Capital Flow Waves:
Surges, Stops, Flight and Retrenchment

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Abstract: This paper attempts to better understand international waves in capital flows. We build on the literatures on "sudden stops" and "bonanzas" to develop a new methodology for identifying episodes of extreme movements in capital flows using quarterly data on gross inflows and gross outflows, disaggregated by the type of investor (foreign vs. domestic) and by the type of flow (banking, direct investment, equity and debt). We identify episodes of "surge", "stop", "flight" and "retrenchment" and show how our approach yields fundamentally different results on the identification of these episodes than in the previous literature that used more aggregate measures of net flows. Causes of these episodes include global factors (especially global risk and global growth), contagion, and domestic macroeconomic characteristics (especially related to the domestic financial system). We find little role for global interest rates, global liquidity and domestic growth. The results have important implications for discerning between different theoretical approaches aimed at explaining crises and surges in capital flows.

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1. Introduction

The past decade has witnessed an impressive range of capital flow cycles. International capital flows dried up in late 2001, surged throughout the mid-2000s, contracted sharply during the "Great Recession" of 2008-2009, and rebounded quickly in 2010. For many countries these waves of capital—which can amplify economic cycles, increase financial system vulnerabilities, and aggravate overall macroeconomic instability—were just a continuation of experiences in the 1980s and 1990s. Some countries experienced less volatility in capital flows, however, and have even benefited from sudden capital inflows that helped stabilize their economies. For example, during the Great Recession as global liquidity contracted, several countries received net capital inflows driven by a "retrenchment" of domestic investors as they liquidated foreign investments.

Not surprisingly, over the decades these extreme waves in capital flows have generated an extensive academic literature. One series of papers examines "sudden stops" (when foreign capital inflows suddenly reverse). Another series focuses on "surges" or "bonanzas" (when foreign capital inflows increase rapidly) and yet another set focuses on the issue of capital "flight" (when domestic investors send large amounts of capital abroad).[1] The goal of this paper is to better understand what causes these waves of capital flows, i.e., what causes the flow and ebb of capital globally, within regions, and to and from individual countries. A common theme in the previous literature is a focus on a particular type of capital flow episode, be it stops, surges, or flight. In contrast, this paper is the first to simultaneously consider all of these types of episodes, as well as periods of "retrenchment" as seen during the Great Recession, by viewing them as part of global cycles in capital flows rather than studying each type of episode in isolation.

In addition to this broader focus, our approach is fundamentally different from the existing literature. Almost all previous work in the literature on capital flow episodes relied on proxies for *net* capital flows that cannot differentiate between changes in foreign and domestic behavior. In contrast, our analysis focuses on *gross* capital flows, differentiating between capital movements initiated by foreigners and those initiated by domestic investors.[2] This differentiation is important because foreign

[1] For examples of the literature on sudden stops, see Calvo (1998) and Calvo, Izquierdo and Meijía (2004, 2008). This literature is also closely linked to the series of papers on current account reversals, such as Adalet and Eichengreen (2007), Edwards (2005), and Freund and Warnock (2007). For examples of the literature on bonanzas/surges, see Reinhart and Reinhart (2009), Caballero (2010) and Cardarelli, Elekdag, and Kose (2009). This literature is also related to the series of papers on credit booms, such as Gourinchas, Valdés, and Landerretche (2001) and Mendoza and Torrones (2008). On capital flight, see Rothenberg and Warnock (2010), Dooley (1988), Khan and UlHaque (1985) and Lessard and Williamson (1987).

[2] Two other papers in progress also look at trends in gross capital flows and their relationship to crises. Milesi-Ferretti and Tille (2010) carefully document trends in gross capital flows during the recent crisis and highlight the role of banking flows.

and domestic investors can be motivated by different factors, focus on different types of capital flows, and respond differently to various policies and shocks. Moreover, policymakers might want to react differently based on whether episodes are instigated by domestic or foreign sources. Finally, the sheer size and volatility of gross flows relative to net flows (a point made in Broner et al., 2010) is yet another reason to study gross flows. Focusing on net flows might have been acceptable in the past, but nowadays one cannot fully understand the dynamics of global capital flows without a careful consideration of gross capital flow movements.

To identify capital flow episodes we utilize quarterly data on gross inflows and gross outflows for a broad sample of emerging and developed economies, disaggregated by the type of investor (foreign vs. domestic) and by the type of flow (banking, direct investment, equity and debt). We identify prolonged episodes of extreme gross capital flows, when domestic or foreign investors substantially increase or decrease capital flows into or out of a country. We call these "surge", "stop", "flight" and "retrenchment" episodes (all of which are defined in more detail below). We document the incidence of each type of episode over time, as well as the incidence by income level (high, middle, or low) and by region. We also show how this approach yields fundamentally different results on the incidence and drivers of sudden stops and surges than the previous literature that used proxies for net flows.

After identifying episodes of extreme capital movements, the paper shifts to its main goal: understanding what causes the episodes. We briefly review the theoretical literature, which describes capital flow episodes as largely being driven either by global factors, contagion, or domestic factors. This literature review yields strong predictions; different classes of models predict different patterns of domestic and foreign capital flows during periods of booms and crises. We evaluate which of these theories appears most relevant in explaining the patterns of capital flows since 1980, beginning with a descriptive analysis and then moving to more formal regressions.

