Financial Diversification and Sudden Stops*

K. Cowan J. De Gregorio A. Micco C. Neilson

First Draft: November 2006

1 Introduction

The financial crises of the second half of the nineties have led to renewed interest in understanding the causes and consequences of international capital flows. Sudden stops, defined as large drops in net capital inflows, have received particular attention. This is not surprising as the costs of the current account, and capital account, reversals commonly associated with these episodes in terms of output and investment is large. For example, Edwards (2003) finds that the current account reversals associated with sudden stops lead to an average drops in GDP growth of close to 4%.[1]

The premise in most of the sudden stop literature is that emerging market economies (henceforth EMEs) are exposed to large fluctuations in the supply of external capital, that originate in imperfections in international financial markets themeselves (see Calvo, Izquierdo and Mejía 2004, Guidotti et al 2004, Cavallo and Frankel 2005). "Wall Street" is therefore either the carrier of financial contagion or the originator of the shock itself. The existence of these imperfections in international financial markets – usually stemming from informational asymmetries – is plausible, and has recently received considerable empirical support. Evidence of the role of "wall street" in contagion

*Prepared for the tenth Central Bank of Chile annual conference, *Current Accounts and External Financing*. K. Cowan, J. De Gregorio and C. Neilson are from the Central Bank of Chile. A. Micco is from the Ministry of Finance of Chile. The usual disclaimers apply.

[1]Other estimates of the cost of sudden stops are presented in Guidotti et al (2004).

can be found in the transmission of shocks from a crisis country to one belonging to the same asset class (Rigobon 2001), borrowing from the same international banks (Van Rijckeghem and Weder 2000) or sharing a set of overexposed mutual funds (Broner and Gelos 2003). Evidence of international financial markets as a source of instability can be found in the recent literature that explores the role of risk premia in developed economy (DEs) capital markets on spreads in emerging market bonds (Guerrero and Ortiz 2006, Daude and Ramos-Ballester 2006).

This is a view of capital account dominance, in which the current account responds to shocks in the capital account. Put simply, the origin of the stop in capital inflows is not a shift in investment and savings decision in the local economy, and hence a change in the marginal productivity of capital in the EME economy, but rather in the spread between returns in the domestic economy and returns offshore. If this is the case, vulnerability to these shocks becomes a key policy dimension. Holding international reserves as a means of self ensuring against sudden stops is one example (see Calvo 2006, García and Soto 2006 Jeanne and Ranciere 2006).[2] The use of contingent instruments that provide flows offseting these sudden stops is a second example (Caballero and Panageas 2005). Furthermore, Edwards (2003) and Guidotti et al (2004) both have emphasized the importance of trade openness and the exchange rate regime as a means of reducing the impact of sudden stops to capital flows on output.

If, on the other hand, it is changes in economic fundamentals – policy induced or otherwise – that are the main drivers of capital flows, then authorities should concentrate mainly on avoiding policies that can become a source of shocks, as emphasized in much of the crisis literature prior to the Mexican and Asian crises.

Under floating exchange rates, current account and capital account reversals occur simultaneously and we cannot identify, just by looking at changes in net capital flows, which one is the source of the reversal. In addition, we cannot identify whether the reversals are the results of adjustment to fundamental changes, i.e. terms of trade shocks, domestic policy changes or external financial shocks coming from, say, "wall street". For this reason we think that it is necessary to explore gross flows in order to find a first characterization of reversals, or sudden stops as termed in the recent literature.

Indeed, the jury is still divided regarding the relative role played by fundamentals and external financial factors in explaining recent crises. Asia is a

[2]For a discussion on the benefits and costs of self insurance and external insurance see Caballero and Cowan (2006).

case in point – with two clear sets of explanations. On the one hand Sachs, Tornell and Velasco (1996), Furman and Stiglitz (1998), Radelet and Sachs (1998) and Chang and Velasco (1999) argue that excessive reliance on short-term external debt left east emerging-market economies vulnerable to shocks (and panics) from international financial markets. The alternative view is that the Asia financial crises largely reflected policy distortions in the region, in particular distortions that led to excessive borrowing by corporations and excessive lending by domestic banks (Corsetti, Pesenti and Roubini 1998).

This paper studies two distinct, but closely related, issues. The first one is the use of gross capital flows (the change of international assets and liabilities) to disentangle fundamental driven sudden stops, or more properly reversals, from "wall street" driven sudden stops, which is a more accurate definition of sudden stops. This is motivated by previous research on the events surrounding the Chilean "sudden stop" of 1998 that has argued that the Chilean sudden stop is atypical in Latin America, as it was completely driven by a rise of capital outflows (increase in the foreign assets of residents) instead of a sudden reduction of inflows (Cowan and De Gregorio 2006). Under the assumption that inflows (changes in gross international liabilities) should be more sensitive to changes in conditions in international financial markets that outflows, the authors argue that the stable inflows are evidence that Chile did not experience a "wall street" driven sudden stop, rather a sudden start of outflows.

Specifically, in the first section of the paper we split sudden stops into two varieties according to the importance of gross inflows in the overall reversal of capital flows. We then compare the impact of the two varieties of sudden stops on key macroeconomic variables. This exercise is useful as it allows us to build a measure of sudden stops that is closer to the premise many of the papers discussed above have in mind, i.e external shocks to the capital account. Using this approach we find that close to 25% of large capital account reversals actually correspond to "sudden starts" in capital outflows. Taken face value this implies that the incidence of externally driven sudden stops has likely been overestimated in the literature, with implications for optimal reserve management, the design of state contingent instruments etc. In addition, we report some simple stylized facts that characterize the countries experiencing the different varieties of sudden stops. Here we extract two preliminary lessons. First, that the economic consequences of the two varieties of sudden stops are quite different, with the "sudden starts" leading to lower output and investment losses. The second, is that the countries that experiencing the two varieties of sudden stops are different in the run up to the capital reversal, with "sudden start" economies having more developed domestic financial systems, higher reserves and more open economies. This in turn may explain previous results in the literature linking growth performance after sudden stops with

trade openness.

Finally, we look at large reversals in inflows (non FDI in particular) and discuss the degree of coincidence between these large inflow stops and the (net) sudden stops. The main finding is that inflow stops are prevalent in both EME and DEs, but that a much smaller share of inflow reversals in DEs coincide with sudden stops. This suggests an offsetting response in outflows, and issue we turn to in detail in the second half of the paper.

Whereas the first part of the paper concentrates on the lower tail of the distribution of changes in the net capital account, the second issue we address is a more complete characterization of capital flows. Thus, the second half of the paper presents and discusses stylized facts for the overall distribution of net flows, inflows and outflows. Not surprisingly, we find that emerging market economies have more volatile capital accounts that developed economies. Interestingly, however, this greater variance is not the result of more volatile capital inflows to EMEs – as in fact the volatility of gross inflows is remarkably similar across country groups – but the result of a higher covariance between inflows and outflows in DEs. This is the continuos counterpart to the finding that sudden stops, more properly reversals of the capital account, are highly correlated with stops to inflows in EMEs but not in DEs. Indeed, we find that the correlation between net and gross inflows decreases with income per capita and effective financial integration (measured by gross international assets over GDP). This result is robust to changes in the sample period and country coverage, and holds even within the EMEs and DE groups.

We present a conceptual framework that is consistent with this finding. In our framework the key difference across countries is the spread, (country risk premium) charged by international investors on assets in that country. This spread introduces a wedge between the expected marginal product of capital in the economy and in the international financial market, and becomes the price domestic savers must pay if they wish to diversity their portfolios by allocating wealth offshore. A country with a low spread will have large asset holdings offshore. Emerging countries, that rely more on foreign capital and have high spread – on the other hand – will have insufficient foreign assets to offset the inflow shock, and a sudden stop to the net capital account will result. As evidence of this assumption we show that gross foreign assets are decreasing in the EMBI spreads of an economy, even after controlling for overall economic development. In the event of a shock to the preferences of international savers, that leads to a reduction in gross inflows, a small change in the domestic rate of return will lead to a reversal of outflows offsetting the inflow shock.

Summing up, we argue that sudden stops to inflows are prevalent in international financial markets but that international assets provide the first "line

of defence" against non-fundamental shocks to capital flows. The key price variable here is the expected return in the domestic economy. The second line of defense is provided by productive assets, capable of generating export revenues that offset the inflows. This is the role of the tradable sector in the Calvo, Izquierdo and Mejia (2004) model. The key price variable for this second line of defense is the real exchange rate.

This interpretation of our stylized facts has several policy implications. The first, relates directly to the current debate on global imbalances. Our results suggest that shocks to the demand for US assets arising from portfolio decisions of foreign investors *that are not accompanied* by changes in the US returns will likely be offset by shifts in US foreign asset position. The US will not have to adjust its current account and the impact on output will be small. The flip side is that countries outside the US will experience a sudden stop to inflows from the US, leading to an unwinding of gross international asset positions in those economies with gross asset positions and a capital account reversal in poorer economies. The second is that optimal reserve and contingent asset policies followed by governments need to take into consideration total foreign asset positions when deciding the optimal level of coverage against external financing shocks. A key issue in this discussion is the development of the domestic financial system. Foreign assets and liabilities are not likely to be held by the same agents in the economy – and will therefore need to be allocated though the domestic financial system. Financial underdevelopment will therefore distort the decision to save abroad in the first place, and then will distort the decision to repatriate assets in case of a sudden stop. It remains to be seen, in this sense, whether the Chilean institutional investors will repatriate their foreign assets in the event of a shock to the cost of Chilean external financing.

This paper is closely related to several strands of literature. First, to the literature that has studied the causes and consequences of current account and capital account reversals (which includes, but is not limited to Calvo, Izquierdo and Mejía 2004, Edwards 2003, Razin and Milessi-Ferretti 1998). Second to a recent (and small) literature, that has looked at the behavior of different forms of capital inflows around sudden stops (Lebcenko and Mauro 2006). However, the three papers closest to this paper are Faucette at al (2005), Cowan and De Gregorio (2006) and Rothenberg and Warnock (2006). Faucette et al (2005) separate capital account reversals into outflow and inflow induced, and argue that only the first correspond to sudden stops. Cowan and De Gregorio (2006) focus on the behavior of gross capital flows to Chile in the 1998 capital account reversal. Finally, Rothenberg and Warnock (2006) follow a similar route to the one of section 2 of this paper by looking at sudden stops caused by large drop in inflows, finding similar results to those of the next section.

The rest of the paper proceeds as follows. The second section discusses sudden stops, and the role played by inflows and outflows. Section 3 describes the main stylized facts characterizing gross and net capital flows to DEs and EMEs. Finally section 4 concludes.

