably because they do not vary much over time.

[5] In our sample, the correlation coefficients are 0.98 with the 3-month federal funds future, 0.99 with the 3-month Treasury bill, and 0.65 with the 10-year Treasury bond.

As noted in BHL, the dividend yield is a very meaningful variable, as it can be thought of as a measure of the cost of capital and/or a leading indicator of growth opportunities. For example, if one thinks of the classic dividend discount model with a constant growth rate of dividends, then the dividend yield is given by:

$$D / P = r - g ,$$

where D are dividends, P is share price, r is the discount rate, and g is the growth rate of dividends. The dividend yield increases with the discount rate and decreases with the growth rate of dividends. Bekaert and Harvey (2000) argue that because of their low variability, dividend yields capture better permanent price increases induced by the cost of capital (largely via the discount rate) than average returns. However, changes in the dividend yield could also reflect changing perceptions of growth opportunities via changes in the expected growth rate of dividends. Reinforcing this, Campbell and Cochrane (2000) argue that a habit persistence model allows one to explain the low volatility of the risk free rate and a high and volatile equity risk premium. In such a model, the surplus consumption function (consumption relative to habit) is the key variable determining the relative degree of risk aversion. When surplus consumption is low, risk aversion is high, the equity risk premium is high, and the dividend yield is high. Based on this insight, they argue that the dividend yield can act as a good, high frequency, "recession indicator".

The ordering of the VAR is such that U.S. variables are considered the most exogenous, followed by domestic macroeconomic variables, and then domestic financial variables. The exact ordering is the following: (1) VIX, (2) industrial production growth rate in the United States, (3) yield on U.S. federal funds rates, (4) domestic industrial production growth rate, (5) domestic short-term interest rates, (6) bond flows as a share of debt, (7) equity flows as a share of market capitalization, (8) dividend yield, (9) domestic equity returns minus S&P500 return.

By placing the VIX before U.S. industrial production growth and interest rates we are disregarding any contemporaneous feedback that may exist between the later two variables on risk aversion. Instead, we just consider the same-period effect that risk aversion may have on real developments and the interest rate. The ordering also implies that the contemporaneous influence of industrial production growth on the interest rate is taken into account, but not vice-versa. This means that monetary policy reactions to contemporaneous real developments are captured by the model but any effect of interest rates on growth in the same month is not accounted for, which seems sensible given that interest rate effects on real activity may have long lags and are likely to be small contemporaneously. Using the same logic, the domestic industrial production growth rate is placed ahead of domestic short-term interest rates.

Given that preliminary estimations in the previous section indicate that equity flows Granger cause bond flows but not vice-versa, the chosen ordering for the flows variables is first equity and then bonds. Both precede the dividend yield and equity return, implying that the contemporaneous effect of these variables on flows, which could potentially be ascribed to price pressure effects, is removed. By placing the dividend yield before equity returns and both variables after flows, the contemporaneous effect of shocks to the returns on both the capital flows and dividend yields is omitted. Hence, only the effect of past returns (momentum trading) on the endogenous variables is considered.

In sum, this structure allows us to investigate many questions, which can be grouped as follows:

- What determines financial flows into Latin America?
    - What is the impact of U.S. economic developments on flows? Is U.S. investors' risk aversion more or less relevant than factors typically considered in the literature (i.e., U.S. liquidity and real developments)?
    - How does domestic developments affect financial flows?
    - Is there evidence of momentum trading or return chasing?

- What can we learn from financial flows?
    - Do flows have significant effects on domestic financial conditions?
    - How do the effects of flows on the dividend yield and equity return compare to those from U.S. and domestic conditions?
    - In particular, is there evidence of the "price pressure" or of the "permanent impact" hypothesis?
    - Does the exclusion of flows from the VAR represent a significant misspecification?

D. Determinants of financial flows

Figure 9 shows the impulse responses of bond and equity flows to shocks in U.S. and domestic variables, including domestic financial conditions.

An increase in risk aversion (i.e., a positive shock in VIX) is typically associated with a drop in bond and equity flows as shares of debt and market capitalization, respectively. The drop in equity flows is significant for Mexico and, especially, for Brazil. The drop in bond flows is only slightly significant for both Brazil and Colombia. Interestingly, Chile is the only country in which the responses of both bond and equity flows to a shock in risk aversion are not significant. This is consistent with the view that Chile is perceived by U.S. investors as a country that has had solid macroeconomic fundamentals for a long

period of time, and is therefore less subject to the effect of shocks to risk aversion. In terms of magnitudes, a 1 standard deviation shock to VIX lead to sudden drops in the range 0.02-0.05 for the bond flows ratio, and in the range 0.02-0.06 for the equity flows ratio (except for Colombia).

A shock to growth in real activity in the United States (measured by U.S. industrial production growth) has different effects on different types of flows and across countries. In Brazil, positive shocks to growth in U.S. industrial production lead to positive bond outflows, which are significant on impact. The magnitude of the outflow is of about 0.04 of the bond-to-debt ratio in response to a shock of one standard-deviation in growth. In Chile, U.S. real shocks lead to significant inflows (with a lag) of both equity and bonds to Chile. The magnitude of the inflows is of more than 0.05 for the bonds ration and about 0.04 for the equity ratio in response to a one standard deviation shock. All other responses of flows to U.S. real shocks are not statistically significant.

Positive shocks to U.S. short-term interest rates have no statistically significant effect on financial flows from U.S. to Latin America, except for equity flows to Brazil which are surprisingly positive, but barely significant, in response to the interest rate shock. These results differ from the effect typically found in the literature that focus on the 1990s (e.g., Calvo et al., 1993), according to which an increase in U.S. interest rates has a negative effect on flows. One possible explanation for the difference is that our sample period is the 2000s, not the 1990s. While the strong and long-lasting increase in U.S. interest rates observed since 2004 may have exerted a negative effect on U.S. flows to Latin America (as in early 1990s), this effect may have been more than compensated by concomitantly rising commodity prices and its associated positive spillovers to investors' perceptions of domestic fundamentals.

Interestingly, the response of financial flows to shocks in domestic real developments is not statistically significant for any of the four countries considered. Similarly, the responses of flows to shocks to the domestic interest rate are also not statistically significant, except in the case of equity flows to Chile, which respond positively (with a lag) to an increase in domestic interest rate, as expected. The magnitude of the response to a one standard deviation shock is of about 0.02 of the flows ratio.

Finally, other domestic financial conditions may affect flows. In particular, if equity flows increase in response to positive equity return and/or negative dividend yield shocks, there is evidence of momentum trading. However, if the dividend yield shocks are perceived as permanent and lead to equity inflows, there is evidence that investors chase future expected returns. The graph shows that impulse responses of flows to dividend yield and equity return shocks are not significant. Nonetheless, it is clear that shocks to equity returns are on average associated with inflows in all countries, what may be interpreted as weak evidence in favor of the momentum trading hypothesis.

Table 6 shows the variance decomposition of bond and equity flows for each of the four countries. The table highlights those variables that explain at least 5 percent of the variance of flows. The results confirm that the VIX is an important determinant of at least one type of flow in all four cases, but the country where it has the smallest relevance is Chile. In some cases, U.S. industrial production growth explains a relevant part of the variance of flows. In Brazil, the U.S. interest rate accounts for more than 5 percent of the variance of equity flows, whereas for other countries its relevance is minor. Domestic industrial production growth is relevant for explaining the variance of bond flows to Mexico and of equity flows to Chile, whereas domestic interest rates account for a significant part of the variance of both types of flows to Chile. The results also suggest that the dividend yield and equity returns are not important factors in determining flows.

In sum, the evidence from impulse responses and variance decompositions suggests the following conclusions:

- In general, VIX is an important determinant of flows, although less so in the case of Chile.[6]

- U.S. industrial production is also an important determinant of flows, especially in Brazil and Chile.

- In the case of Chile, domestic variables (industrial production growth and domestic interest rate) are relevant determinants of flows.

One caveat of our analysis that is also apparent from the variance decompositions in Table 6 is that we are unable to explain a large fraction of the variance of flows. In fact, at least half of the variance is not explained in all cases, while in a few instances a fraction of only about 10 percent can be explained. This is an important result as it documents the fact that existing literature on determinants of financial flows, which typically focuses on explanatory variables similar to ours, may be omitting important drivers of flows which future research should attempt to uncover. We now proceed to an examination of the consequences of financial flows.

[6] A related result by Osterholm and Zettelmeyer (2007), who study the effect of external conditions on growth in Latin America, is that a one standard deviation in the HY spread lead to a 0.9 percentage point drop in Latin America annual growth (measured as a weighted index for Argentina, Brazil, Chile, Colombia, Mexico and Peru) after three quarters. They state that results were similar when VIX was used in place of the HY spread.

E. Determinants of domestic financial conditions and the transmission of shocks

The effect of shocks to financial flows

The impulse responses of domestic financial conditions variables (dividend yield and equity return differential) to shocks on financial flows is depicted in figure 10. While there are discrepancies across countries, shocks to flows generally lead to a persistent drop in the dividend yield and a short-lived increase in equity return which is not reverted afterwards. The responses are consistent with the permanent impact hypothesis, but not with the price pressure hypothesis. However, contrary to the case of risk aversion shocks discussed previously, these responses to financial flows shocks are surprisingly not statistically significant, indicating that the adjustment to shocks may occur more prominently through prices (VIX and interest rates) than through quantities (financial flows).

The effect of U.S. and domestic macroeconomic conditions

While the previous section has shown that U.S. financial flows may not be as relevant to domestic financial conditions as one would have expected, this does not mean that the country's financial markets are isolated from external developments. In fact, the variance decompositions in table 7 confirm the point that flows are not very relevant for explaining domestic variables and shows that some external and domestic macroeconomic variables are. While cross-country differences are significant, the VIX seems to be particularly important in almost all instances for explaining the variance of the dividend yield and equity return. The most notable exception is Chile, where the VIX seems to be less relevant.

Figure 11 shows the impulse response functions of the dividend yield and equity return differential in reaction to shocks to external variables (VIX, U.S. industrial production growth and interest rate) and domestic macroeconomic variables (domestic industrial production growth and interest rate).

A rise in risk aversion leads to a statistically significant and persistent increase in the dividend yield in Brazil, Mexico and (to a smaller extent) Colombia. This is consistent with the interpretation that the cost of capital (captured by the dividend yield) increases as U.S. investors become more risk-averse.

Shocks to U.S. industrial production growth have no statistically significant effect on the dividend yield, but are positively associated with persistent increases in the dividend yield. This is true in all countries but Mexico, where close industrial ties may imply that the cost of capital decreases in response to better growth prospects in the United States.

As expected, shocks to U.S. interest rates seem to lower the long-term expected returns (measured by the dividend yield) in both Brazil and Mexico (statistically significantly in

the former case). In the case of Chile the effect is virtually null, while in Colombia, where equity inflows from U.S. are very small, shocks to U.S. interest rate are associated with an increase in the dividend yield.

An increase in domestic industrial production growth leads to a lower cost of capital (i.e., a drop in dividend yield) for both Brazil and Mexico. In the case of Chile and Colombia the effect is virtually zero. The effect of an increase in domestic interest rate on the dividend yield is small and not significant for all countries except Colombia, where it leads to a statistically significant increase in the dividend yield and, therefore, in the cost of capital.

Flows and the transmission of shocks

The literature on the transmission of shocks on U.S. financial and economic conditions to the rest of the world frequently omits financial flows. Does that represent an important misspecification? In other words, how is the transmission of other external shocks to domestic financial conditions affected by the inclusion of financial flows into the empirical analysis?

To answer this question we also estimate VARs without financial flows. The impulse responses of domestic financial conditions to shocks in external variables are also shown in figure 11. Clearly, there are only slight differences between the impulse responses of domestic variables to external shocks of VARs with and without financial flows. Importantly, this shows that there is virtually nothing to learn about transmission mechanisms of external shocks by including financial flows in the analysis.

F. Dimensionality Issues and Robustness of Results

A sensible concern about the VAR approach in this paper is whether we are using too many variables given the limited sample size. As in any VAR analysis, we are faced with the so-called dimensionality curse: the number of parameters grow with the square of the number of variables.

An increase in the sample size could help alleviate this problem, but would generate others. In fact, 3 of the 4 countries in our sample have floated their exchange rates in late 1999s (the exception being Mexico), and an extension of the sample to the 1990s would pose the question of whether the choice of exchange rate regime could be influencing flows. Another problem of extending the sample to the 1990s is that this was a period of significant liberalization of emerging financial markets, which may have served as an important stimulus for financial flows. Therefore, our focus on the 2000s has the virtue of controlling for features that are not the focus of our analysis.

As an alternative to an increase in the sample size, we perform the estimation of a number of lower-dimension VARs to test the robustness of our results. For that we use the four groups of explanatory variables – U.S. variables (the VIX, U.S. industrial production growth and interest rate), domestic macroeconomic variables (industrial production growth and interest rate), financial flows (bond and equity flows normalized by debt and market capitalization, respectively), and domestic financial conditions (dividend yield and equity return differentials) – as separate blocks.