2 Inflow and Outflow Induced: Sudden Stops

2.1 Data and definitions

Following balance of payment conventions capital inflows are defined as changes in the gross international liabilities of domestic residents. International liabilities include foreign ownership of equity (FDI and portfolio), bonded debt held by non-residents and loans from non-resident banks. As they are changes in stocks, inflows can be positive or negative (a reversal). Capital outflows, in turn, are changes in the foreign assets of domestic residents. By convention an outflow has a negative sign. International assets include offshore FDI, foreign equity and bonds held by resident and loans to non residents (or deposits offshore). The capital account is simply the sum of net of inflows and outflows. We use annual data on inflows and outflows from the IFS for the period 1975 to 2004.

As we are primarily concerned with changes in private capital flows we follow the literature on sudden stops and limit our sample to emerging market economies, i.e, those economies with access to voluntary private capital flows, and developed economies. Appendix A lists the countries in our sample. As a basic test for the quality of the flow data we analyze the behavior of the errors and omissions term in the balance of payments. This leads us to drop two countries from the initial sample. Panamá (all years) that has large (over 10% of GDP) swings in the errors and omissions line, that exactly offset changes in the financial account, and South Africa that reports large errors and omission prior to 1985 but zero in the financial account.

For most of the exercises reported in this paper we scale capital flows (inflows, outflows and net capital flows) by a linear trend of dollar GDP. This allows us to disentangle capital account volatility from the volatility of real output and the real exchange rate. As is evident from appendix B, however, alternative measures that scale gross and net inflows by lagged GDP or a lagged moving average lead to very similar results.

Before moving on, a word on semantics. Throughout the paper we will refer to large drops in *net* capital inflows as *sudden stops*. In doing so we follow the literature, without discussing the appropriateness of the expression,

although as should be clear from our discussion it may be misleading. In addition, we will sometime talk about *inflow stops*, a "true sudden stop,´´ and *outflow starts*, to refer to large drops in gross capital inflows and large (absolute) increases in outflows, respectively.

2.2 Varieties of Sudden Stops

2.2.1 Identifying the varieties

We follow Guidotti et al (2004) and define a sudden stop episode as a year in which the annual change in the capital account (scaled by GDP) is one standard deviation below the average, and below 5% of GDP. We take this definition because it is fairly representative of what the literature in this area has termed sudden stops. Both standard deviation and average are country specific. This leads us to identify 100 sudden stop episodes in our sample of 1580 observations (roughly 6% of the sample). We then build a measure of the contribution of the fall in inflows in each sudden stop episode

$$S_t^I = \frac{\Delta I_t}{\Delta I_t + \Delta O_t},$$

where ΔI_t , ΔO_t are the changes in inflows and outflows between t-1 and the current (sudden stop) period. Figure 1 plots the histogram of S_t^I for all 100 episodes. Most observations (75%) are between 0 and 1, indicating that inflows and outflows moved in the same direction: foreign liabilities falling and foreign assets rising. Values above 1 (approx. 25% of observations) mean that outflows undid the reversal of inflows, offsetting the impact on the financial account. Values below 0 (approx. 10% of observations) mean that inflows actually rose in the sudden stop episode.

We then proceed to split the sudden stop episode into three categories: outflow starts which we define as $S_t^I < 0.25$, inflow stops ($S_t^I > 0.75$) and mixed cases. Our premise is that outflow starts do not correspond to external financing shocks, as the reaction of inflows is so much smaller than of outflows. At the other extreme, inflow stops are most likely driven by external financing shocks since outflows increase by much less than inflows, and in most cases fall. Figure 2 ilustrases the split.

Of the 100 sudden stops in the sample, just over half (57) correspond to inflow stops, whereas slightly below a fifth (18) are outflow starts. Interestingly, these ratios change considerably when we split the sample into EME and DEs. Of the 36 sudden stops in DEs, only 40% are inflow stops. For EMEs this ratio rises to 65%. Sudden stops (as defined in the literature) are

a better proxy for external financing shocks in EMEs than in DEs. On the flip side, even in EMEs inflow stops are considerably less frequent than the net sudden stop measure suggests. In other words, many experiences that are called sudden stops are better described as a current account reversal. From the policy point of view, if external insurance decisions are based on sudden stop probabilities, then countries will be overinsuring.

Figure 3 plots the different sudden stop episodes by year. As the figure shows, there is much higher bunching of inflow stops than outflow starts (as one would expect if these events are driven by events in financial markets). The figure also shows that outflow starts are a fairly recent phenomenon. This may be more related to portfolio diversification by domestic residents, possible as the result of capital account liberalization. We return to this point below.

2.2.2 Does the distinction matter - Outcomes?

The next step is to determine whether the distinction between the two varieties of sudden stops matters for macroeconomic outcomes. We explore this issue by looking at the behavior of key macroeconomic variables in 6 year windows around the sudden stops. In particular, we compare the output growth, investment, exports, the exchange rate, domestic credit and reserves of inflow stops and outflow starts. The results are reported in figure 4. In turn, table **??** reports summary statistics based on the same series: the difference between the pre and post means and the cumulative deviation in the post sudden stop period vis-a-vis the pre period average . In addition the last columns report differences in pre sudden stop averages of the variables for countries experiencing and inflow stop and an outflow start. In these figures the variables are scaled by current GDP.

When comparing inflow stop and outflow start episodes a series of differences emerge:

- GDP growth falls more in the inflow stop group, so that the average cumulative post sudden stop growth loss is -7.2%, three times as much as the cumulative loss for inflow stop episodes, which amounts -1.9% for outflow episodes.
- The decline in gross fixed capital formation over GDP is similar, which implies a larger absolute fall in investment in those countries experiencing inflow stops, since the decline in GDP is greater.
- In both types of episode, exports rise as a share of GDP after the sudden stop. Possibly driven by the larger real exchange rate depreciation in

inflow stop episodes, the proportional change in exports is larger in this group. Note also that exports over GDP is considerably higher in the outflow start group. One interpretation, therefore is that after a term of trade shock that increase export revenues, countries save this windfall abroad. This also lends support to the view that economies more open, measured as the share of exports on GDP, are less likely to suffer sudden stops of inflows, and reversals are more associated with an increase in outflows.

- Reserves and bank credit fall in both types of episodes. Once again similar absolute changes imply larger relative drops after and inflow stop. Note also that the average level of reserves to GDP and credit to GDP are higher in outflow starts – this last difference possible explained by the larger share of DEs in the outflow starts (11 of the 18 episodes are in DEs), or vice versa.

Thus, there appear to be relevant differences in the impact of sudden stops on key macroeconomic variables depending on the type of inflow. With the evidence we report it is not possible to disentangle whether these differences are due to the nature of the shock itself or to differences in the characteristics of the economies experiencing the sudden stop. An interesting extension to this work would be to analyze to what extent the determinants of sudden stops differ from the determinants of inflow stops. Our previous results suggest they are different, in particular, figure 3 suggests that inflow stops are more driven by events in financial markets than outflow start.

2.3 Inflow vs net sudden stops

The previous subsection split sudden stops according to the importance of the inflow drop in the change in the net financial account. However, by doing so we may be missing episodes in which inflows to a country are curtailed, but outflows adjust to offset the stop. In this case we would not detect this sudden stop of inflows since it would not be accompanied by a reversal. To explore this, in this subsection we build a *direct* measure of inflow stops and compare the incidence of these events with the sudden stop events discussed above.

What type of inflow is relevant for building this measure? If we are concerned about shocks originating in financial markets, then non FDI inflows is the correct measure to consider. Indeed, a recent paper by Levchenco and Mauro (2006) finds that FDI is much more stable around sudden stops that non FDI inflows. To ilustraste this point, figure 5 plots FDI inflows, non FDI inflows and the financial account for EMEs and DEs over the 1974-2004 period

(data are averaged across two years). The panel for EME shows the collapse of non FDI flows in 1982 around the debt crisis and latter in 1998 following the Asian crisis. FDI flows, on the other hand, are remarkably stable. Indeed, the average FDI inflow does not fall in EMEs untill 2000-01, and then only slightly. The same pattern is apparent in figure 6, that plots gross inflows (FDI and other) for selected sudden stop episodes.

We define an inflow stop as a period in which the change in non FDI inflows net of the average country change (scaled by trend GDP) is below 5%. Defined in this way, table 1 shows that the share of inflow stops in our sample is 9%, that is 147 cases out of 1580. The share of inflow stops is higher in DEs (12%) than in EMEs (7%).

We compare this definition with the Guidotti et al (2004) definition used in the previous subsections where the sudden stop is defined on the basis of the magnitude of the reversal in the capital account. A line with a 1 indicates the number of sudden stops according to the definition based on net flows, and a 0 no sudden stop. A row with a 1 indicates sudden stop of non FDI inflows. Therefore, the cells both with a 1 in the row and the column are the intersection between both measures.

The most interesting fact is that in the full sample there are 85 episodes of sudden stops of inflows that did not occur together with a reversal of the capital account, more than half the total of sudden stop of inflows. Notably, this is mostly concentrated in developed economies, where there are 63 of such episodes, representing three quarters of sudden stop of inflows. In emerging market economies two thirds of sudden stops of inflows are also reversals of the capital account.

Thus (once again) a dummy for sudden stops (capital account reversal) is a better proxy of inflow stops in EMEs than in DEs. However, there are still a third of episodes of sudden stop measured by a reversal of the capital account that did not ocurred with sudden stop of non FDI inflows. More importantly, however, this simple episode analysis suggests that the key distinction between DEs and EMEs is not in the volatility of non FDI inflows – but in the covariance between inflows and outflows. We turn to this aspect of gross capital flows in the following section.

3 Gross and Net Capital Flows: Stylized Facts

The previous section focused on the lower tails of the distributions of net and gross capital inflows. Moreover it reduced the analysis of the tails to a set of

somewhat arbitrary dummy variables. These dummy variables are a reasonable approach if one thinks that the world behaves in a non linear way, with economies running in to vertical supply constraints, as in the work of Caballero and Krishnamurthy (2005) and others. However, by focusing on these episodes we are not taking into account a lot of information on gross and net capital flows from our sample. Moreover, the episodes approach necessarily requires discretionary choices in the establishment of thresholds, which may not coincide with the "vertical" episodes theoretical models have in mind. With these concerns in mind, in this section we characterize gross and net capital flows for our sample of EMEs and DEs. We start with a characterization that emphasizes differences and similarities between the two (also arbitrary) groups of countries in our sample. We then move to a more general (and robust) approach that differentiates the behavior of capital flow across income levels and degrees of financial integration.