In examining the robustness of the results on the determinants of flows, we perform five VARs: (1) U.S. variables, financial flows, and domestic financial conditions; (2) domestic macroeconomic variables, financial flows, and domestic financial conditions; (3) U.S. variables, and financial flows; (4) domestic macroeconomic variables, and financial flows; and (5) financial flows and domestic financial conditions. While the results are, as expected, quantitatively different, the main messages remain valid: external factors, especially the VIX, are more important than domestic factors in determining financial flows, with the exception of Chile, where the opposite occurs.

Similarly, we estimate shorter VARs in order to assess the robustness of our results for the drivers of domestic financial conditions. Besides the VARs (1), (2) and (5) above, the following ere also estimated: (6) U.S. variables, and domestic financial conditions; and (7) domestic macroeconomic variables, and domestic financial conditions. The key result that VIX is an important determinant of domestic financial conditions whereas flows are not remains valid, and Chile continues to be the exception.

Different orderings were also examined. Keeping the ordering of the blocks of variables fixed (i.e., U.S. variables first, followed by domestic macroeconomic variables, followed by financial flows, followed by domestic financial conditions), we experimented different orderings within each groups. For instance, changing the ordering of VIX to second and bringing U.S. interest rates to first did not affect the results in any substantial manner. The same was true for other changes within each group, allowing us to conclude that our central results are not sensitive to alternative ordering schemes.

IV. CONCLUSIONS

This paper has attempted to analyze the pattern, causes and implications of financial flows from the United States to Latin America.

First, using a variety of capital flows data sources, we find that total capital flows—both FDI and portfolio debt and equity flows—have generally fallen as a percent of GDP compared to before the Asian crisis. Part of this is no surprise, given that in recent years

the current account positions of most major Latin American countries have improved dramatically on the back of the commodity price boom.

When we look specifically at U.S. holdings and flows, we find that Latin American assets make up an extremely small share of U.S. investors' portfolios, whose foreign purchases are largely in industrialized countries. Moreover, even this share has fallen since the Asian crisis, particularly with respect to bonds, likely reflecting a broad reassessment undertaken by U.S. investors of the attractiveness of emerging market debt in the aftermath of the Asian crisis. Turning to flows, a significant portion of portfolio and FDI inflows to Latin America come from other countries.

Despite the seeming lack of importance of Latin American assets in U.S. investors' portfolios, Brazilian and Mexican equity markets, and Colombian and Peruvian bond markets, have sizable exposures to U.S. investors. Thus, U.S. investors do remain systemically important in many countries, despite their importance having declined since the mid-1990s.

Second, we use VARs to analyze the causes and consequences of financial flows. This points to a larger role for external factors than for domestic fundamentals in determining financial flows. Amongst external factors, the VIX is generally more important than U.S. interest rates or U.S. industrial production. The major exception is Chile, for which U.S. industrial production and domestic factors are more important than the VIX, suggesting that Chile's strong macroeconomic record of recent decades has largely cushioned it from sudden capital movements associated with changes in global risk aversion.

Turning to the impact of financial flows, comparing the results from VARs with and without flows suggests that previous analyses which omitted financial flows are not misspecified, as the impulse responses for shocks other than to flows barely change. Moreover, shocks to flows do not explain much of the variance of domestic financial variables. Indeed, the VIX seems to be a key factor, except in the case of Chile. These results suggest financial shocks are largely transmitted via prices and not necessarily via financial flows.

Overall, this paper concludes that, while U.S. investors remain systemically important in some Latin American countries, the degree of this importance has declined since the Asian crisis. Still, U.S financial conditions, especially measures of risk aversion, have a major impact on the regions' macroeconomic and financial health. The fact that Chile has remained largely immune to changes in the VIX, suggests that while it may be difficult to "proof" domestic financial systems from U.S. macroeconomic developments, a long record of macroeconomic stability can certainly help mitigate the pernicious effect of changes in global risk sentiment on domestic macroeconomic and financial conditions.

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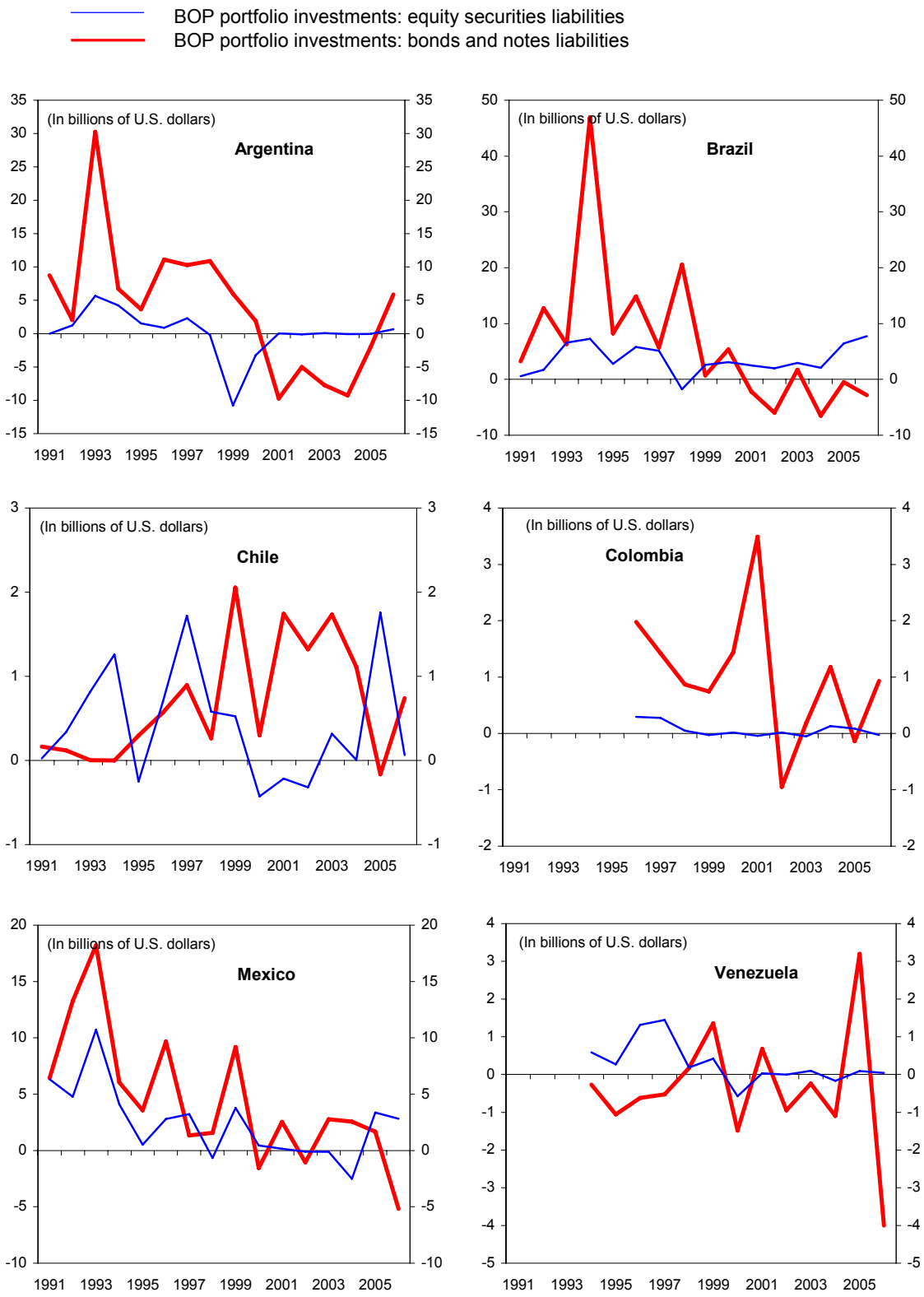
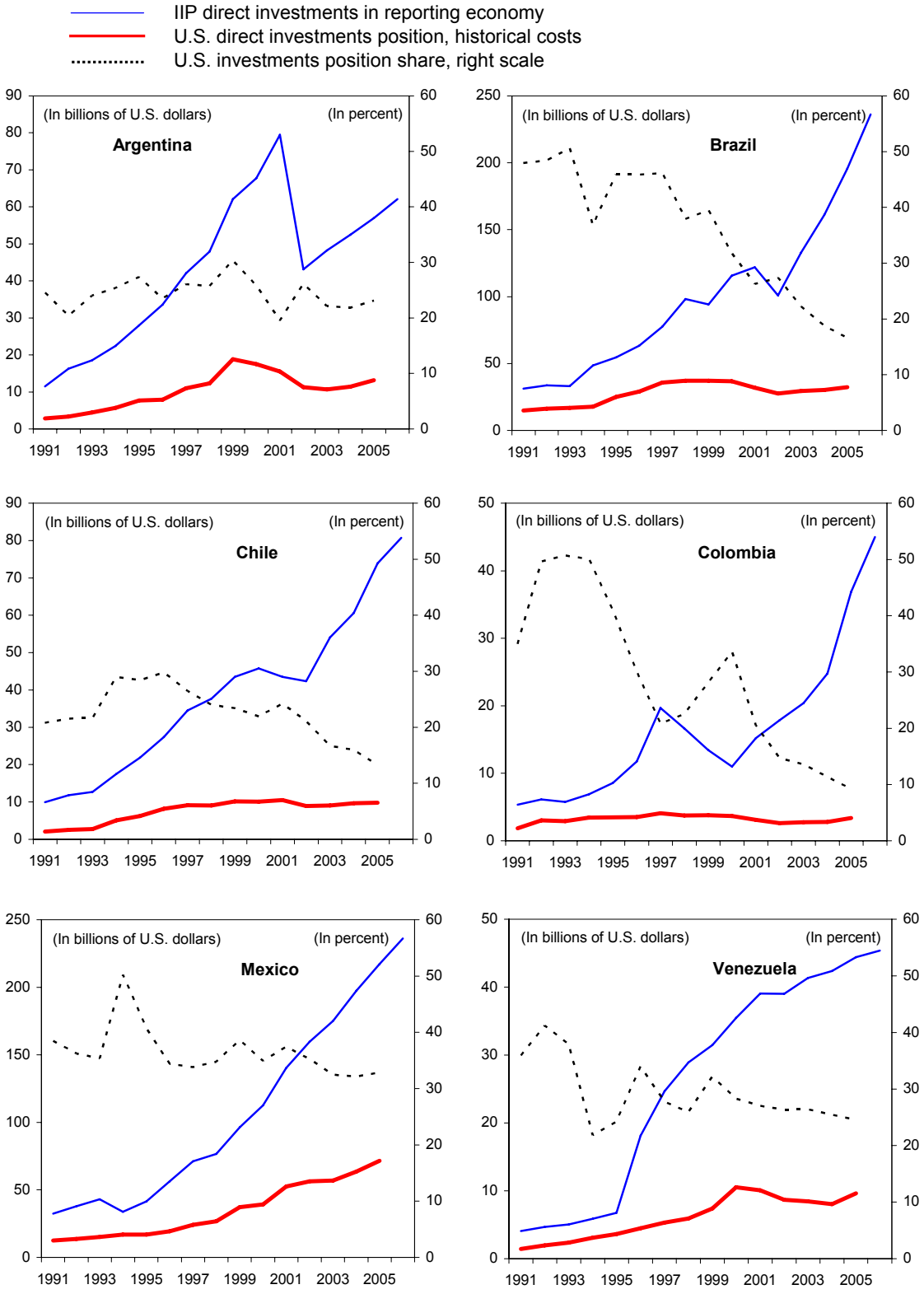
Figure 1. BOP Portfolio Investments into Equities and Bonds.



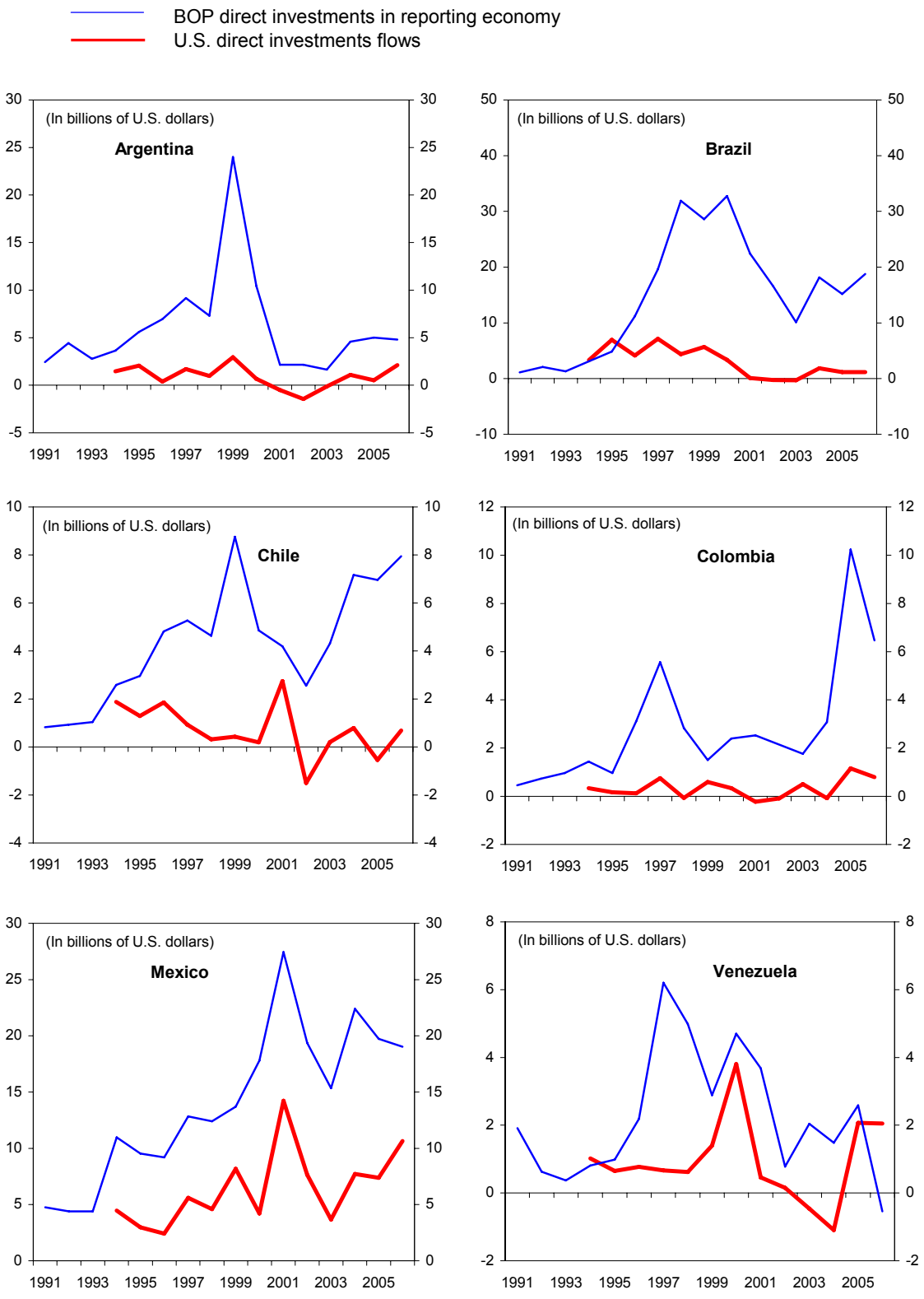
Sources: Haver Analytics; IMF Balance of Payments Statistical Yearbook; and IMF staff calculations.

Figure 2. Direct Investments Positions.



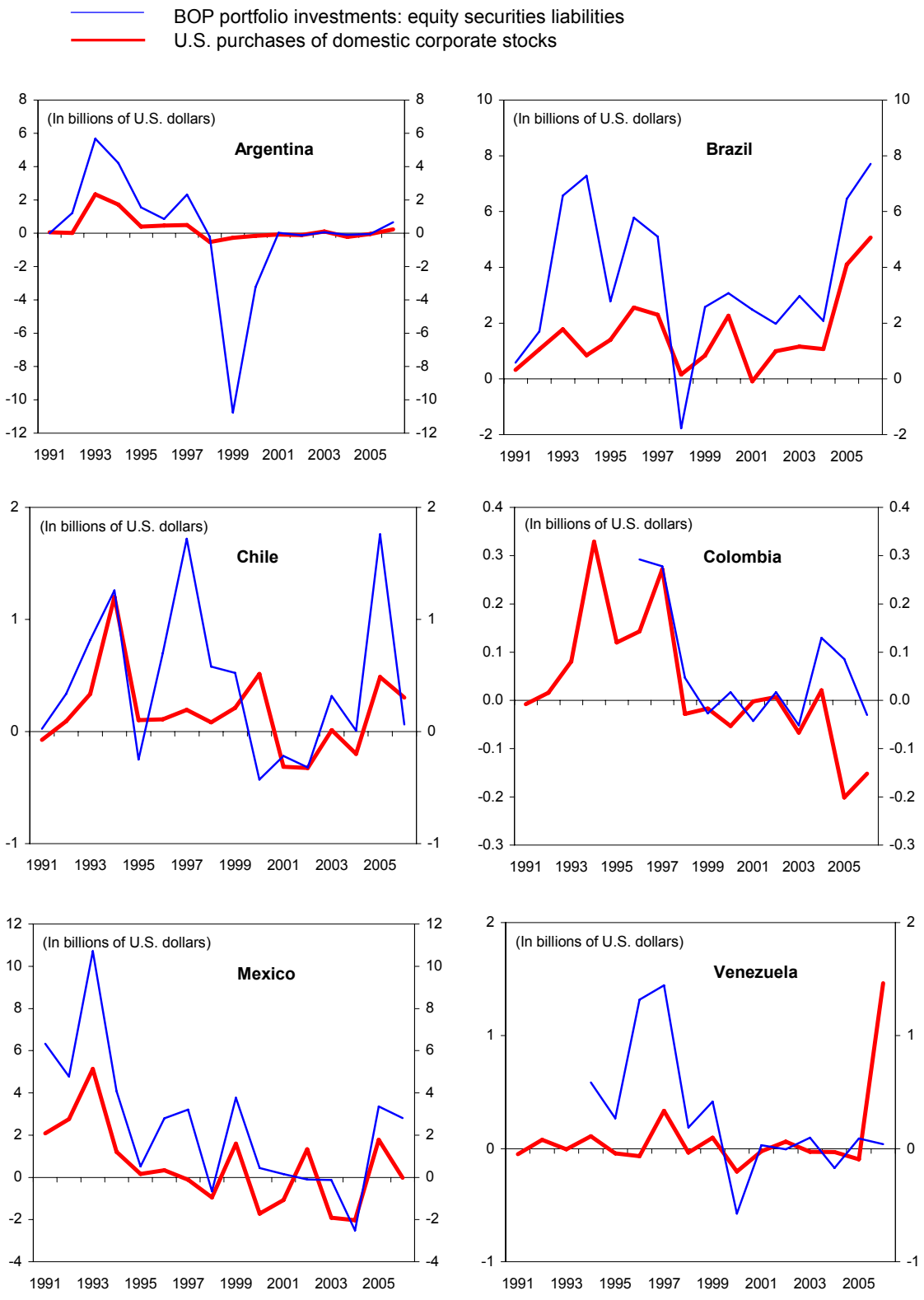
Sources: Haver Analytics; IMF Balance of Payments Statistical Yearbook; and IMF staff calculations.

Figure 3. Direct Investments Flows.



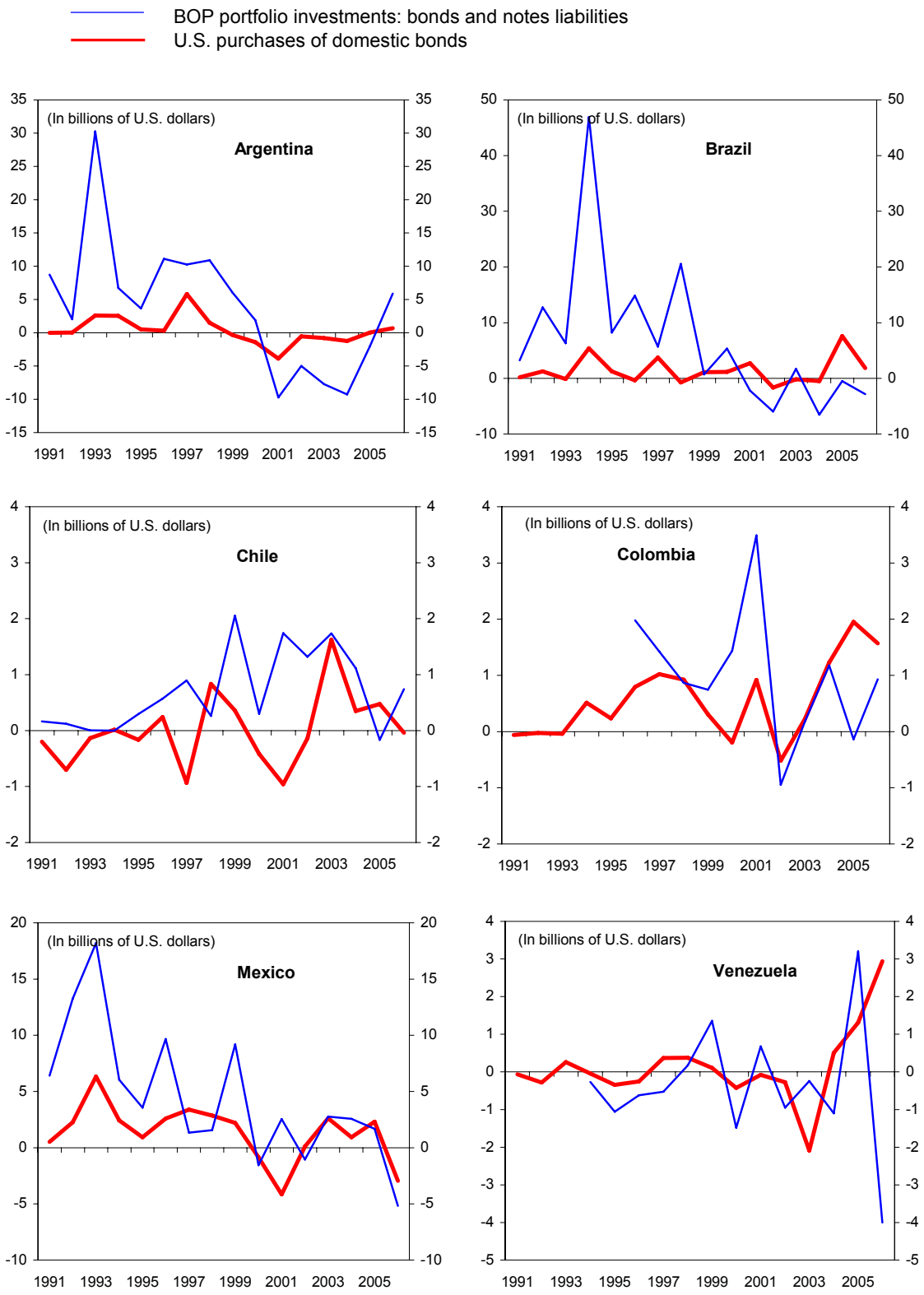
Sources: Haver Analytics; IMF Balance of Payments Statistical Yearbook; and IMF staff calculations.

Figure 4. BOP and U.S. Portfolio Investments into Equities.



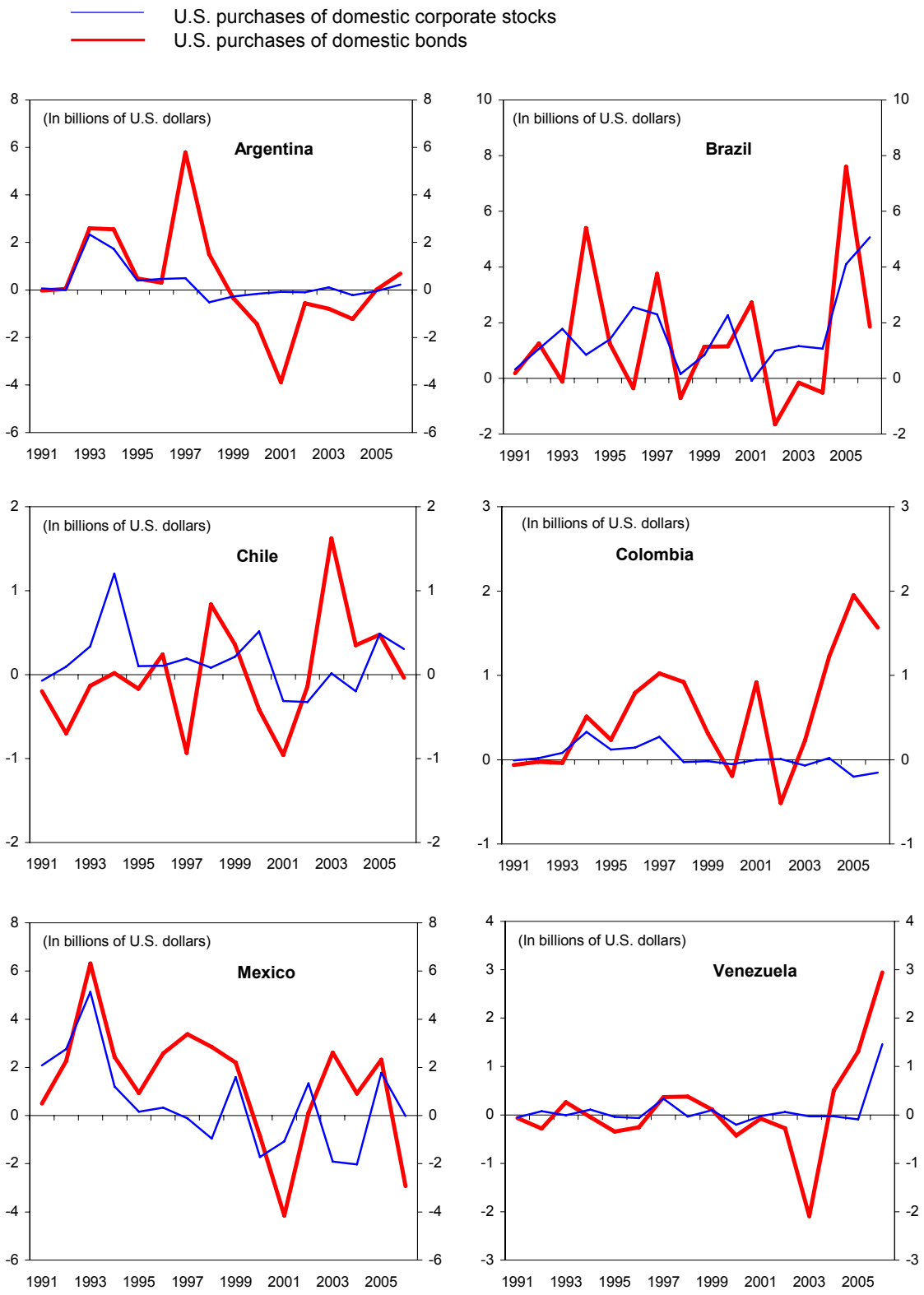
Sources: Haver Analytics; IMF Balance of Payments Statistical Yearbook; and IMF staff calculations.