3.1 Gross and Net Capital Flows: Emerging and Developed Economies

Gross capital flows swamp net capital flows in DEs (figure 7), and increasingly in EMEs. This is the flow counterpart of the increasing level of financial integration documented by Lane and Milesi-Ferretti (2004). The growth in gross inflows and outflows in DEs took off in earnest in the second half of the nineties leveling off in the current decade. Gross flows in EMEs lag considerably behind those of DEs, despite moderate growth in the last ten years. Indeed, as clear from the figure, gross outflows and inflows in 2004 in DEs were similar in level to gross flows of DEs in the mid seventies.

The group averages presented in figure 7, hide considerable cross country varation. This is evident from figure 8, that plots average inflows and outflows over trend GDP over 1999-04 for all countries in our sample.[3] In this figure EMEs are mostly in the lower left-hand-side corner. As mentioned above, there is also considerable variance in the level of gross flows, within both country groups.

We turn now to the variance of the change in gross inflows and outflows and net flows. We work with changes instead of levels motivated by the sudden stop and reversal literature. Gross and net flows are normalized by trend GDP. In addition we remove the (usually non significant) country mean of

[3]We exclude offshore financial centers, in which inflows and outflows are automatically matched, as capital is raised an funneled offshore once again. We decide therefore to exclude from our sample Ireland, Belgium, Switzerland and Great Britain. They are outliers in terms of size of average inflows and outflows.

the changes to separate country trends from volatility. For notation we refer to change in the net financial account as ΔF, changes in inflows as ΔI and changed in outflows as ΔO.

EMEs have more volatile net capital flows (table 2). The standard deviation of ΔF in the average (median) EME is 60% (90%) higher than in the average (median) DE. Focusing on the lower tail of the distribution shows that large negative values of ΔF are more common in EMEs than in DEs. The final panel reports the sudden stop measure used in the previous section and a dummy for absolute sudden stops: $\Delta F < -5\%$ that does not take into consideration individual country variance. Both are more prevalent in EMEs.

To pull apart the determinants of this higher volatility we carry out a simple decomposition exercise, splitting the variance in both groups into the variance of non FDI inflows, FDI inflows and outflows and their respective covariances. We report the results in table 3. Most of the difference is explained by the much larger negative covariance between non FDI inflows and outflows in DEs. The higher variance of non FDI inflows in EMEs and a smaller covariance between FDI inflows and outflows explains the remainder. We analyze these differences in detail next, since we think that precisely what makes reversals much less common in DEs compared to EMEs, is that the correlation between inflows and outflows in DEs is strongly negative. We interpret this result in section 4.

Table 4 takes a more detailed look at changes in gross inflows ΔI. The standard deviation of ΔI is only marginally higher in EMEs, much less so that the difference in the standard deviation of ΔF. Large reversals in inflows are equally likely in EMEs than in DEs. To ilustraste this point further, figure 9, plots the negative segment of the cdf's for ΔF, ΔI and non FDI inflows in both DEs and EMEs. The distribution of changes in non FDI inflows and FDI inflows is also remarkably similar across both groups of economies (panel B and C).

One possible explanation, is that DEs have a larger share of more stable FDI inflows. Data on stocks of liabilities (scaled by GDP) from the Lane and Milesi-Ferretti Database show that this is not the case, however. An alternative explanation is that shocks to non FDI inflows are generated by portfolio adjustments, so that countries with larger gross liabilities (DEs) will experience larger fluctuation in gross inflows in terms of GDP. To explore this possibility, columns (4) to (6) of table 4 report similar statistics for ΔI and its components, scaled not by GDP but by the gross liability stocks of each category. Here the story changes. All categories of gross inflows in EMEs are more volatile than in DEs, although gross inflows, relative to gross outflows, are larger in EMEs than in DEs. Furthermore, the likelihood of large reversals in non FDI inflows (scaled by liabilities) is larger in EMEs.

3.2 Gross and Net Capital Flows: Income and Financial Integration

In the previous subsection we discussed diffences in the variances and covariances of inflows and outlflows in EMEs and DEs. In this section we move beyond the simple sample split and analyze specific characteristics of DEs and EMEs that may explain these differences. We start with a simple cross section regression of variances and covariances of gross and net flows over the period 1975-2004 on average per capita income over the same period. Specifically we estimate

$$\sigma_{ji}^{75-04} = \alpha + \beta_j \ln(y_i^{75-04}) + \varepsilon_{ij}$$

for the 54 countries (i) in our sample. σ_{ij}^{75-04} is one of the j sample second moments of ΔF , the components of ΔI and ΔO for the period 75-04 and $\ln(y_i^{75-04})$ is the log of per capita GDP in constant (ppp) dollars. Table 5 reports the estimated $\beta_j' s$. We find a significant *negative correlation* between income levels and variance of ΔF, the covariance of Δ non FDI inflows and Δ outflows and the covariance of Δ FDI inflows and Δ outflows). We find a significant *positive correlation* between income levels and the variance of Δ FDI inflows and Δ outflows. To delve further into the correlation of inflows and outflows we estimating the following regresion (by OLS)

$$\Delta F_t = \delta + \gamma \Delta SI_{it} + \upsilon_{it}.$$

This specification is a simple linear transformation of a regression of inflows and outflows, but has a more intuitive economic interpretation, and a closer link o the first section of this paper. Recall that we discussed shares of the adjustment to ΔF_{it} explained by ΔSI_{it} in sudden stops. The advantage on the cross section approach is to take better advantage of the time variation in income levels in our sample.

Table 6 reports the $\widehat{\gamma}$ for various subsamples: DEs and EMEs, time periods and sudden stop episodes. In panel A the rhs variable is the change in non FDI inflows (ΔSI_{it}), in B the change in total inflows (ΔI_{it}). More than the actual coefficients (which are biased because of endogeneity), what is important is the differences in these coefficients across samples. The advantage of this dif-in-dif approach is that it is dificult to find an explanation for why the error term is more (or less) correlated with the gross flows across samples to explain the differences in $\widehat{\gamma}$. The main results in table 6 are:

- $\widehat{\gamma}$ is higher in EMEs, ie, gross inflows and the financial account are more closely correlated.

- $\widehat{\gamma}$ falls over time in both groups of countries.
- $\widehat{\gamma}$ in both periods of SS and tranquil periods $\widehat{\gamma}$ is higher in EMEs.

  All of these differences are statistically significant (interaction regression are available).

Next we interact ΔSI_{it} with the one period demeaned lagged per capita income levels (log GDP demeaned) $y_{i,t-1}$ and a simple measure of financial diversification: the ratio of gross international assets to GDP (lagged one period) $A_{i,t-1}$. Hence, our specification is

$$\Delta F_{it} = \delta + \gamma_1 \Delta SI_{it} \upsilon_{it} + \gamma_2 y_{i,t-1} \times \Delta SI_{it} + \gamma_3 A_{i,t-1} \times \Delta SI_{it} + \theta_1 y_{i,t-1} + \theta_2 A_{i,t-1} + \mu_{it} \quad (1)$$

We are particularly interested in γ_2 and γ_3 the impact of income per capita and gross assets on the correlation between ΔF_t and ΔSI_{it}

We report the results of estimating (1) in table 7. These results confirm our simple cross section approach: gross inflows have a larger positive correlation with net inflows in lower income economies. This result holds in the full sample and in the subsamples of DE and EMEs. This finding is not simply due to the fact that richer countries hold larger assets, which they can unwind in case of a sudden stop to inflows The estimated coefficient on γ_2 remains negative and significant even after including the $A_{i,t-1} \times \Delta SI_{it}$ interaction. As expected, estimated values of γ_3 are negative (and significant), so that countries holding more gross assets (more financially integrated) show lower correlations between net inflows and gross inflows. Again, this result holds in the full sample and within the EME and DE groups (columns 5 and 6). Panel B replicates this analysis using ΔI_{it} as the measure of inflows. All results remain qualitatively unchanged. We postpone interpretation of these results to the following section.

As we discussed above, our interaction terms will be biased if the error is correlated with the interaction term. One possibility for this is terms of trade shock. If terms of trade shocks are more correlated with gross inflows in high income economies, then our results would be spurious. To control for this we introduce a terms of trade shock in our specification. The shock is the residual from an AR(1) regression on the terms of trade data from the WDI and the results are presented in table 9. In columns (1) and (3) we interact the terms of trade shock with the estimated persistence of the shocks for each country which should condition the impact of terms of trade on the current (and financial) account. Columns (2) and (4) include interactions of the terms of trade shocks with emerging market dummies. In all cases our previous results remain unchanged.

4 Discussion of Results

In this section we offer a stylized interpretation of the results presented above.

Consider a small open economy in which there is a time varying premium (positive) between domestic returns, r and international returns r^*. Assume that the variance in this premium comes from events in international financial markets: changes in the risk appetite of international investors (as in the recent global risk aversion literature), or changes in the perception of risk (as in the "wake up call" literature).

Risk averse domestic savers then face a tradeoff between international diversification (holding foreign assets) and receiving the higher domestic returns (a direct result of this premia). Assume, in addition, that countries vary across two dimensions: the risk premia and their wealth. Countries with higher average risk premia will have a lower share of wealth invested in international assets. Countries with low wealth will also have few international assets.

To evaluate the validity of this assumption, table 10 estimates the correlation between gross international assets over GDP, income per capita (a proxy of financial wealth) and the EMBI spread. The sample is limited to countries for which data on the EMBI is available. Column (1) is the simple cross section correlation for 2001 between external assets over GDP and the log of the EMBI spread. As expected the correlation is negative and signifcant. In column (2) we include the log of per capital GDP. The estimated signs are as expected, however significance is lost. Results are similar in columns (3) and (4) which pool all available years. Column (4) drops extreme EMBI values (EMBI>3000). Finally, column (5) reports results for a country fixed effects regression. Although significance in several cases is small, the correlation between the EMBI and gross international assets is negative.

What happens in this setting when a country is hit by a inflow stop? The sudden stop is nothing more than a rise in the international risk premium. Therefore foreign capital leaves the country. This fall in foreign capital leads to a rise in the domestic marginal productivity of capital leading to an fall in the foreign assets of domestic residents, which in part offsets the sudden stop.

How do EMEs and DEs vary in this setting, and how does it relate to the stylized facts shown above?

One explanation is that in most EMEs, the premium is so high that foreign assets are such that before the sudden stop they should have to be negative to offset the rise in the premium. If insurance is costly, there is underinsurace.