Figure 5. BOP and U.S. Portfolio Investments into Bonds.



Sources: Haver Analytics; IMF Balance of Payments Statistical Yearbook; and IMF staff calculations.

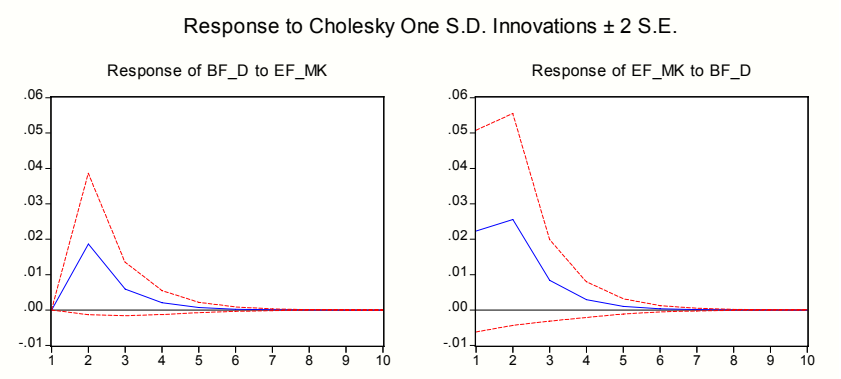
Figure 6. U.S. Portfolio Investments into Equities and Bonds.



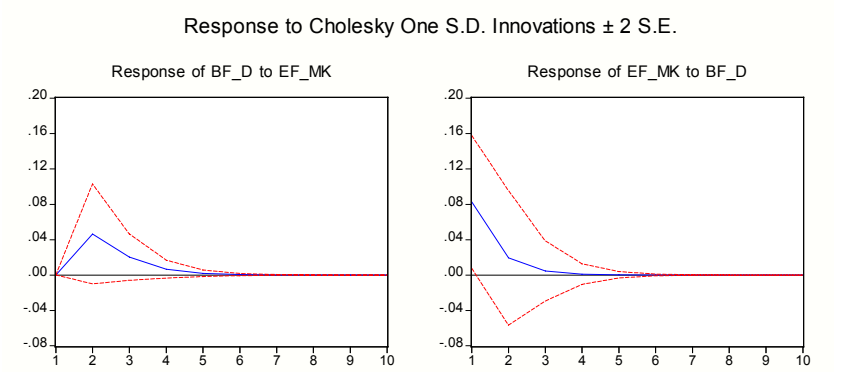
Sources: Haver Analytics; IMF Balance of Payments Statistical Yearbook; and IMF staff calculations.

Figure 7. Bivariate VAR – U.S. Bond and Equity Flows

Brazil



Mexico



Note: Bond and equity flows are normalized by debt and market capitalization respectively.

Figure 8. VIX and High yield spread

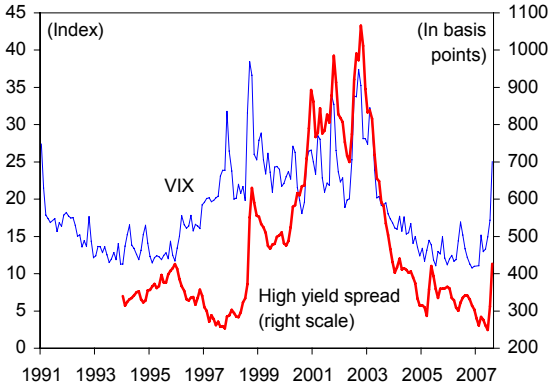
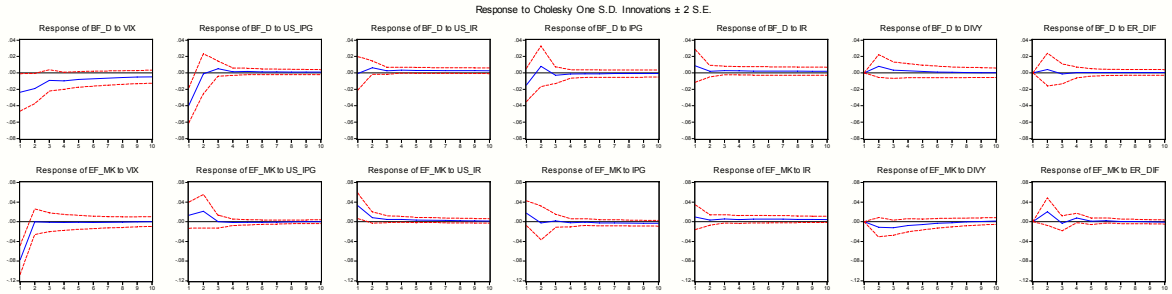
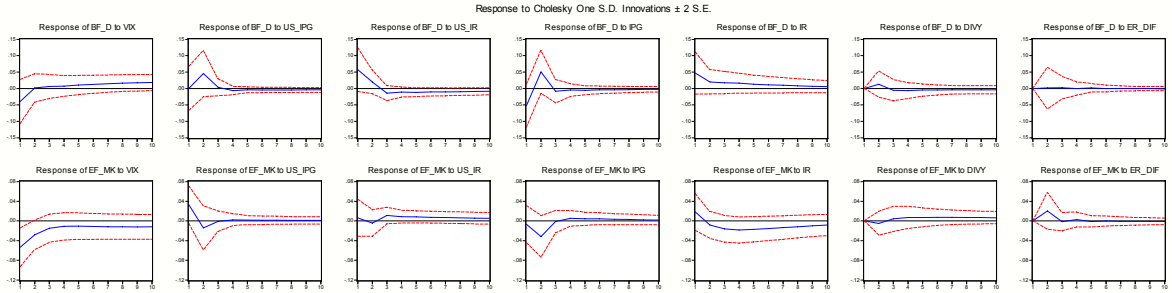


Figure 9. Determinants of financial flows

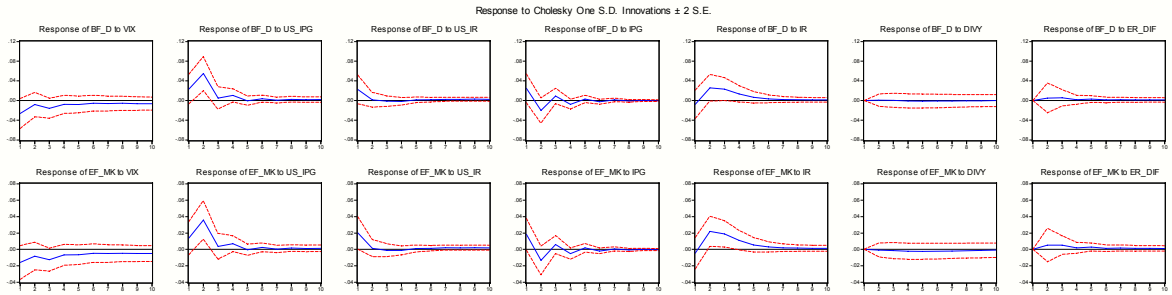
Brazil



Mexico



Chile



Colombia

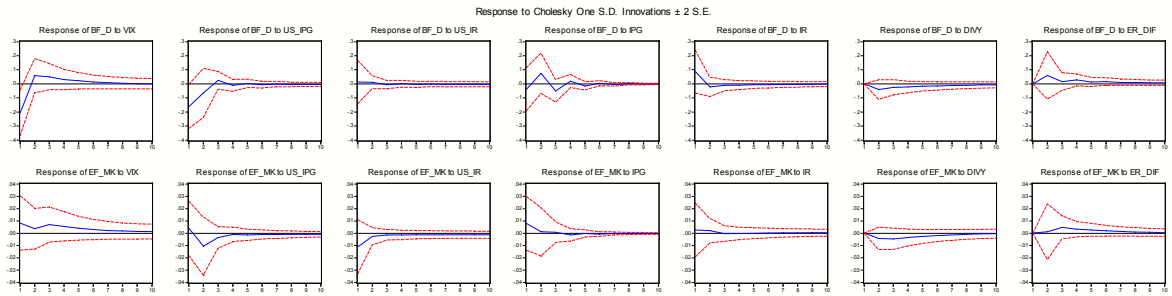
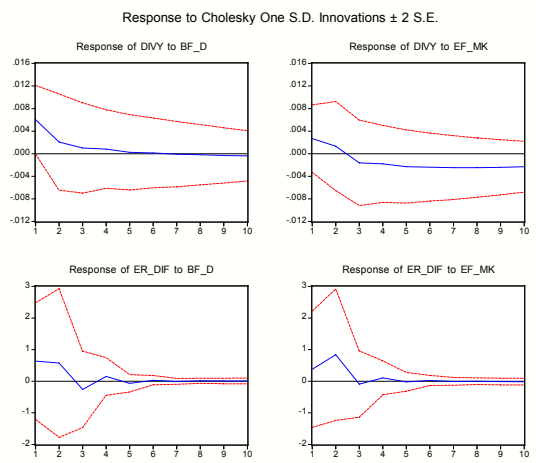
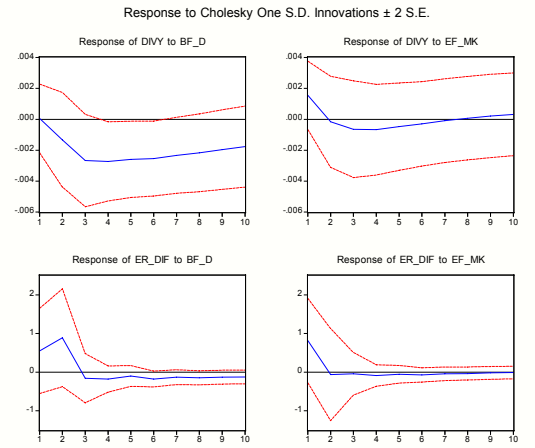


Figure 10. Response of domestic financial conditions to shocks on financial flows

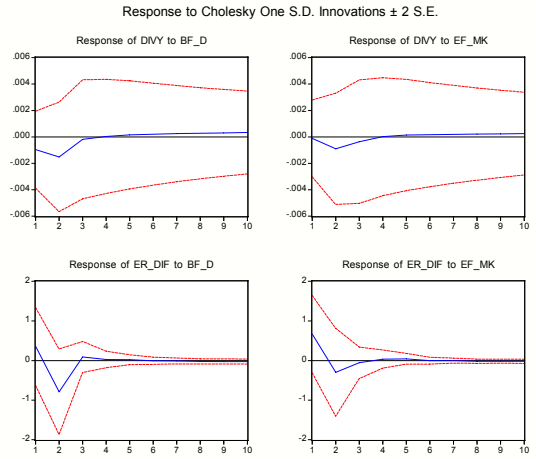
Brazil



Mexico



Chile



Colombia

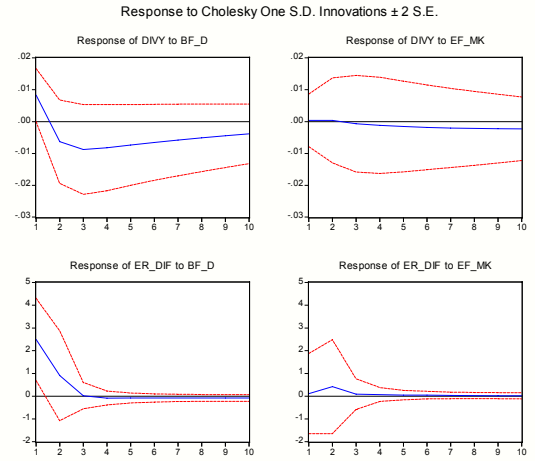
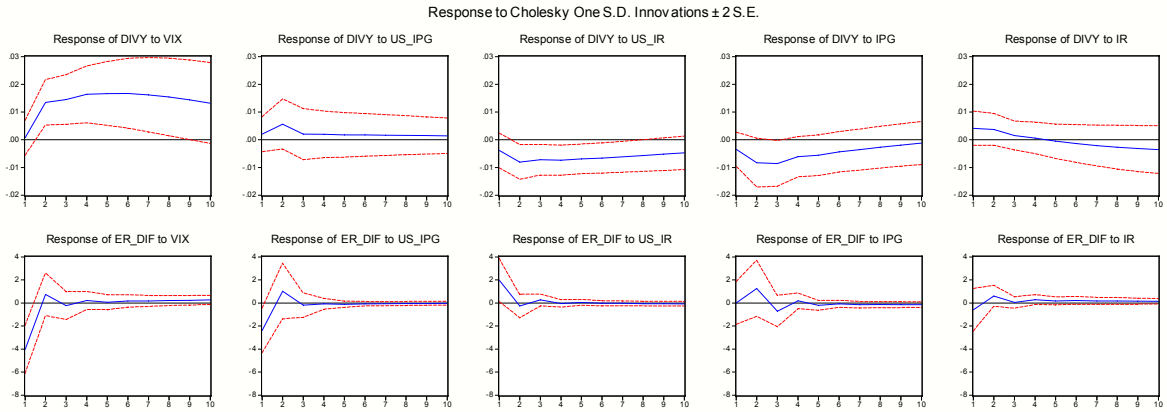