The alternative explanation is that EMEs have more frequent (and larger)

shocks to domestic productivity. These shocks lead to co-movements in inflows and outflows (all rush to the gate), and this would explain the lower negative correlation in EMEs. Although this explanation is relevant, it is not the full story. To start, we control for terms of trade shocks. Second, even after we control for per capita GDP (a good proxy for institutions), countries with larger foreign assets have a more negative covariance.

The simple framework that follows illustrates these mechanisms.

4.1 A simple model of gross flows

In this section we develop a mean-variance portfolio model to describe changes in the gross international liabilities and assets of domestic residents in a small open economy.

We assume that domestic residents have a stock of wealth (K^d) they can invest at home (K_h^d) or abroad (K_a^d). Gross returns at home (R^d) are a decreasing function of total capital ($R^d = A - \alpha K^T$), an assumption aimed to capture decreasing marginal returns. Investment abroad yields a fixed return R^*.

We assume risk neutral international investors, so that the following international arbitrage condition holds for capital inflows:

$$A - \alpha K^T = R^* + \rho, \tag{2}$$

where ρ is the country risk premium, whish we assume is a random variable. From equation (2), total capital at home (K^T), which we assume is proportional to GDP, will be equal to $(A - R^* + \rho)/\alpha$. ρ is the only source of uncertainty in this model. We assume that domestic agents do not observe realized ρ when deciding their portfolios, but that capital inflows do move according to changes in ρ.

Domestic residents maximize a mean variance utility function, which after substituting for returns yields

$$K_h^d \mathrm{E}(A - \alpha K^T) + K_a^d R^* - \frac{1}{2}\gamma \left(K_h^{d\,2} \mathrm{Var}(A - \alpha K^T) \right)$$

From the first order conditions we obtain:

$$K_h^d = \frac{\mathrm{E}(\rho)}{\gamma \mathrm{Var}(\rho)}$$

$$K_a^d = K^d - \frac{\mathrm{E}(\rho)}{\gamma \mathrm{Var}(\rho)}.$$

The stock of wealth of domestic residents invested at home is increasing in the expected level of country's risk premium and decreasing in its volatility. This is an intuitive result: domestic agentes must sacrifice higher domestic returns to diversify. The higher the expected premium, the higher the cost of diversification.

Using the previous results we have that international liabilities and assets of domestic residents are:

$$K^T - K_h^d = \max\left\{\frac{A - R^d - \rho}{\alpha} - \frac{\mathrm{E}(\rho)}{\gamma \mathrm{Var}(\rho)}, 0\right\}$$

$$-K_a^d = \min\left\{\frac{E(\rho)}{\gamma \mathrm{Var}(\rho)} - K^d, 0\right\}$$

Finally we compute capital inflows and outflows (-) taking first differences. If the country is not up against any of the non-negativity constraint, then an increase in a country's expected risk premium implies a fall on capital inflows that is compensated by a fall on capital outflows (-). For countries with volatile country risk premium (large $\mathrm{Var}(\rho)$), these changes are larger. Therefore "international expectations financial shocks" generate a negative correlation between inflows and outflows. The size of this correlation will be 'reduced if the initial stock of international assets is limited. This will happen in countries with low domestic capital or high expected risk premia.

In turn, a shock to A (productivity) will only lead to an change in inflows, and thus a zero correlation between inflows and outflows. Productivity in our case is a broad expression for profitability, which also should include other factors affecting it, such as policies, terms of trade, etc. Hence, we could expect that emerging market economies have less assets to compensate portfolio changes, but also they are affected by greater shocks to profitability.

5 Conclusions

When sudden stops are considered to be sharp reversals in the capital account, we may be combining too many phenomena. In a world of floating exchange rate, or limited intervention by the central bank, the reversal could be a current account reversal.This current account reversal could be the result, for example, of a change in the terms of trade or productivity. It could be also

the result of policy factors, such as a change in public savings o exchange rate misalignments. These are all changes produced in the saving-investment decisions. However, this could be also a phenomenon triggered in the financial side, that is, capital account drive. There are two alternatives in this case. It could be a true curtailment of capital inflows, or the decision of domestic residents to diversify portfolio and invest abroad. Thus, it is difficult to argue that a capital account reversal, represents necessarily a sudden stop, a phenomenon that could be very costly for emerging markets.

For this reason we propose, something that we did not do in this paper to avoid semantic confusión, to focus on sudden stop as cases were there is a reversal in the capital account and at the same time a sudden stop of capital inflows. This narrows substantially the number of episodes, focusing on those, as we reported in this paper, which has the largest output costs and that should require some form of insurance. There are many cases in which there are sudden stops of inflows, but compensated by a parallel sudden stop of outflows. In this case, more commonly observed in DEs, the sudden stop does not come with a reversal in the capital account, and it responds more to portfolio diversification. It could be the result also of a retrenchment of foreign investors, but the country could have enough domestic assets abroad to compensate this shock without altering substantially net indebtedness. This is illustrated in our model. That framework also highlights that some reversals may be the results of changes in profitability, due to changes in fundamental factors or policy decisiones, or alternatively the inability to offset negative shocks to inflows with assets held aborad. In this case, the accumulation of foreign reserves could be an insurance mechanism. However, in order to use appropriately the insurance, the call is as to whether the change in capital flows is the result of a current account adjustment or a truly financial shock. The misinterpretation of the facts may lead to postpone adjustments, and may end up being more costly.

References

Broner, F. and Gelos, G. (2003), Testing the portfolio channel of contagion: the role of risk aversion, Mimeo, Universitat Pompeu-Fabra.

Caballero, R. and Cowan, K. (2006), Financial integration without the volatility. manuscript.

Caballero, R. J., Cowan, K. and Kearns, J. (2004), Fear of sudden stops: Lessons from australia and chile, RBA Research Discussion Papers rdp2004-03, Reserve Bank of Australia.

Caballero, R. and Panageas, S. (2005), A quantitative model of sudden stops and external liquidity management, NBER Working Papers 11293, National Bureau of Economic Research, Inc.

Calvo, G. A. (1999), Contagion in emerging markets: When wall street is the carrier. University of Maryland.

Calvo, G. A., Izquierdo, A. and Mejia, L.-F. (2004), On the empirics of sudden stops: The relevance of balance-sheet effects, NBER Working Papers 10520, National Bureau of Economic Research, Inc.

Chang, R. and Velasco, A. (1998), The asian liquidity crisis, NBER Working Papers 6796, National Bureau of Economic Research, Inc.

Corsetti, G., Pesenti, P. and Roubini, N. (1999), 'What caused the asian currency and financial crisis?', *Japan and the World Economy* **11**(3), 305–373.

Cowan, K. and Gregorio, J. D. (2006), International borrowing, capital controls and the exchange rate: Lessons from chile, NBER Working Papers 11382, National Bureau of Economic Research, Inc.

Daude, C. and Ramon-Ballester, F. (2006), Financial vulnerabilities in latin america: A reappraisal. manuscript.

Edwards, S. (2004), Financial openness, sudden stops and current account reversals, NBER Working Papers 10277, National Bureau of Economic Research, Inc.

Edwards, S. (2005), Capital controls, sudden stops and current account reversals, NBER Working Papers 11170, National Bureau of Economic Research, Inc.

Faucette, J., Rothenberg, A. and Warnock, F. (2005), 'Outflow-induced sudden stops', *The Journal of Policy Reform* **8**(2), 119–129.

Frankel, J. A. and Cavallo, E. A. (2004), Does openness to trade make countries more vulnerable to sudden stops, or less? using gravity to establish causality, NBER Working Papers 10957, National Bureau of Economic Research, Inc.

Furman, J. and Stiglitz, J. E. (1998), 'Economic consequences of income inequality', *Proceedings* pp. 221–263.

García, P. and Soto, C. (2004), Large hoardings of international reserves: Are they worth it?, Working Papers Central Bank of Chile 299, Central Bank of Chile.

Garcia, A. and Ortiz, A. (2004), The role of global risk aversion in explaining latin american sovereign spreads, International Finance 0408001, EconWPA.

Jeanne, O. and Rancière, R. (2006), The optimal level of international reserves for emerging market countries: Formulas and applications, IMF Working Papers 229, International Monetary Fund.

Mauro, P. and Levchenko, A. (2006), Do some forms of finacial flows help protect from sudden stops?, IMF Working Papers 202, International Monetary Fund.

Milesi-Ferrett, G. M. and Razin, A. (1998), Current account reversals and currency crises: Empirical regularities, NBER Working Papers 6620, National Bureau of Economic Research, Inc.

Radelet, S. and Sachs, J. (1998), 'The east asian financial crisis: Diagnosis, remedies, prospects', *Brookings Paper* **28**(1), 1–74.

Rigobon, R. (2001), The curse of non-investment grade countries, NBER Working Papers 8636, National Bureau of Economic Research, Inc.

Rijckeghem, C. V. and Weder, B. (2000), Spillovers through banking centers - a panel data analysis, IMF Working Papers 00/88, International Monetary Fund.

Rothenberg, A. D. and Warnock, F. E. (2006), Sudden flight and true sudden stops. mimeo.

Sachs, J., Tornell, A. and Velasco, A. (1995), 'The real story', *International Economy* .

Sturzenegger, F., Guidotti, P. and Villar, A. (2004), 'On the consequences of sudden stops', *Economia* **4**(2), 171–214.