Figure 11. Response of domestic financial conditions to shocks on U.S. and domestic macroeconomic variables – VARs with and without financial flows

Brazil – with flows



Brazil – without flows

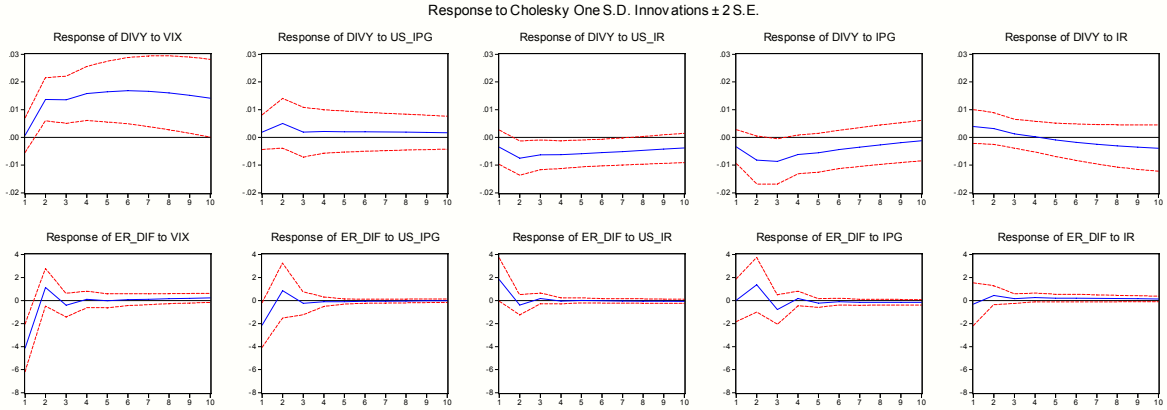
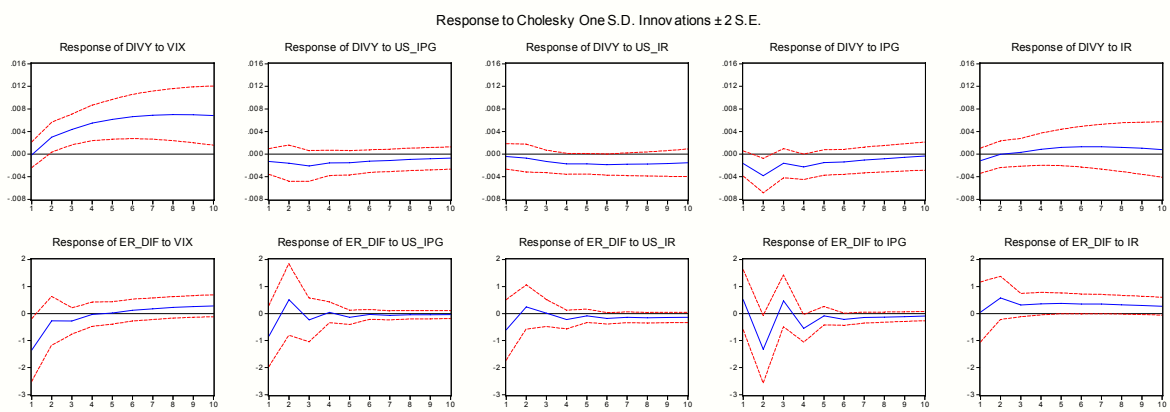


Figure 11. Response of domestic financial conditions to shocks on U.S. and domestic macroeconomic variables – VARs with and without financial flows (continuation)

Mexico – with flows



Mexico – without flows

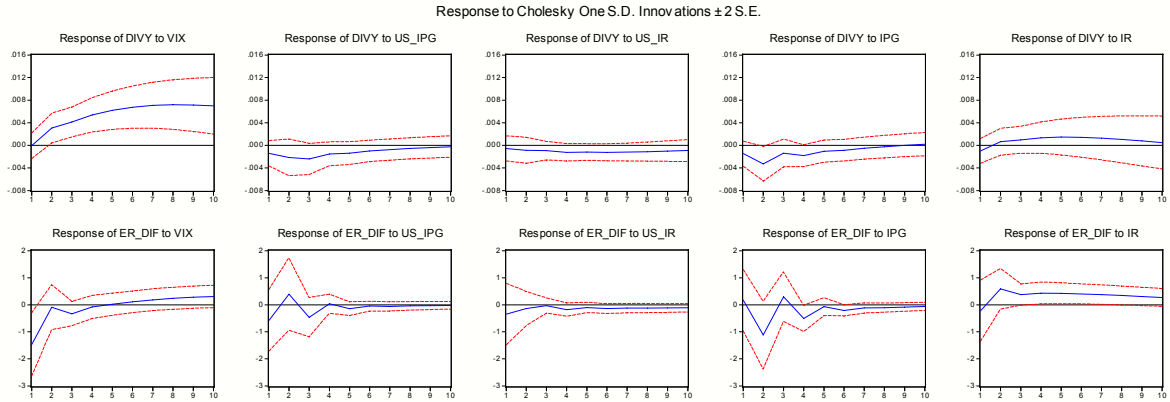
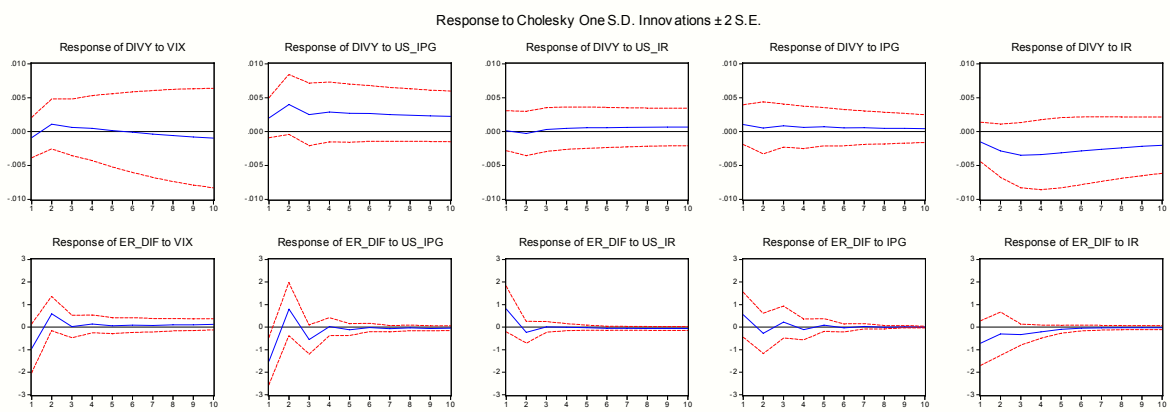


Figure 11. Response of domestic financial conditions to shocks on U.S. and domestic macroeconomic variables – VARs with and without financial flows (continuation)

Chile – with flows



Chile – without flows

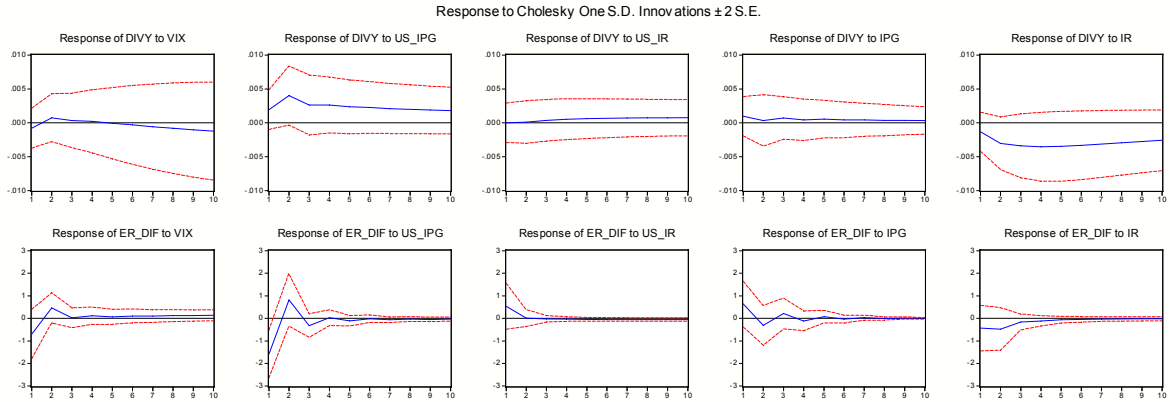
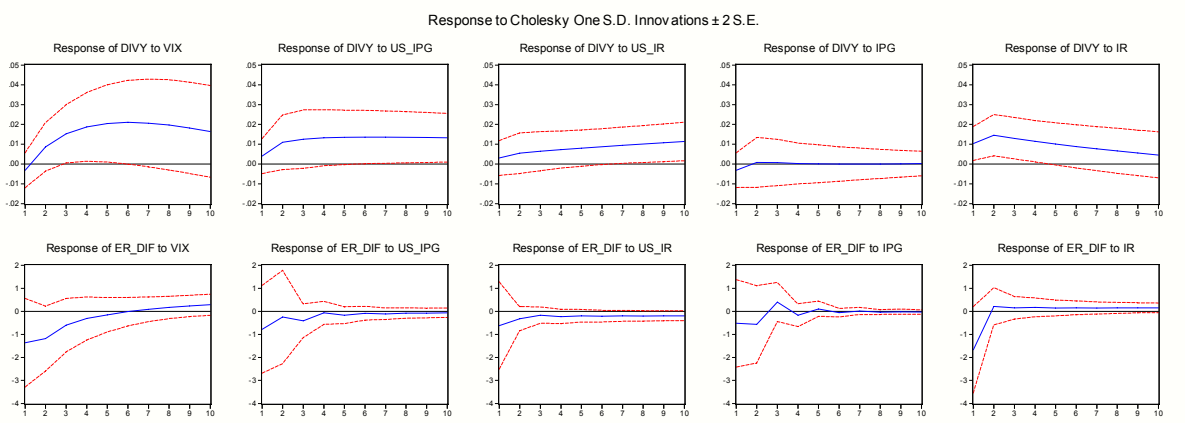


Figure 11. Response of domestic financial conditions to shocks on U.S. and domestic macroeconomic variables – VARs with and without financial flows (continuation)

Colombia – with flows



Colombia – without flows

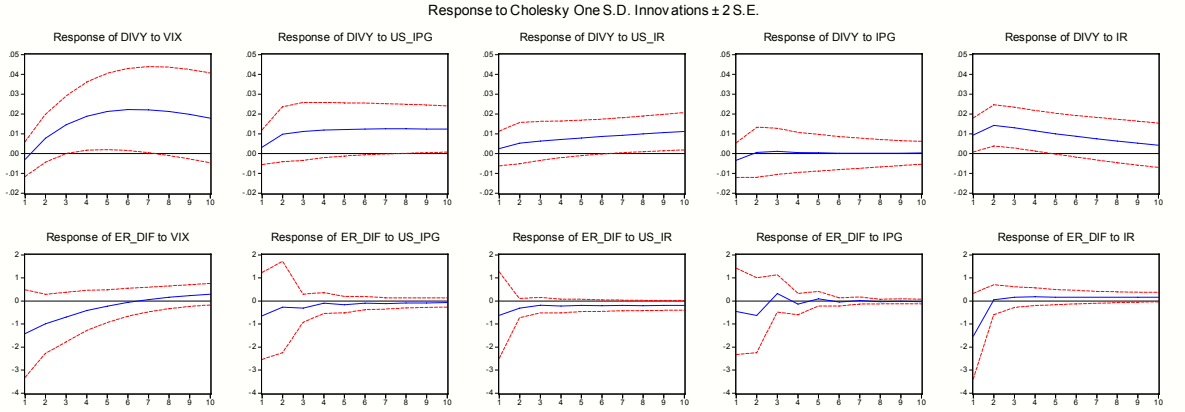


Table 1. Indicators of External and Financial Vulnerability
(In percent of GDP)