Table 1

Inflow Stops and Sudden Stops

Sudden Stop Guidoti et al	Inflow Stop 0	Inflow Stop 1	Total
		Full Sample	
0	1,395	85	1,480
1	38	62	100
Total	1,433	147	1,580
		EMEs	
0	834	22	856
1	20	44	64
Total	854	66	920
		DEs	
0	561	63	624
1	18	18	36
Total	579	81	660

Table 2

The Distribution of Changes in the Financial Account

	DE	EME	EME/DE
S.Dev of D(financial account) by Country			
Mean Country	0.030	0.047	1.6
Median Country	0.023	0.043	1.9
Distribuion of D(financial account)			
5th Percentile	-0.053	-0.080	1.5
10th Percentile	-0.034	-0.050	1.5
25th Percentile	-0.014	-0.020	1.4
median	0.000	0.002	12.6
Incidence of Sudden Stops			
prob (SS a la GSV)	0.055	0.070	1.3
prob (Absolute SS)	0.050	0.079	1.6

Table 3

Variance Decomposition

	EME	DE	EME-DE	Share of (a)
Var (D Non FDI inflows)	25.7	22.0	3.7	0.2
Var (D FDI inflows)	1.5	3.2	-1.6	-0.1
Var (D Outflows)	7.8	16.0	-8.2	-0.5
Cov (D Non FDI inflows, D FDI inflows)	0.4	-1.1	1.5	0.1
Cov (D Non FDI inflows, D Outflows)	-8.5	-25.6	17.0	1.1
Cov (D FDI inflows, D Outflows)	-1.0	-4.4	3.4	0.2
Var (D Financial Account) (a)	26.0	10.1	15.8	1.0

Table 4

Characterizing Capital Inflows in Industrial and Emerging Economies

group	Scaled by trend GDP			Scaled by Stocks of Libilities (assets)		
	DE	EME	EME/DE	DE	EME	EME/DE
	(1)	(2)	(3)	(4)	(5)	(6)
			D Inflows			
S. Dev	0.05	0.05	1.07	0.06	0.08	1.26
5th Percentile	-0.07	-0.08	1.06	-0.10	-0.11	1.13
25th Percentile	-0.02	-0.02	0.91	-0.03	-0.03	1.03
Median	0.00	0.00	--	0.00	0.00	--
P(z)<-0.05	0.10	0.09	0.97			
			D Non FDI Inflows			
S. Dev	0.05	0.05	1.08	0.07	0.09	1.34
5th Percentile	-0.06	-0.08	1.17	-0.11	-0.13	1.22
25th Percentile	-0.02	-0.02	0.81	-0.04	-0.04	1.05
Median	0.00	0.00	--	0.00	0.00	--
P(z)<-0.05	0.09	0.08	0.92			
			D FDI Inflows			
S. Dev	0.02	0.01	0.70	0.14	0.18	1.29
5th Percentile	-0.02	-0.02	0.94	-0.16	-0.18	1.07
25th Percentile	0.00	0.00	0.98	-0.06	-0.05	0.95
Median	0.00	0.00	--	-0.01	-0.01	--
P(z)<-0.05	0.01	0.00	0.30			

Table 5

Variance, Covariance and Income Per Capita

Var (D financial account	-59.804 *
Var (D Non FDI inflows)	3.113
Var (D FDI inflows)	6.841 *
Var (D Outflows)	29.175 *
Cov (D Non FDI inflows, D Outflows)	-40.015 *
Cov (D FDI inflows, D Outflows)	-6.529 *

Table 6

Changes in the Financial Account and Changes in Inflows

	Dependent variable in all regression is D financial account									
	Regresion Results				Sample					
					Group		Period		SS episodes	
	Estimated Coeficients	Standard Errors	N	R2	EME	DE	75-89	90-04	SS=1	SS=0
				Panel A: RHS variables is Non FDI Inflows						
1	0.842	[0.051]***	781	0.7	x		x	x	x	x
2	0.395	[0.042]***	506	0.34		x	x	x	x	x
3	0.945	[0.043]***	342	0.84	x		x		x	x
4	0.789	[0.071]***	439	0.63	x			x	x	x
5	0.724	[0.064]***	236	0.6		x	x		x	x
6	0.322	[0.044]***	270	0.28		x		x	x	x
7	0.631	[0.123]***	64	0.63	x		x	x	x	
8	0.740	[0.069]***	717	0.58	x		x	x		x
9	0.219	[0.085]**	31	0.28		x	x	x	x	
10	0.301	[0.035]***	475	0.24		x	x	x		x
				Panel B: RHS variables is Inflows						
1	0.828	[0.048]***	781	0.73	x		x	x	x	x
2	0.379	[0.039]***	506	0.34		x	x	x	x	x
3	0.935	[0.043]***	342	0.87	x		x		x	x
4	0.776	[0.065]***	439	0.67	x			x	x	x
5	0.726	[0.062]***	236	0.62		x	x		x	x
6	0.309	[0.041]***	270	0.29		x		x	x	x
7	0.649	[0.130]***	64	0.64	x		x	x	x	
8	0.733	[0.062]***	717	0.62	x		x	x		x
9	0.221	[0.080]***	31	0.31		x	x	x	x	
10	0.293	[0.033]***	475	0.26		x	x	x		x

Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 7

Baseline Regression: Changes in Net Financial Account and Changes in Gross Inflows

	Dependent Variable: D Net Financial Account					
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Inflows are D non FDI inflows over trend GDP					
Interactions						
D Inflows	-0.204	-0.163	-0.217	-0.104	-0.073	-0.131
x ln (GDP) (-1)	[0.028]***	[0.082]**	[0.034]***	[0.048]**	[0.091]	[0.057]**
D Inflows				-0.199	-0.195	-0.208
x Gross Assets to GDP (-1)				[0.054]***	[0.073]***	[0.049]***
Main effects						
D Inflows	0.7	0.732	0.709	0.764	0.787	0.81
	[0.034]***	[0.055]***	[0.060]***	[0.023]***	[0.047]***	[0.108]***
ln (GDP) (-1)	0	0	0	0.001	0	0
	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.003]
Gross Assets to GDP (-1)				-0.001	-0.001	-0.002
				[0.001]	[0.002]	[0.001]
	Panel B: Inflows are D all inflows over trend GDP					
Interactions						
D Inflows	-0.204	-0.162	-0.202	-0.104	-0.073	-0.121
x ln (GDP) (-1)	[0.025]***	[0.075]**	[0.032]***	[0.042]**	[0.084]	[0.042]***
D Inflows				-0.2	-0.185	-0.234
x Gross Assets to GDP (-1)				[0.047]***	[0.069]***	[0.048]***
Main effects						
D Inflows	0.686	0.722	0.667	0.753	0.776	0.812
	[0.031]***	[0.052]***	[0.055]***	[0.022]***	[0.045]***	[0.093]***
ln (GDP) (-1)	0	0	0	0.001	0	0
	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.003]
Gross Assets to GDP (-1)				-0.001	0	-0.002
				[0.001]	[0.002]	[0.001]
N	1278	772	506	1271	770	501
Sample	All	EME	DE	All	EME	DE

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 8

Sudden Stops and Inflow Stops: Probit Estimation

	Dependent Variable: Sudden Stop Dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: RHS variables are sudden stops in non FDI inflows					
Interactions						
SS Inflows	-0.37	-0.308	-0.53	-0.022	0.041	-0.033
x ln (GDP) (-1)	[0.118]***	[0.247]	[0.307]*	[0.158]	[0.266]	[0.440]
SS Inflows				-0.827	-1.162	-0.433
x Gross Assets to GDP (-1)				[0.251]***	[0.400]***	[0.320]
Main effects						
SS Inflows	2.155	2.168	2.413	2.326	2.377	2.064
	[0.147]***	[0.247]***	[0.446]***	[0.174]***	[0.271]***	[0.629]***
ln (GDP) (-1)	0.016	0.043	-0.048	-0.073	-0.106	-0.11
	[0.058]	[0.122]	[0.203]	[0.077]	[0.152]	[0.232]
Gross Assets to GDP (-1)				0.245	0.444	0.005
				[0.106]**	[0.158]***	[0.131]
	Panel B: RHS variables are sudden stops in total inflows					
Interactions						
SS Inflows	-0.32	-0.322	-0.446	0.064	0.06	0.125
x ln (GDP) (-1)	[0.114]***	[0.246]	[0.303]	[0.145]	[0.268]	[0.416]
SS Inflows				-1.046	-1.355	-0.718
x Gross Assets to GDP (-1)				[0.244]***	[0.425]***	[0.279]**
Main effects						
SS Inflows	2.189	2.154	2.424	2.429	2.448	2.108
	[0.143]***	[0.247]***	[0.439]***	[0.172]***	[0.282]***	[0.629]***
ln (GDP) (-1)	0.014	0.062	-0.102	-0.12	-0.09	-0.235
	[0.061]	[0.135]	[0.200]	[0.078]	[0.165]	[0.197]
Gross Assets to GDP (-1)				0.358	0.456	0.217
				[0.114]***	[0.177]**	[0.128]*
N	1411	876	535	1368	844	524
Sample	All	EME	DE	All	EME	DE

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 9

Changes in Net Financial Account and Changes in Gross Inflows - Controling for Terms of Trade

Dependent Variable: D Net Financial Account over trend GDP				
	(1)	(2)	(3)	(4)
Panel A: Inflows are D non FDI inflows over trend GDP				
D Inflows	-0.201	-0.2	-0.101	-0.1
x ln (GDP) (-1)	[0.028]***	[0.028]***	[0.048]**	[0.048]**
D Inflows			-0.2	-0.201
x Gross Assets to GDP (-1)			[0.053]***	[0.053]***
Terms of trade Shock	-0.029		-0.029	
x rho	[0.012]**		[0.011]***	
Terms of trade Shock		-0.069		-0.069
		[0.032]**		[0.031]**
Terms of trade Shock		0.049		0.049
x I(EME)		[0.033]		[0.032]
Panel B: Inflows are D all inflows over trend GDP				
D Inflows	-0.202	-0.202	-0.101	-0.1
x ln (GDP) (-1)	[0.025]***	[0.025]***	[0.042]**	[0.042]**
D Inflows			-0.2	-0.201
x Gross Assets to GDP (-1)			[0.047]***	[0.047]***
Terms of trade Shock	-0.035		-0.035	
x rho	[0.011]***		[0.011]***	
Terms of trade Shock	0	-0.07		-0.071
	0	[0.030]**		[0.029]**
Terms of trade Shock	0	0.045		0.046
x I(EME)	0	[0.031]		[0.030]
N	1270	1270	1264	1264
Sample	All	All	All	All

Table 10

Determinants of Gross International Asset Positions

	Dependent Variable is External Assets over GDP				
	(1)	(2)	(3)	(4)	(5)
ln(embi)	-0.3	-0.219	-0.178	-0.245	-0.107
	[0.155]*	[0.186]	[0.123]	[0.144]	[0.034]***
ln(gdp per capita)		0.128	0.123	0.081	
		[0.159]	[0.109]	[0.121]	
N	22	22	156	153	156
R2	0.16	0.19	0.17	0.21	0.89
Sample	Year=2001	Year=2001	All	All	All
Country FE	No	No	No	No	Yes
Clustered SE	No	No	Yes	Yes	No