	1991-2005	1991-1998	1999-2003	2004-2005	2004-2006
Argentina					
Current account balance	-0.8	-3.0	1.3	2.6	3.0
Capital and financial account balance	1.4	3.5	-0.4	-2.9	-3.4
Net foreign direct investment	2.1	1.5	3.1	2.2	2.0
Net portfolio investment	0.5	4.0	-3.5	-3.3	-1.2
Portfolio investment assets	-0.5	-1.0	-0.1	0.4	0.2
Portfolio investment liabilities	1.0	5.0	-3.4	-3.6	-1.4
Equity	0.1	0.8	-1.0	0.0	0.1
Bonds and notes	1.0	4.2	-2.4	-3.6	-1.5
Net other investment	-1.3	-1.9	0.0	-1.8	-4.3
Brazil					
Current account balance	-1.4	-1.5	-2.6	1.7	1.5
Capital and financial account balance	1.5	1.6	2.6	-1.5	-1.4
Net foreign direct investment	2.0	1.1	3.7	1.4	0.6
Net portfolio investment	1.6	2.8	0.3	-0.1	0.2
Portfolio investment assets	-0.1	-0.1	-0.1	-0.2	-0.1
Portfolio investment liabilities	1.7	2.9	0.4	0.1	0.3
Equity	0.5	0.6	0.5	0.5	0.6
Bonds and notes	1.2	2.4	-0.1	-0.5	-0.4
Net other investment	-2.0	-2.3	-1.4	-2.8	-2.3
Chile					
Current account balance	-1.8	-3.2	-0.9	1.6	2.3
Capital and financial account balance	2.1	3.1	1.8	-1.0	-2.2
Net foreign direct investment	3.6	3.0	4.1	4.9	4.4
Net portfolio investment	-0.7	0.6	-2.1	-2.8	-4.2
Portfolio investment assets	-2.3	-0.8	-4.0	-4.1	-5.2
Portfolio investment liabilities	1.6	1.4	2.0	1.3	1.0
Equity	0.6	1.0	0.0	0.7	0.5
Bonds and notes	1.0	0.4	2.0	0.5	0.5
Net other investment	-0.7	-0.5	-0.2	-3.1	-2.5
Colombia					
Current account balance	-1.8	-2.7	-0.5	-1.2	-1.6
Capital and financial account balance	1.7	2.6	0.5	1.0	1.3
Net foreign direct investment	2.1	1.9	2.0	3.8	3.8
Net portfolio investment	0.3	0.8	-0.2	-0.8	-1.2
Portfolio investment assets	-0.8	-0.3	-1.4	-1.5	-1.8
Equity	0.0	0.0	0.0	0.0	0.0
Bonds and notes	-0.5	-0.2	-1.0	-0.2	-0.3
Portfolio investment liabilities	1.3	1.1	1.2	0.6	0.7
Equity	0.1	0.3	0.0	0.1	0.1
Bonds and notes	1.1	1.0	1.2	0.5	0.6
Net other investment	-0.7	-0.1	-1.2	-2.0	-1.4
Mexico					
Current account balance	-3.0	-3.9	-2.5	-0.8	-0.6
Capital and financial account balance	3.4	4.4	2.9	1.0	0.6
Net foreign direct investment	2.6	2.3	3.0	2.2	2.0
Net portfolio investment	1.7	2.5	0.8	1.1	0.8
Portfolio investment assets	0.0	-0.1	0.2	0.1	0.1
Equity	0.0	0.0	0.0	0.0	0.0
Bonds and notes	0.0	-0.1	0.2	0.1	0.1
Portfolio investment liabilities	1.7	2.5	0.7	0.9	0.7
Equity	0.6	1.1	0.2	0.0	0.1
Bonds and notes	1.3	2.1	0.5	0.3	0.0
Net other investment	-0.9	-0.4	-1.0	-2.3	-2.1
Venezuela					
Current account balance	5.4	1.6	7.2	15.8	15.5
Capital and financial account balance	-3.7	-0.3	-5.3	-13.5	-13.5
Net foreign direct investment	1.9	2.3	1.8	0.9	0.1
Net portfolio investment	-0.1	0.5	-0.7	-1.2	-2.2
Portfolio investment assets	-0.5	-0.2	-0.5	-1.8	-1.9
Equity	-0.1	-0.1	-0.1	-0.1	0.0
Bonds and notes	-0.3	0.0	-0.3	-1.7	-1.7
Portfolio investment liabilities	0.4	0.6	-0.1	0.6	-0.3
Equity	0.4	0.7	0.0	0.0	0.0
Bonds and notes	0.0	0.0	-0.1	0.6	-0.3
Net other investment	-5.6	-3.1	-6.4	-13.2	-11.4

Sources: IMF Balance of Payments Statistical Yearbook; IMF World Economic Outlook; and IMF staff calculations.

Table 2. Portfolio share of U.S. investors' holdings of foreign assets relative to ICAPM benchamrks 1/

	2006			2005			2004			2001			1997		
	ω_{us}	ω_m	ω_{us} / ω_m	ω_{us}	ω_m	ω_{us} / ω_m	ω_{us}	ω_m	ω_{us} / ω_m	ω_{us}	ω_m	ω_{us} / ω_m	ω_{us}	ω_m	ω_{us} / ω_m
Total: equity, domestic and international long-term debt securities															
Argentina	0.03	0.15	0.17	0.02	0.15	0.11	0.01	0.17	0.08	0.02	0.23	0.07	0.17	0.31	0.56
Brazil	0.25	1.19	0.21	0.22	1.06	0.21	0.17	0.87	0.20	0.13	0.86	0.15	0.23	1.12	0.21
Chile	0.03	0.16	0.18	0.03	0.16	0.18	0.03	0.16	0.21	0.02	0.14	0.16	0.04	0.18	0.20
Colombia	0.01	0.09	0.15	0.01	0.10	0.12	0.01	0.07	0.18	0.01	0.06	0.18	0.02	0.06	0.34
Mexico	0.25	0.63	0.40	0.21	0.59	0.35	0.18	0.51	0.36	0.18	0.54	0.34	0.29	0.48	0.60
Peru	0.01	0.06	0.15	0.01	0.03	0.33	0.01	0.03	0.36	0.01	0.02	0.28	0.02	0.03	0.49
Venezuela	0.01	0.21	0.07	0.01	0.10	0.14	0.02	0.06	0.32	0.01	0.05	0.26	0.04	0.08	0.45
Latin America 2/	0.59	2.48	0.24	0.51	2.20	0.23	0.44	1.86	0.24	0.38	1.91	0.20	0.80	2.26	0.36
Emerging Asia 2/	1.18	8.83	0.13	0.87	7.32	0.12	0.67	6.20	0.11	0.50	5.09	0.10	0.47	4.28	0.11
Industrial countries 2/	8.81	46.94	0.19	5.66	46.65	0.12	6.93	48.75	0.14	6.08	42.94	0.14	5.78	45.67	0.13
Equity															
Argentina	0.01	0.07	0.13	0.01	0.06	0.10	0.01	0.06	0.12	0.01	0.07	0.09	0.12	0.26	0.45
Brazil	0.44	1.16	0.38	0.33	0.97	0.34	0.26	0.87	0.30	0.20	0.57	0.34	0.29	0.63	0.45
Chile	0.02	0.28	0.08	0.02	0.26	0.06	0.02	0.25	0.06	0.02	0.18	0.10	0.04	0.24	0.17
Colombia	0.00	0.08	0.04	0.00	0.10	0.04	0.00	0.05	0.03	0.00	0.02	0.06	0.01	0.06	0.11
Mexico	0.40	0.66	0.61	0.28	0.56	0.50	0.22	0.45	0.49	0.24	0.44	0.53	0.32	0.56	0.57
Peru	0.00	0.10	0.04	0.00	0.04	0.09	0.00	0.04	0.10	0.00	0.02	0.18	0.02	0.04	0.50
Venezuela	0.00	0.02	0.20	0.00	0.01	0.18	0.00	0.02	0.19	0.00	0.02	0.19	0.02	0.04	0.49
Latin America 2/	0.88	2.38	0.37	0.64	2.00	0.32	0.51	1.74	0.29	0.47	1.33	0.35	0.81	1.83	0.44
Emerging Asia 2/	2.28	13.23	0.17	1.58	10.49	0.15	1.29	9.43	0.14	1.06	7.29	0.15	0.62	6.55	0.09
Industrial countries 2/	14.25	41.82	0.34	11.33	41.98	0.27	11.13	41.93	0.27	10.94	39.19	0.28	8.52	40.29	0.21
Domestic and international long-term debt securities															
Argentina	0.04	0.21	0.20	0.03	0.22	0.12	0.02	0.25	0.07	0.02	0.35	0.07	0.23	0.35	0.65
Brazil	0.08	1.21	0.07	0.10	1.12	0.09	0.10	0.87	0.12	0.08	1.08	0.07	0.18	1.50	0.12
Chile	0.04	0.07	0.48	0.04	0.09	0.45	0.05	0.09	0.50	0.03	0.11	0.23	0.03	0.14	0.23
Colombia	0.02	0.09	0.25	0.02	0.09	0.22	0.02	0.08	0.27	0.02	0.09	0.20	0.03	0.05	0.61
Mexico	0.11	0.60	0.18	0.14	0.62	0.22	0.15	0.54	0.27	0.15	0.61	0.24	0.26	0.42	0.62
Peru	0.01	0.03	0.47	0.02	0.03	0.70	0.02	0.02	0.70	0.01	0.02	0.35	0.01	0.02	0.45
Venezuela	0.02	0.35	0.06	0.03	0.17	0.16	0.03	0.09	0.38	0.02	0.08	0.27	0.05	0.11	0.47
Latin America 2/	0.32	2.56	0.13	0.38	2.35	0.16	0.38	1.94	0.20	0.32	2.34	0.14	0.80	2.60	0.31
Emerging Asia 2/	0.16	5.40	0.03	0.15	5.05	0.03	0.13	4.08	0.03	0.10	3.46	0.03	0.32	2.50	0.13
Industrial countries 2/	3.74	50.92	0.07	0.00	50.00	0.00	3.30	53.23	0.06	2.56	45.74	0.06	3.07	49.89	0.06

1/ U.S. holdings of foreign equity and bond securities are from U.S. Treasury International Capital System Benchmark surveys; ωus, ωm refer to the weight (in percent) in U.S. investors' and world market portfolio; while ωus/ωm is the ratio.

2/ Latin America represents the total of Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. Emerging Asia includes China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand. Industrial countries include Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, Portugal, Spain, Sweden, Switzerland, and United Kingdom.

Sources: IMF staff calculations.

Table 3. U.S. investors holdings of foreign securities 1/

	2006		2005		2004		2001		1997	
	In percent of market capitalization	In millions of U.S. dollars	In percent of market capitalization	In millions of U.S. dollars	In percent of market capitalization	In millions of U.S. dollars	In percent of market capitalization	In millions of U.S. dollars	In percent of market capitalization	In millions of U.S. dollars
Total: equity, domestic and international long-term debt securities										
Argentina	6.4	10,979	4.4	6,840	2.9	4,825	3.0	4,379	24.5	38,567
Brazil	7.8	110,256	8.5	90,257	7.7	62,989	6.1	33,453	9.1	51,656
Chile	6.4	12,539	7.3	12,097	8.0	11,598	6.6	5,947	8.7	8,126
Colombia	5.6	5,828	5.1	5,019	7.0	4,455	7.3	2,760	14.9	4,162
Mexico	14.5	108,432	14.5	86,074	13.9	66,122	14.2	48,772	26.3	63,751
Peru	5.4	3,763	13.5	4,588	13.8	3,874	11.5	1,673	21.6	3,544
Venezuela	2.5	6,096	5.7	6,003	12.3	6,862	10.6	3,655	19.8	7,827
Latin America 2/	8.8	257,893	9.5	210,878	9.2	160,725	8.3	100,639	15.5	177,633
Emerging Asia 2/	4.9	515,409	4.9	358,139	4.1	241,518	4.1	132,189	4.8	103,798
Industrial countries 2/	6.9	3,841,064	6.4	2,999,632	5.5	2,508,199	5.9	1,605,149	5.5	1,278,820
Equity										
Argentina	5.4	1,844	4.8	1,144	5.6	1,161	3.8	744	22.5	12,892
Brazil	15.3	92,045	16.9	68,560	13.3	43,104	14.0	21,801	22.3	31,338
Chile	3.1	4,447	3.2	3,520	2.8	2,564	3.9	1,917	8.5	4,555
Colombia	1.7	732	1.8	753	1.4	270	2.5	150	5.2	704
Mexico	24.6	84,620	24.7	57,876	22.2	37,516	21.7	26,279	28.3	34,965
Peru	1.8	925	4.6	870	4.5	666	7.4	452	24.5	2,341
Venezuela	7.9	971	8.8	483	8.5	636	7.6	348	24.2	1,975
Latin America 2/	15.1	185,584	15.8	133,206	13.3	85,917	14.3	51,691	21.9	88,770
Emerging Asia 2/	7.0	479,346	7.4	326,688	6.2	216,126	5.9	117,305	4.7	68,293
Industrial countries 2/	13.8	2,999,187	13.3	2,344,473	12.0	1,865,865	11.4	1,214,092	10.5	936,430
Domestic and international long-term debt securities										
Argentina	6.6	9,135	4.3	5,696	2.6	3,664	2.9	3,635	25.6	25,675
Brazil	2.3	18,211	3.3	21,697	4.0	19,885	3.0	11,652	4.8	20,318
Chile	16.2	8,092	15.9	8,577	17.1	9,034	9.7	4,030	9.0	3,571
Colombia	8.4	5,096	7.7	4,266	9.4	4,185	8.2	2,610	23.9	3,458
Mexico	5.9	23,812	7.8	28,198	9.3	28,606	10.1	22,493	24.2	28,786
Peru	16.0	2,838	24.6	3,718	24.1	3,208	14.4	1,221	17.6	1,203
Venezuela	2.2	5,125	5.5	5,520	12.9	6,226	11.1	3,307	18.6	5,852
Latin America 2/	4.2	72,309	5.7	77,672	6.8	74,808	5.7	48,948	12.1	88,863
Emerging Asia 2/	1.0	36,063	1.1	31,451	1.1	25,392	1.2	14,884	5.0	35,505
Industrial countries 2/	2.5	841,877	2.2	655,159	2.1	642,334	2.3	391,057	2.4	342,390

1/ U.S. holdings of foreign equity and bond securities are from U.S. Treasury International Capital System Benchmark surveys. Domestic market capitalization is from the World Federation of Exchanges for equities, and from the Bank for International Settlements for debt securities.

2/ Latin America represents the total of Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. Emerging Asia includes China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand. Industrial countries include Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, Portugal, Spain, Sweden, Switzerland, and United Kingdom.

Sources: IMF staff calculations.

Table 4. Correlations of Brazil and Mexico bond and equity quarterly inflows.

1991–2006

	BRA BOP equity	BRA BOP bond	MEX BOP equity	MEX BOP bond	BRA US equity	BRA US bond	MEX US equity	MEX US bond
BRA BOP equity	1.00	0.21	0.24	0.27	0.60	0.32	0.27	0.12
BRA BOP bond	0.21	1.00	0.10	0.16	0.11	0.15	0.08	0.26
MEX BOP equity	0.24	0.10	1.00	0.08	0.42	0.34	0.63	0.09
MEX BOP bond	0.27	0.16	0.08	1.00	0.21	0.08	0.11	0.36
BRA US equity	0.60	0.11	0.42	0.21	1.00	0.29	0.24	0.09
BRA US bond	0.32	0.15	0.34	0.08	0.29	1.00	0.16	-0.06
MEX US equity	0.27	0.08	0.63	0.11	0.24	0.16	1.00	0.30
MEX US bond	0.12	0.26	0.09	0.36	0.09	-0.06	0.30	1.00

1991–1998

	BRA BOP equity	BRA BOP bond	MEX BOP equity	MEX BOP bond	BRA US equity	BRA US bond	MEX US equity	MEX US bond
BRA BOP equity	1.00	0.41	0.31	0.35	0.75	0.38	0.28	0.36
BRA BOP bond	0.41	1.00	-0.13	-0.13	0.26	0.03	0.22	0.22
MEX BOP equity	0.31	-0.13	1.00	0.26	0.48	0.20	0.69	0.44
MEX BOP bond	0.35	-0.13	0.26	1.00	0.43	-0.02	0.15	0.36
BRA US equity	0.75	0.26	0.48	0.43	1.00	0.11	0.09	0.54
BRA US bond	0.38	0.03	0.20	-0.02	0.11	1.00	-0.05	-0.13
MEX US equity	0.28	0.22	0.69	0.15	0.09	-0.05	1.00	0.45
MEX US bond	0.36	0.22	0.44	0.36	0.54	-0.13	0.45	1.00

1999–2004

	BRA BOP equity	BRA BOP bond	MEX BOP equity	MEX BOP bond	BRA US equity	BRA US bond	MEX US equity	MEX US bond
BRA BOP equity	1.00	0.41	0.15	0.29	0.48	0.49	0.37	-0.27
BRA BOP bond	0.41	1.00	0.09	0.26	0.30	0.29	0.11	0.03
MEX BOP equity	0.15	0.09	1.00	0.10	0.19	0.24	0.53	-0.13
MEX BOP bond	0.29	0.26	0.10	1.00	0.28	0.38	0.36	0.40
BRA US equity	0.48	0.30	0.19	0.28	1.00	0.25	0.30	0.17
BRA US bond	0.49	0.29	0.24	0.38	0.25	1.00	0.11	-0.03
MEX US equity	0.37	0.11	0.53	0.36	0.30	0.11	1.00	0.00
MEX US bond	-0.27	0.03	-0.13	0.40	0.17	-0.03	0.00	1.00

2005–2006

	BRA BOP equity	BRA BOP bond	MEX BOP equity	MEX BOP bond	BRA US equity	BRA US bond	MEX US equity	MEX US bond
BRA BOP equity	1.00	0.33	0.51	0.07	0.19	0.07	0.40	-0.25
BRA BOP bond	0.33	1.00	0.44	0.45	-0.04	0.42	0.26	0.56
MEX BOP equity	0.51	0.44	1.00	-0.50	0.49	0.48	0.69	0.05
MEX BOP bond	0.07	0.45	-0.50	1.00	-0.70	0.02	-0.58	0.42
BRA US equity	0.19	-0.04	0.49	-0.70	1.00	0.27	0.58	-0.57
BRA US bond	0.07	0.42	0.48	0.02	0.27	1.00	0.40	0.05
MEX US equity	0.40	0.26	0.69	-0.58	0.58	0.40	1.00	0.21
MEX US bond	-0.25	0.56	0.05	0.42	-0.57	0.05	0.21	1.00

Source: IMF staff calculations.

Table 5. Granger causality tests – U.S. Bond and Equity Flows

Null Hypothesis	Chi-square	Pvalue
Brazil		
EF/MK does not causes BF/Debt	3.536	0.06 *
BF/Debt does not cause EF/MK	1.715	0.19
Mexico		
EF/MK does not causes BF/Debt	2.728	0.10 *
BF/Debt does not cause EF/MK	0.000	0.99

Note: * mean significant at the 10 percent significance level.

Table 6. Variance decomposition of bond and equity flows

Brazil

Variance Decomposition of BF_D:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.1	5.5	15.2	0.0	2.1	0.7	76.5	0.0	0.0	0.0
2	0.1	8.5	14.2	0.4	2.6	0.7	72.7	0.2	0.6	0.1
3	0.1	9.1	14.3	0.4	2.6	0.8	71.7	0.3	0.7	0.2
4	0.1	9.8	14.1	0.5	2.6	0.8	70.9	0.3	0.7	0.2
5	0.1	10.3	14.0	0.6	2.6	0.9	70.4	0.3	0.8	0.2
6	0.1	10.7	14.0	0.6	2.6	0.9	70.0	0.3	0.8	0.2
7	0.1	11.0	13.9	0.7	2.6	0.9	69.6	0.3	0.8	0.2
8	0.1	11.2	13.9	0.8	2.6	1.0	69.3	0.4	0.8	0.2
9	0.1	11.4	13.8	0.8	2.6	1.0	69.1	0.4	0.8	0.2
10	0.1	11.6	13.8	0.9	2.6	1.0	68.8	0.4	0.8	0.2

Variance Decomposition of EF_MK:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.1	30.2	0.9	5.4	1.5	0.4	0.2	61.5	0.0	0.0
2	0.1	28.3	3.0	5.3	1.4	0.5	1.3	57.7	0.6	2.0
3	0.1	27.9	2.9	5.4	1.4	0.6	1.3	57.2	1.3	2.0
4	0.1	27.7	2.9	5.5	1.4	0.7	1.3	56.7	1.5	2.3
5	0.1	27.6	2.9	5.5	1.4	0.8	1.3	56.5	1.7	2.3
6	0.1	27.5	2.9	5.5	1.5	0.9	1.3	56.4	1.7	2.3
7	0.1	27.5	2.9	5.5	1.5	1.1	1.3	56.3	1.7	2.3
8	0.1	27.4	2.9	5.6	1.5	1.2	1.3	56.2	1.7	2.3
9	0.1	27.4	2.9	5.6	1.6	1.3	1.3	56.1	1.7	2.3
10	0.1	27.4	2.9	5.6	1.6	1.3	1.3	56.0	1.7	2.3

Mexico

Variance Decomposition of BF_D:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.3	1.8	0.0	3.7	3.1	2.5	89.0	0.0	0.0	0.0
2	0.3	1.6	2.1	3.8	5.5	2.7	83.4	0.7	0.2	0.0
3	0.3	1.6	2.1	4.0	5.5	3.0	82.8	0.7	0.2	0.0
4	0.3	1.7	2.1	4.1	5.5	3.2	82.4	0.7	0.3	0.0
5	0.3	1.8	2.1	4.2	5.5	3.4	82.0	0.7	0.3	0.0
6	0.3	1.9	2.2	4.3	5.5	3.5	81.6	0.7	0.3	0.0
7	0.3	2.1	2.2	4.4	5.5	3.6	81.2	0.7	0.3	0.0
8	0.3	2.4	2.2	4.5	5.5	3.6	80.8	0.7	0.3	0.0
9	0.3	2.7	2.2	4.5	5.5	3.7	80.5	0.7	0.3	0.0
10	0.3	3.0	2.2	4.6	5.4	3.7	80.1	0.7	0.4	0.0

Variance Decomposition of EF_MK:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.2	9.0	3.5	0.1	0.1	1.0	0.1	86.1	0.0	0.0
2	0.2	9.2	3.3	0.2	2.6	1.0	0.9	81.8	0.1	1.0
3	0.2	9.4	3.2	0.4	2.5	1.6	1.9	79.9	0.1	1.0
4	0.2	9.5	3.1	0.6	2.5	2.4	2.0	78.6	0.2	1.0
5	0.2	9.7	3.1	0.8	2.5	3.1	2.1	77.5	0.3	1.0
6	0.2	9.8	3.0	0.9	2.6	3.6	2.2	76.5	0.4	1.0
7	0.2	10.0	3.0	1.0	2.6	4.0	2.2	75.7	0.6	1.0
8	0.2	10.3	3.0	1.1	2.6	4.2	2.2	75.0	0.7	1.0
9	0.2	10.5	3.0	1.1	2.6	4.4	2.2	74.5	0.8	1.0
10	0.2	10.8	2.9	1.2	2.5	4.5	2.2	74.0	0.9	1.0

Chile

Variance Decomposition of BF_D:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.1	3.8	2.9	2.7	3.3	0.3	86.9	0.0	0.0	0.0
2	0.2	3.3	15.2	2.2	4.4	3.1	71.6	0.1	0.0	0.1
3	0.2	4.2	14.7	2.1	4.6	5.2	68.8	0.1	0.0	0.2
4	0.2	4.4	14.9	2.1	4.8	5.9	67.6	0.2	0.0	0.2
5	0.2	4.6	14.8	2.1	4.8	6.0	67.2	0.2	0.0	0.3
6	0.2	4.7	14.8	2.1	4.8	6.0	67.1	0.2	0.0	0.3
7	0.2	4.9	14.8	2.1	4.8	6.0	66.9	0.2	0.0	0.3
9	0.2	5.2	14.8	2.1	4.8	6.0	66.6	0.2	0.0	0.3
10	0.2	5.3	14.7	2.2	4.7	6.0	66.5	0.2	0.0	0.3

Variance Decomposition of EF_MK:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.1	3.1	2.2	4.9	4.0	0.3	79.6	5.9	0.0	0.0
2	0.1	3.0	13.9	3.8	4.9	4.7	64.4	5.2	0.0	0.2
3	0.1	4.3	13.2	3.6	4.9	7.6	61.0	4.9	0.0	0.5
4	0.1	4.6	13.3	3.6	5.0	8.5	59.6	4.9	0.1	0.5
5	0.1	5.0	13.2	3.5	5.0	8.7	59.1	4.8	0.1	0.6
6	0.1	5.1	13.2	3.5	5.0	8.7	58.8	4.8	0.2	0.6
7	0.1	5.3	13.2	3.6	5.0	8.7	58.6	4.8	0.2	0.6
9	0.1	5.7	13.1	3.6	5.0	8.7	58.3	4.8	0.2	0.6
10	0.1	5.9	13.1	3.6	5.0	8.7	58.1	4.8	0.2	0.6

Colombia

Variance Decomposition of BF_D:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.7	8.1	4.9	0.0	0.3	1.4	85.3	0.0	0.0	0.0
2	0.7	8.4	5.5	0.1	1.3	1.5	82.0	0.4	0.3	0.7
3	0.7	8.7	5.5	0.1	1.7	1.5	81.0	0.4	0.4	0.7
4	0.7	8.8	5.5	0.1	1.8	1.5	80.6	0.4	0.5	0.8
5	0.8	8.9	5.5	0.1	1.8	1.5	80.5	0.4	0.5	0.9
7	0.8	8.9	5.5	0.1	1.8	1.5	80.3	0.4	0.6	0.9
8	0.8	8.9	5.5	0.1	1.8	1.5	80.3	0.4	0.6	0.9
9	0.8	8.9	5.5	0.1	1.8	1.5	80.2	0.4	0.6	0.9
10	0.8	8.9	5.5	0.1	1.8	1.5	80.2	0.4	0.6	0.9