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 1

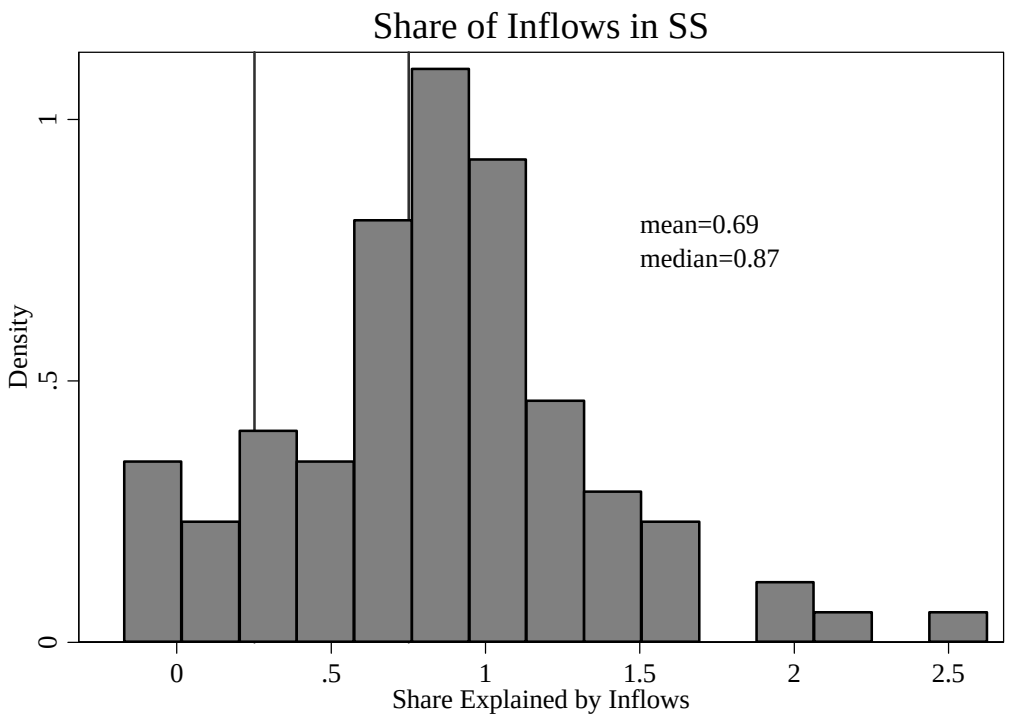

Share of Inflows in SS
mean=0.69
median=0.87
Density
0
.5
1
0
.5
1
1.5
2
2.5
Share Explained by Inflows

Figure 2

Changes in the Finacial Account as Changes in Inflows and Outflows

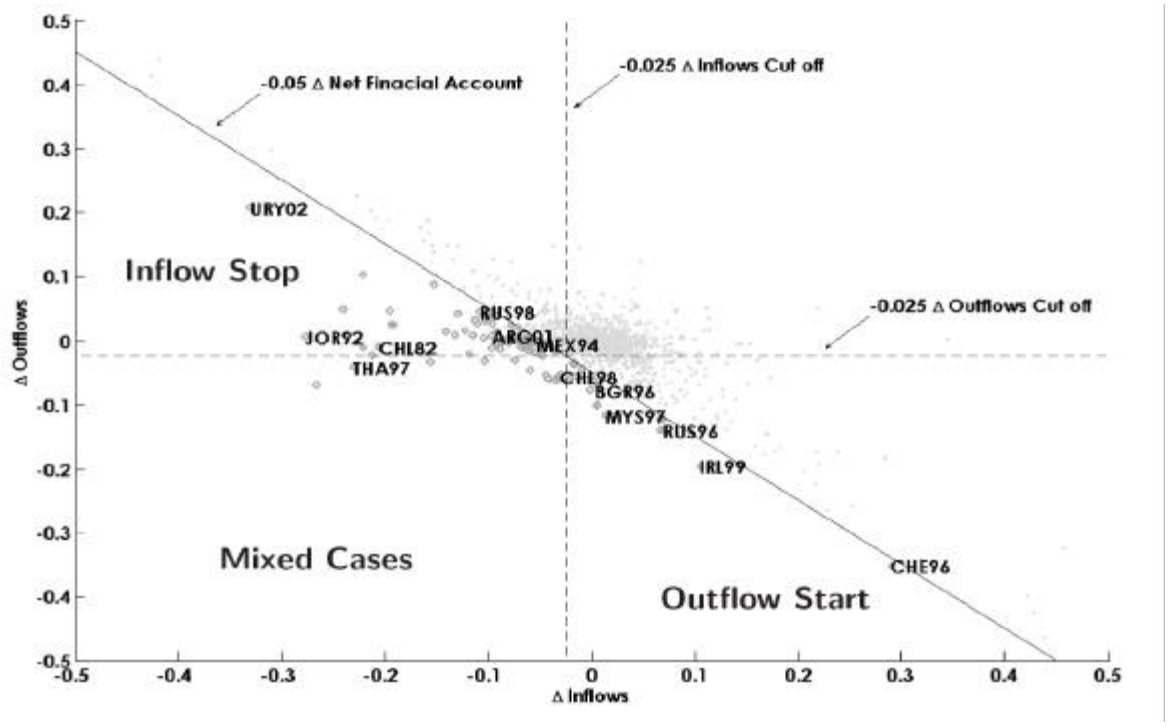


Figure 3

Histogram of Reversals by Grouped by Cause

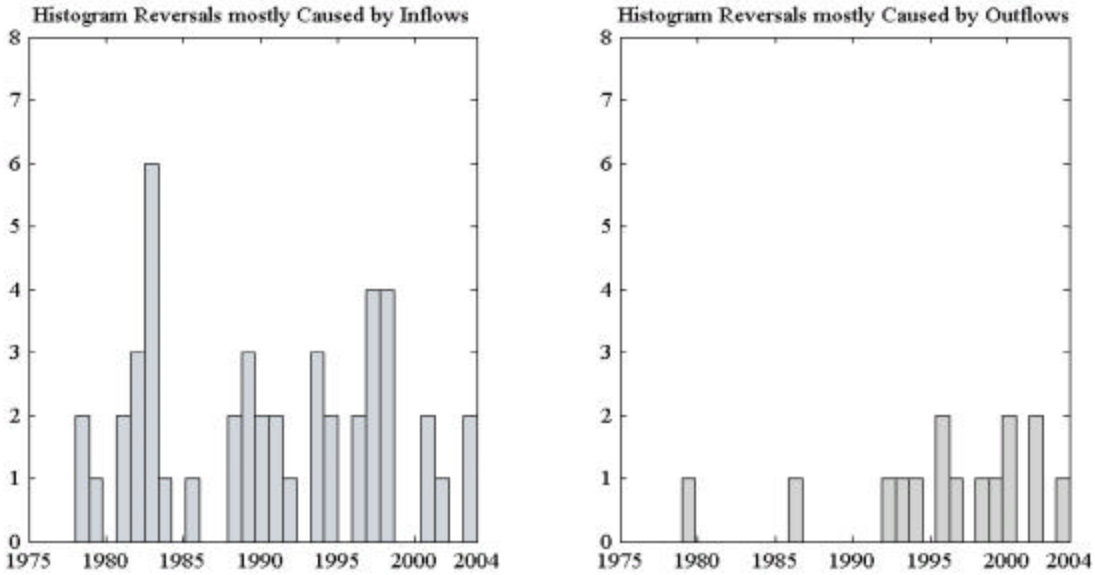


Figure 4

Sudden Stop and Sudden Start Episodes

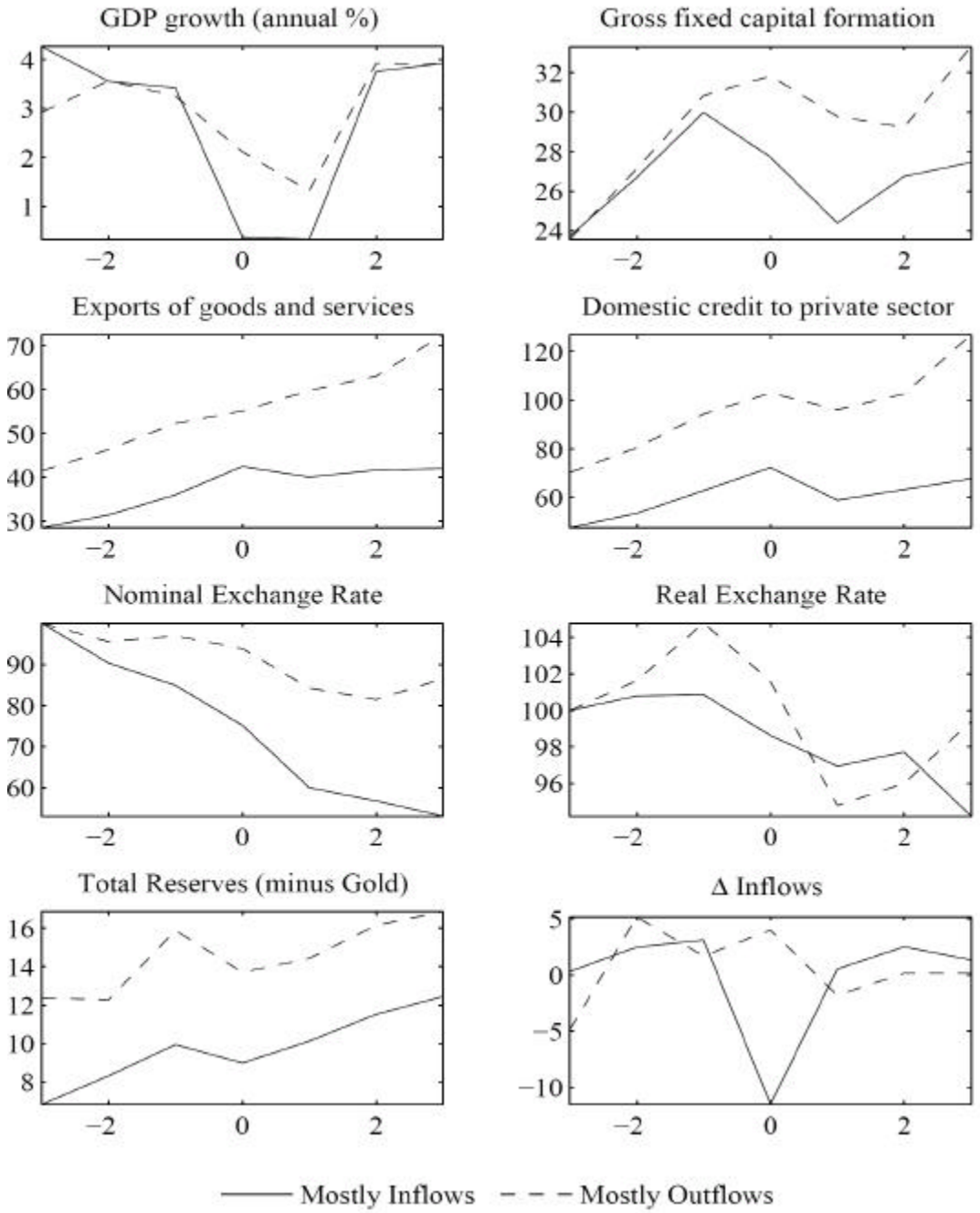
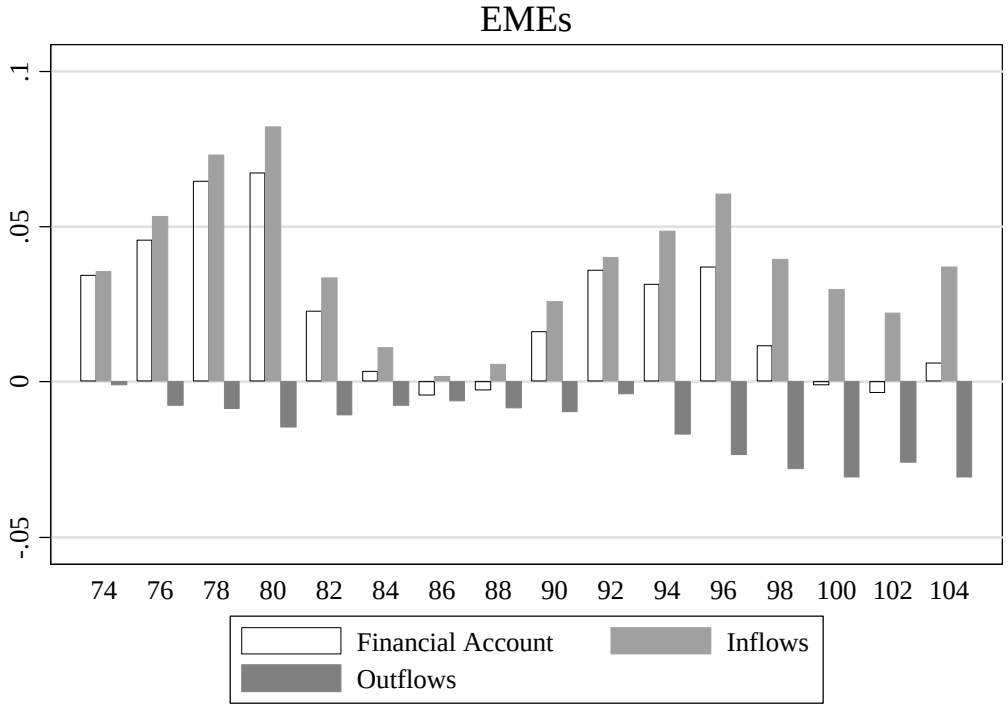