Variance Decomposition of EF_MK:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.1	0.7	0.2	1.3	0.6	0.1	0.2	96.9	0.0	0.0
2	0.1	0.8	1.3	1.3	0.6	0.1	1.5	94.3	0.2	0.0
3	0.1	1.3	1.4	1.3	0.6	0.1	1.5	93.2	0.4	0.2
4	0.1	1.6	1.4	1.3	0.6	0.1	1.5	92.7	0.5	0.3
5	0.1	1.7	1.4	1.3	0.6	0.1	1.5	92.4	0.6	0.4
7	0.1	1.8	1.4	1.3	0.6	0.1	1.5	92.1	0.6	0.4
8	0.1	1.9	1.4	1.4	0.6	0.1	1.5	92.0	0.6	0.5
9	0.1	1.9	1.4	1.4	0.6	0.1	1.5	92.0	0.6	0.5
10	0.1	1.9	1.4	1.4	0.6	0.1	1.5	91.9	0.6	0.5

Table 7. Variance decomposition of dividend yield and equity return differential

Brazil

Variance Decomposition of DIVY:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.0	0.1	0.5	1.9	1.6	2.2	4.6	0.9	88.2	0.0
2	0.0	10.6	2.1	4.6	4.7	1.8	2.4	0.5	61.0	12.3
3	0.0	16.1	1.6	5.4	6.3	1.4	1.7	0.5	55.5	11.4
4	0.1	21.2	1.4	6.0	6.2	1.1	1.4	0.5	50.5	11.9
5	0.1	25.2	1.3	6.3	6.0	0.9	1.1	0.5	47.0	11.7
6	0.1	28.5	1.2	6.5	5.7	0.8	1.0	0.6	44.1	11.6
7	0.1	31.1	1.1	6.7	5.4	0.8	0.9	0.7	41.9	11.5
8	0.1	33.2	1.1	6.8	5.1	0.9	0.8	0.7	40.1	11.3
9	0.1	34.9	1.0	6.8	4.8	1.0	0.8	0.8	38.6	11.2
10	0.1	36.2	1.0	6.9	4.6	1.2	0.7	0.8	37.4	11.0

Variance Decomposition of ER_DIF:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	9.6	17.5	6.1	4.3	0.0	0.4	0.4	0.2	1.9	69.3
2	10.3	15.8	6.4	3.8	1.5	0.7	0.7	0.8	2.5	67.9
3	10.4	15.5	6.2	3.8	1.9	0.7	0.7	0.8	2.4	68.0
4	10.4	15.4	6.2	3.8	2.0	0.7	0.8	0.8	2.5	67.8
5	10.4	15.4	6.2	3.8	2.0	0.8	0.8	0.8	2.5	67.8
6	10.4	15.4	6.2	3.7	2.0	0.8	0.8	0.8	2.5	67.7
7	10.5	15.4	6.2	3.7	2.0	0.8	0.8	0.8	2.5	67.7
8	10.5	15.5	6.2	3.7	2.0	0.9	0.8	0.8	2.5	67.6
9	10.5	15.5	6.2	3.7	2.1	0.9	0.8	0.8	2.5	67.6
10	10.5	15.5	6.2	3.7	2.1	0.9	0.8	0.8	2.5	67.5

Mexico

Variance Decomposition of DIVY:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.0	0.0	1.7	0.2	2.8	1.4	0.0	2.4	91.6	0.0
2	0.0	4.3	2.1	0.3	8.3	0.7	0.8	1.2	65.3	17.1
3	0.0	10.0	3.2	0.9	7.2	0.5	3.2	1.0	57.9	16.1
4	0.0	16.7	3.2	1.6	7.2	0.6	4.7	0.9	49.5	15.5
5	0.0	23.3	3.3	2.1	6.7	0.9	5.6	0.9	42.9	14.5
6	0.0	29.4	3.2	2.5	6.2	1.1	6.2	0.8	37.4	13.3
7	0.0	34.8	3.1	2.8	5.7	1.3	6.5	0.7	33.0	12.1
8	0.0	39.4	2.9	3.1	5.2	1.4	6.6	0.6	29.7	11.1
9	0.0	43.3	2.8	3.2	4.8	1.4	6.6	0.6	27.2	10.2
10	0.0	46.4	2.6	3.3	4.5	1.4	6.5	0.5	25.2	9.5

Variance Decomposition of ER_DIF:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	5.2	6.8	2.6	1.3	1.0	0.0	1.1	2.5	2.7	82.1
2	5.9	5.6	2.8	1.2	5.8	1.0	3.2	2.0	2.6	75.9
3	5.9	5.7	2.9	1.2	6.3	1.2	3.2	1.9	3.0	74.6
4	6.0	5.6	2.8	1.3	7.1	1.6	3.2	1.9	3.1	73.4
5	6.0	5.5	2.9	1.3	7.0	2.0	3.2	1.9	3.1	73.0
6	6.0	5.5	2.9	1.4	7.1	2.3	3.3	1.9	3.1	72.5
7	6.0	5.6	2.8	1.5	7.1	2.6	3.3	1.9	3.1	72.1
8	6.1	5.7	2.8	1.5	7.1	2.9	3.4	1.9	3.1	71.6
9	6.1	5.8	2.8	1.6	7.1	3.1	3.4	1.9	3.1	71.2
10	6.1	6.0	2.8	1.6	7.1	3.3	3.4	1.9	3.1	70.8

Chile

Variance Decomposition of DIVY:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.0	0.5	2.3	0.0	0.6	1.4	0.5	0.0	94.7	0.0
2	0.0	0.5	5.3	0.0	0.3	2.8	0.9	0.2	83.9	5.9
3	0.0	0.4	4.8	0.0	0.4	4.2	0.6	0.2	82.0	7.2
4	0.0	0.4	5.0	0.1	0.3	5.1	0.5	0.1	80.8	7.8
5	0.0	0.3	5.1	0.1	0.4	5.5	0.4	0.1	80.1	8.0
6	0.0	0.3	5.2	0.1	0.3	5.7	0.4	0.1	79.7	8.2
7	0.0	0.3	5.3	0.1	0.3	5.8	0.3	0.1	79.4	8.3
8	0.0	0.3	5.5	0.2	0.3	5.9	0.3	0.1	79.2	8.3
9	0.0	0.3	5.6	0.2	0.3	5.9	0.3	0.1	79.0	8.3
10	0.0	0.4	5.6	0.2	0.3	5.9	0.3	0.1	78.9	8.3

Variance Decomposition of ER_DIF:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	4.9	3.8	9.7	2.7	1.3	2.2	0.5	1.9	0.9	77.0
2	5.1	4.8	11.3	2.7	1.5	2.4	2.9	2.1	0.8	71.5
3	5.1	4.8	12.3	2.6	1.6	2.7	2.9	2.0	0.8	70.2
4	5.1	4.8	12.3	2.6	1.7	2.9	2.9	2.0	0.8	70.0
5	5.1	4.8	12.3	2.6	1.7	2.9	2.9	2.0	0.8	69.9
6	5.1	4.8	12.3	2.6	1.7	2.9	2.9	2.0	0.8	69.9
7	5.1	4.9	12.3	2.6	1.7	2.9	2.9	2.0	0.8	69.9
8	5.1	4.9	12.3	2.7	1.7	2.9	2.9	2.0	0.8	69.8
9	5.1	4.9	12.3	2.7	1.7	2.9	2.9	2.0	0.8	69.8
10	5.1	5.0	12.3	2.7	1.7	2.9	2.9	2.0	0.8	69.7

Colombia

Variance Decomposition of DIVY:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	0.0	0.7	1.0	0.6	0.6	7.0	4.5	0.0	85.6	0.0
2	0.1	2.3	3.6	1.0	0.3	8.5	2.9	0.0	63.3	18.0
3	0.1	5.4	5.0	1.4	0.2	8.3	3.2	0.0	54.2	22.3
4	0.1	8.7	6.0	1.7	0.1	8.0	3.3	0.0	48.9	23.2
5	0.1	11.5	6.9	2.1	0.1	7.6	3.3	0.0	45.2	23.2
6	0.1	14.0	7.6	2.5	0.1	7.3	3.2	0.1	42.4	22.8
7	0.1	15.9	8.3	2.9	0.1	7.0	3.1	0.1	40.2	22.4
8	0.1	17.4	8.9	3.4	0.1	6.7	3.0	0.1	38.4	21.9
9	0.1	18.5	9.5	4.0	0.1	6.4	3.0	0.1	37.0	21.5
10	0.1	19.2	10.1	4.6	0.1	6.2	2.9	0.2	35.7	21.1

Variance Decomposition of ER_DIF:

Period	S.E.	VIX	US_IPG	US_IR	IPG	IR	BF_D	EF_MK	DIVY	ER_DIF
1	8.5	2.6	0.8	0.5	0.4	3.8	8.6	0.0	0.0	83.2
2	8.7	4.3	0.9	0.6	0.8	3.7	9.3	0.3	0.3	79.8
3	8.8	4.7	1.1	0.7	1.0	3.7	9.2	0.3	0.4	78.9
4	8.8	4.8	1.1	0.7	1.0	3.7	9.2	0.3	0.6	78.6
5	8.8	4.8	1.1	0.8	1.0	3.8	9.1	0.3	0.6	78.4
6	8.8	4.8	1.1	0.8	1.0	3.8	9.1	0.3	0.7	78.3
7	8.8	4.8	1.1	0.9	1.0	3.8	9.1	0.3	0.8	78.2
8	8.8	4.9	1.1	0.9	1.0	3.8	9.1	0.3	0.8	78.0
9	8.8	4.9	1.2	1.0	1.0	3.8	9.1	0.3	0.9	77.9
10	8.9	5.0	1.2	1.0	1.0	3.8	9.1	0.3	0.9	77.7

APPENDIX: DEFINITION OF VARIABLES

Variables included in the exercise:

U.S. Interest rate (US_IR): Effective Federal Funds rate. Monthly average, annualized. Source: Federal Reserve Board/Haver Analytics.

Domestic interest rate (IR):

- **Brazil:** Overnight Rate/SELIC. Monthly average, annualized. Source: Banco Central do Brasil/Haver Analytics;
- **Mexico:** 28-day TIIE. Monthly average, annualized. Source Banco de Mexico/Haver Analytics;
- **Chile:** One-day interbank rate. Monthly average, annualized. Source: Banco Central de Chile/Haver Analytics;
- **Colombia:** Colombia interbank overnight – middle rate. Monthly average, annualized. Source: Banco de la República;
- **Peru:** Interbank Rate. Monthly average, annualized. Source Banco Central de Reserva de Peru/Haver Analytics.

Industrial Production (IP): Seasonally adjusted monthly growth rates, annualized. Source: Haver Analytics.

Risk Aversion (VIX): Volatility Index, which captures the market's expectation of the implied 30-day volatility obtained from a wide range of S&P 500 index options. Monthly average. Source: Chicago Board Options Exchange (CBOE).

Equity Flows (EF): Net U.S. purchases of foreign equity. End of month, in millions of US dollars. Source: Treasury International Capital (TIC) Data.

Market Capitalization (MK): End of month, in millions of U.S. dollars (converted from local currency with market exchange rates from International Financial Statistics). Source: Datastream.

Bond Flows (BF): Net U.S. purchases of foreign bonds. End of month, in millions of U.S. dollars. Source: Treasury International Capital (TIC) Data.

Debt (D): International and Domestic Debt Securities outstanding. Quarterly (interpolated to monthly), in billions U.S. dollars. Source: Bank of International Settlement, Quarterly Review, tables 12A and 16A.

Dividend Yield (DIVY): Dividend yield, end of month. Source: Morgan Stanley Capital International, Inc.

Equity return (ER): Domestic price index return, end of month. Source: Morgan Stanley Capital International, Inc.

U.S. equity return (US_ER): Standard & Poor's 500 price index return, end of month. Source: Haver Analytics.

Cross Border Listings: Equities that are listed on U.S. exchanges as ADRs. Source: Bank of New York

Variables considered in preliminary estimations:

U.S. Interest rates: 3-month federal funds future, 3-month Treasury bill (primary and secondary) and 10-year Treasury bond. Monthly average, annualized. Source: Federal Reserve Board/Haver Analytics.

Growth Projections (GP): Weighted average of consensus forecast growth for the current year (*GP_ CUR*) and for the next year (*GP_ NEXT*). For month *m* of year *t*, *GP (m,t) = GP _CUR(m,t)*(12-m)/12+ GP_NEXT(m,t)* m/12*. Data typically becomes available in the beginning of the second week of the month. Source: Consensus Forecasts publications from Consensus Economics, Inc.

Output Gap: Deviation from industrial production trend, which was obtained from an HP filter. Source: Authors' calculations

High-Yield spread: Spread between high yield (B and BB, and overall) corporate bonds and government debt. Source: Merrill Lynch.