Figure 5
Gross and Net Inflows: EMEs and DEs



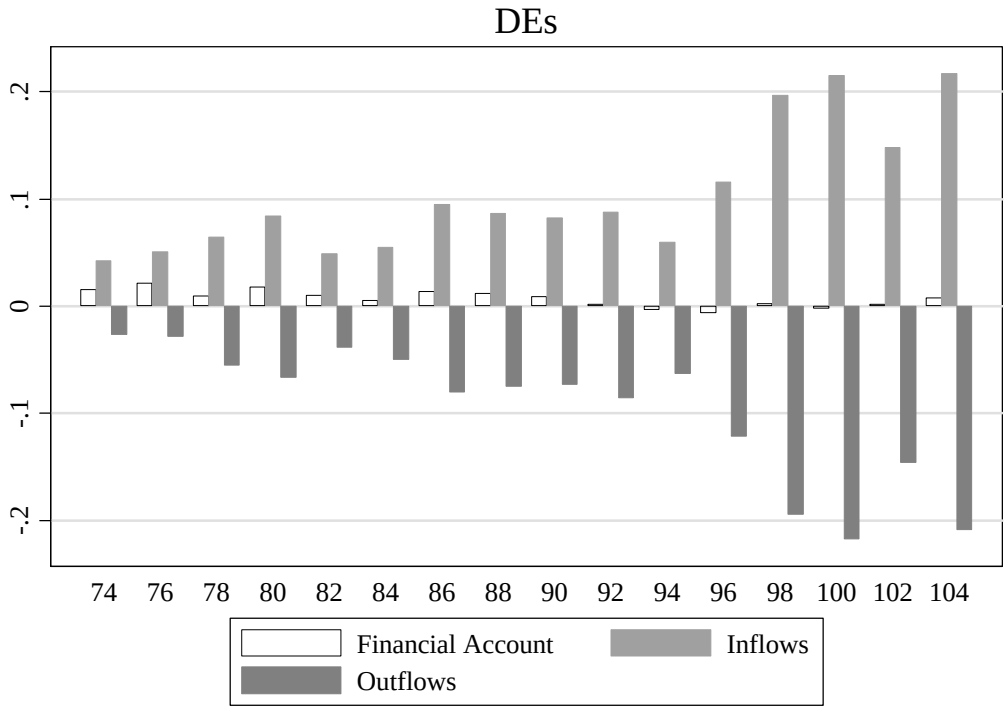


Figure 6

Inflows and Sudden Stops: Four Emblematic Episodes

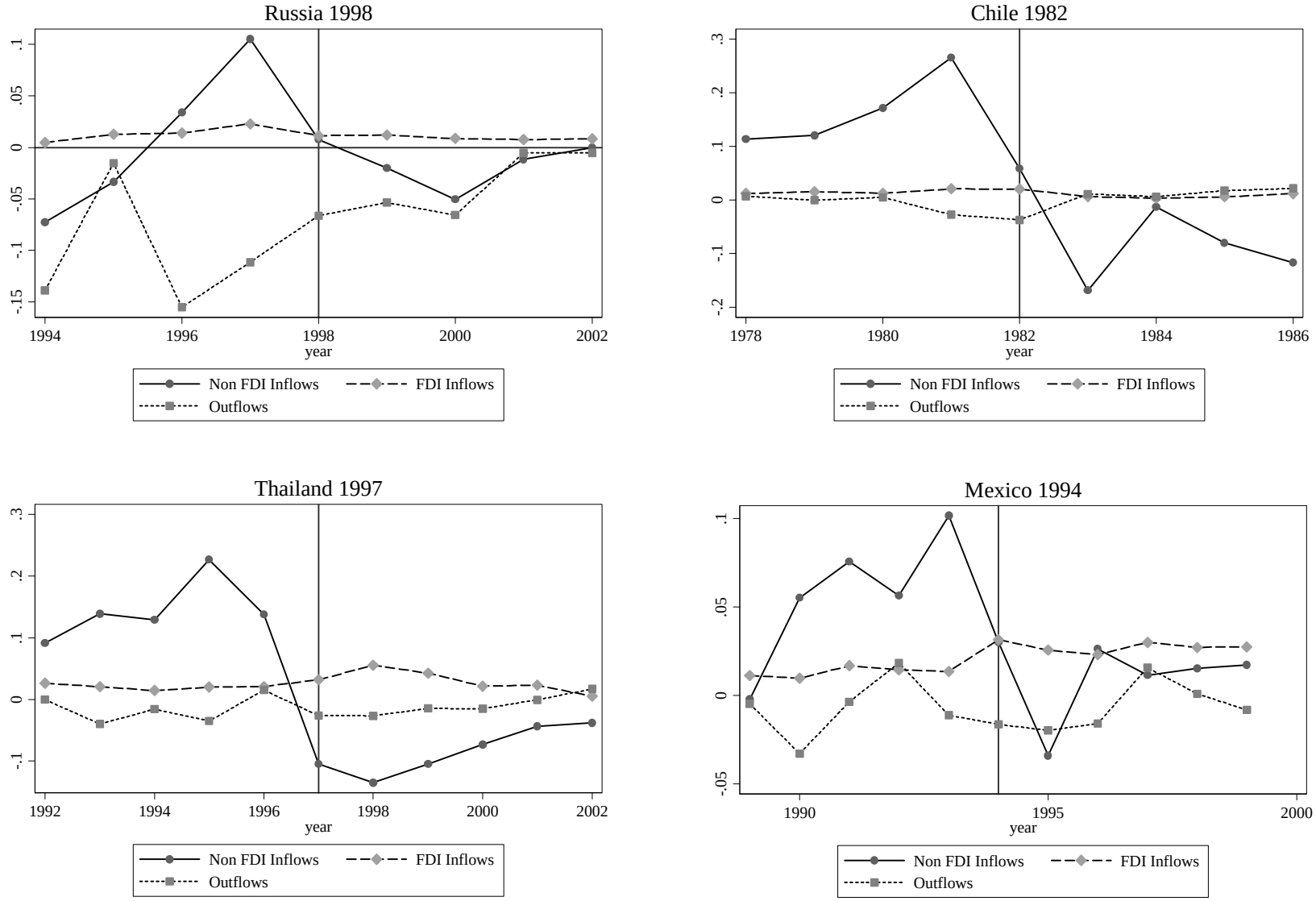
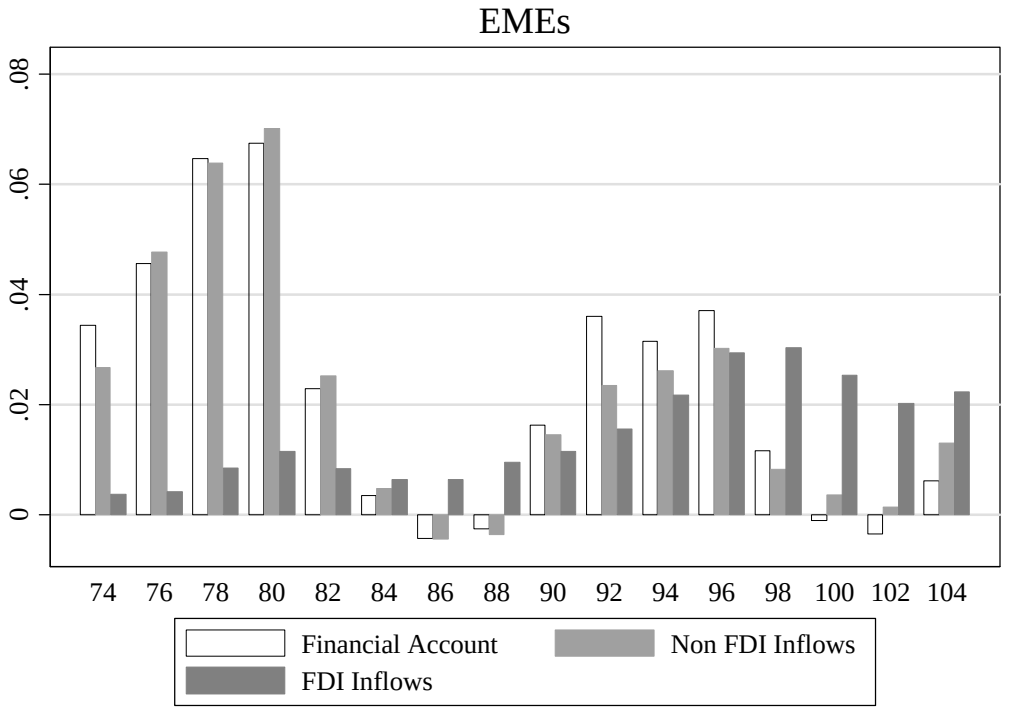


Figure 7
Gross Inflows: EMEs and Des



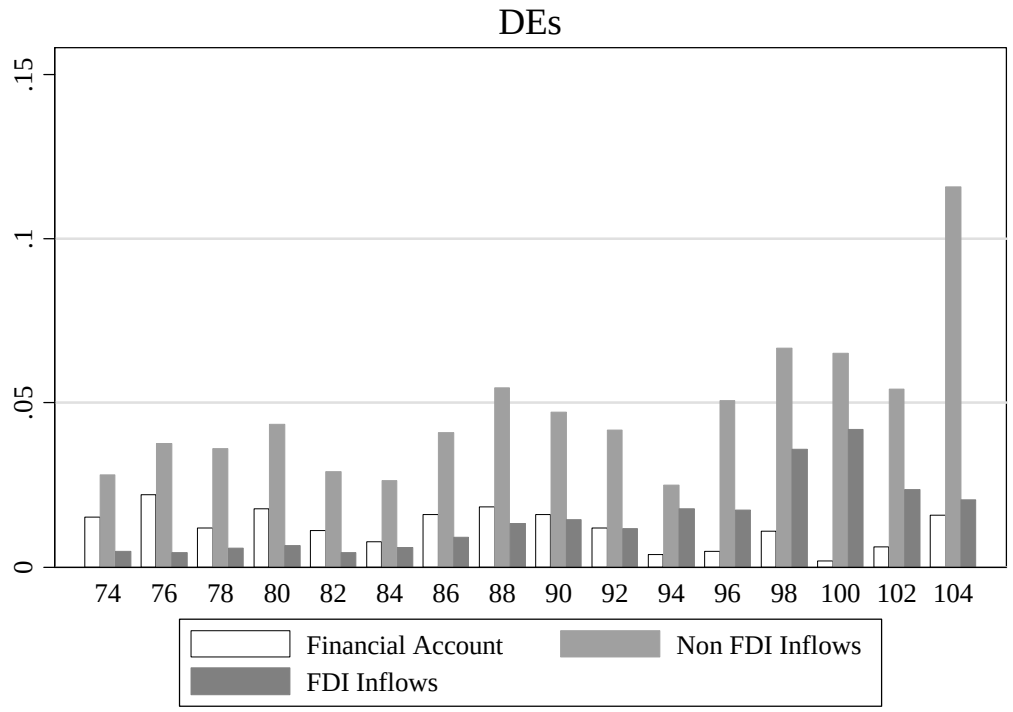


Figure 8
Gross Inflows and Outflows 1999-2004

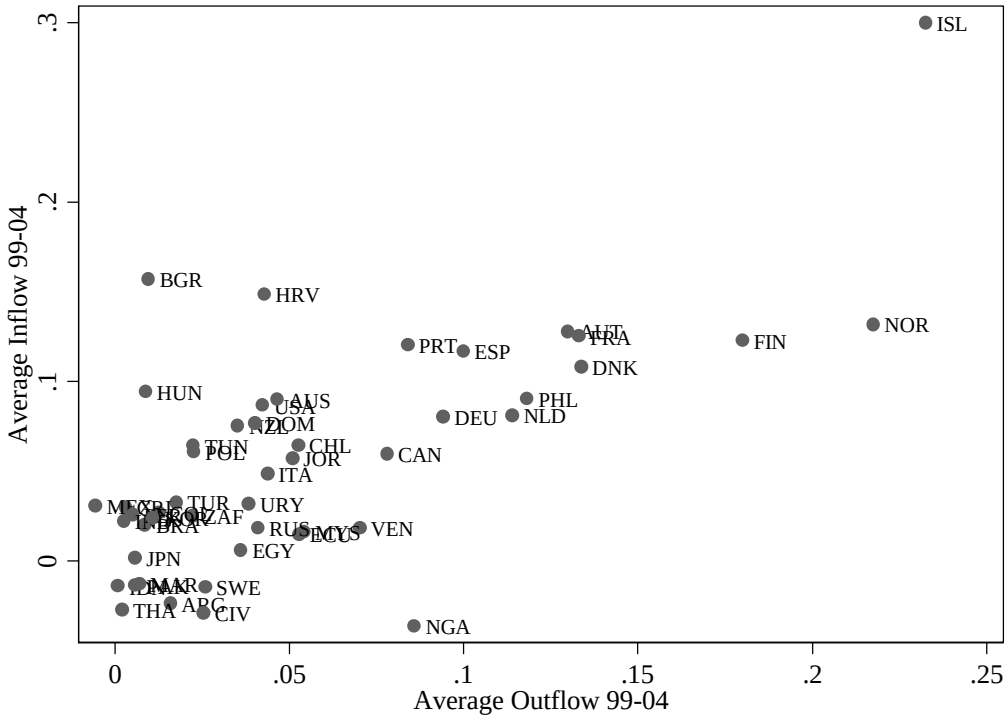
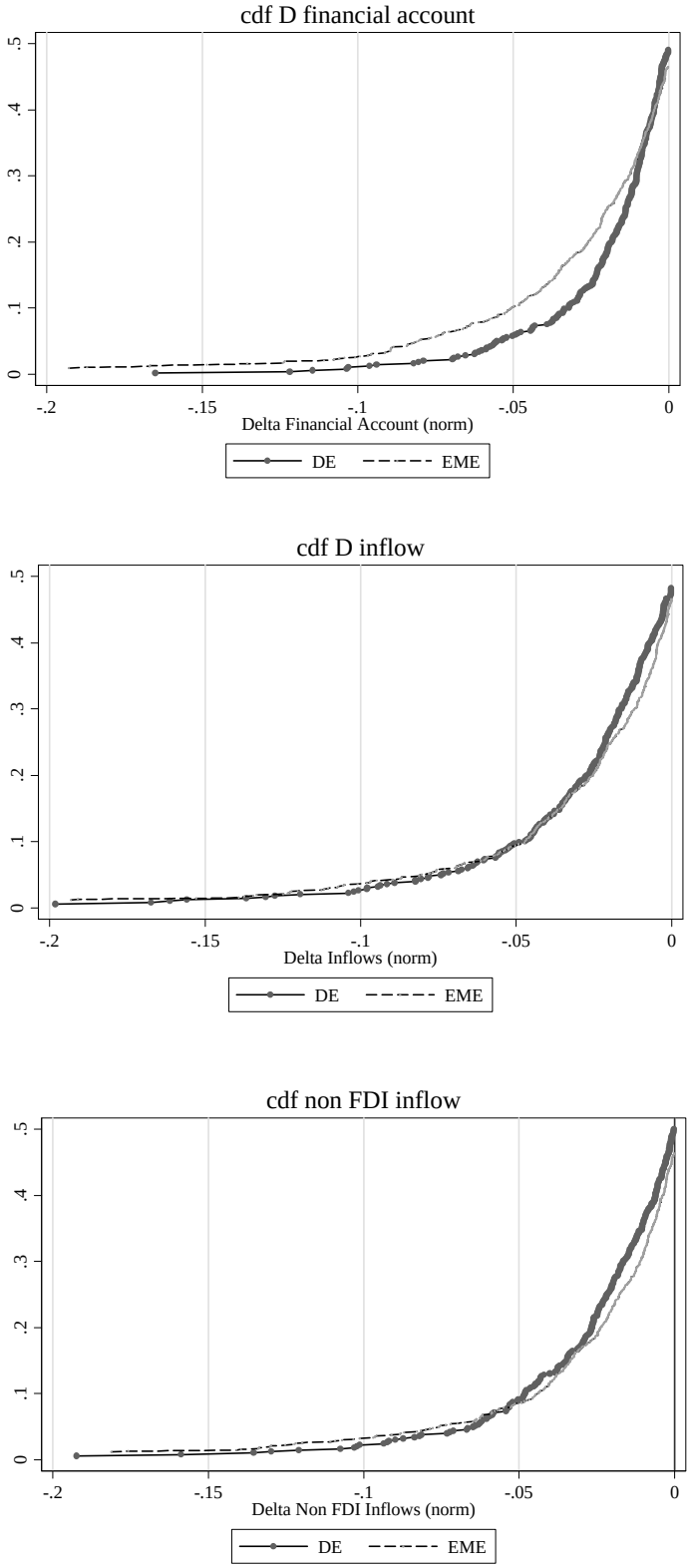


Figure 9

Cumulative Distributions: Financial Account, Gross Inflows and Non FDI Inflows



Appendix A: List of Countries

	Country		
1	Algeria	28	Jordan
2	Argentina	29	Korea
3	Australia	30	Malaysia
4	Austria	31	Mexico
5	Belgium	32	Morocco
6	Brazil	33	Netherlands
7	Bulgaria	34	NewZealand
8	Canada	35	Nigeria
9	Chile	36	Norway
10	Colombia	37	Pakistan
11	CostaRica	38	Peru
12	Coted'Ivoire	39	Philippines
13	Croatia	40	Poland
14	Denmark	41	Portugal
15	DominicanRepublic	42	Russia
16	Ecuador	43	SouthAfrica
17	Egypt	44	Spain
18	Finland	45	Sweden
19	France	46	Switzerland
20	Germany	47	Thailand
21	Hungary	48	Tunisia
22	Iceland	49	Turkey
23	India	50	UnitedKingdom
24	Indonesia	51	UnitedStates
25	Ireland	52	Uruguay
26	Italy	53	Venezuela,RB
27	Japan		

Appendix B: Alternative Scaling for Financial Account

Panel A: Correlations

	Change in Financial Account Scaled by:			
	Trend GDP	Current GDP	Lagged GDP	3 year MA of GDP
Trend GDP	1			
Current GDP	0.9414	1		
Lagged GDP	0.9079	0.9217	1	
3 year MA of GDP	0.9590	0.9414	0.9473	1

Panel A: Summary Statistics

	Change in Financial Account Scaled by:			
	Trend GDP	Current GDP	Lagged GDP	3 year MA of GDP
Mean	0.000	-0.001	-0.001	-0.002
St. Dev	0.044	0.046	0.050	0.048
Min	-0.336	-0.367	-0.449	-0.282
Max	0.345	0.463	0.461	0.367