The descriptive analysis of the role of global, contagion, and domestic factors shows clear global effects in explaining waves in capital flows. Moreover, there is some evidence the global effects increased over time, especially during the Great Recession. The recent crisis saw an unprecedented incidence of sudden stops and retrenchment, as investors around the world liquidated foreign investment positions and brought the money home. When we break down capital flows into the four major

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Broner, Didier, Erce and Schmukler (2010) analyze how gross capital flows by domestic and foreign investors have related to business cycles and crises over time. Both papers discuss the retrenchment in gross capital flows during the recent crisis.

components—banking, equity, debt and direct investment—we find that the global retrenchment during the Great Recession is largely driven by a retrenchment in banking flows, but also evident in equities.

In more formal tests for the role of global, contagion, and domestic factors in explaining episodes of extreme capital flow movements, we use a complementary logarithmic regression framework that incorporates the fact that the incidence of episodes is skewed. That analysis suggests that all types of episodes have some global, contagion, and domestic components. Surges and flight occur when global conditions are calm, while stops and retrenchments occur during periods of elevated volatility. Analyses by income level indicate that middle and low income countries are generally affected by changes in the global environment to the same degree as high income countries, except low income countries are less likely to experience retrenchment during periods of high global volatility. Lower income countries are also more likely to experience contagion during periods of sudden stops.

Finally, we break down the global, contagion and domestic factors into more specific components to better understand exactly how each of those factors affects the probability of surges, stops, flight and retrenchment. Changes in global risk appear to be the most important factor consistently explaining all types of episodes. Global growth is also important in predicting capital movements by foreigners (surge and stop episodes). Contagion—in some form—is highly significant in predicting the probability of all episodes. Financial system size or soundness (although usually not both) is often significant in predicting surges, stops and flight, although has mixed significance in predicting retrenchment episodes. Global liquidity, global interest rates (measured as U.S. rates or an average of major economies), financial market integration, and domestic GDP growth are usually not significant in predicting the probability of capital flow episodes.

The analysis in this paper provides insights for theory, empirical research, and policy. A more complete understanding of what causes waves of global capital flows is necessary to assess of the relevance of different theoretical approaches in explaining stops, capital flow volatility, and crises more generally. Much of this theoretical literature has emphasized the role of domestic vulnerabilities such as unsustainable current account deficits or financial system vulnerabilities. Other papers have emphasized the role of contagion (through channels such as trade of finance) or of global factors (such as changes in global interest rates, demand, risk aversion, or private information).[3] A more recent series of theoretical

[3] For summaries of the extensive literature on contagion, see Claessens, Dornbusch and Park (2001) and Claessens and Forbes (2001). See Calvo, Leiderman and Reinhart (1996) for a summary of the discussion on the role of global factors (such as cyclical movements in interest rates and demand in large economies) versus domestic factors in driving capital flows to emerging markets.

models has attempted to explain the Great Recession by focusing on global shocks—whether changes in risk (Bacchetta and van Wincoop, 2010 and Gourio, Siemer, and Verdelhan, 2010), wealth (Dedola and Lombardo, 2010 and Devereux and Yetman, 2010) or liquidity/credit (Calvo, 2009, Giannetti, 2007, Kalemli-Ozcan, Papaioannou, and Perri, 2010)—with little or no role for domestic factors.

Our analysis helps ascertain the relative importance of these different factors in causing waves in capital flows, and therefore sheds light on the relevance of the different theoretical models. For example, our finding that the primary global factor driving capital flow episodes is changes in global risk supports the focus of much of the recent theoretical literature that changes in global risk is a key cause of crises. This does not support, however, the widespread presumption that changes in interest rates or liquidity in a major economy, such as the United States, is the most important factor driving surges in capital flows. The results also find a significant role for contagion in explaining the coincidence of episodes, although additional analysis needs to be done to better understand the causes of this contagion. The results finding a role for a country's financial system—whether its size or soundness—supports a recent focus of the theoretical literature on global imbalances which has focused on the role of financial development in driving capital flows. Finally, the results find little role for a country's GDP growth in determining episodes. This does not support theoretical work focusing on domestic productivity shocks as key determinants of capital flows, such as the real business cycle literature.

The analysis in this paper also informs empirical research as our more disaggregated focus on gross flows by type of investor allows us to investigate a finer delineation of different types of episodes of extreme capital flows, a delineation that is necessary to understand what causes these episodes. Analysis based on net capital flows that comingled gross inflows and gross outflows generally focused on periods of "surges" or "stops" in capital flows and assumed that each of these types of episodes was driven by sudden changes in capital inflows from abroad. By differentiating gross inflows from gross outflows, our analysis shows that many episodes previously identified as "surges" of foreign investment are actually driven by a retrenchment of domestic citizens. Similarly, the earlier methodology missed many periods of sudden stops in foreign capital inflows when these stops occurred simultaneously with an increase in global risk aversion and domestic retrenchment. More generally, previous empirical research on international capital flows that only focused on shorter time periods or specific episodes,

more narrowly defined, were unable to capture the complete dynamics of the causes of these capital flow cycles.[4]

Finally, our results on the relative importance of global, contagion, and domestic effects in causing extreme movements in capital flows has important implications for economic policy. Capital flow volatility can have substantial economic costs, especially in emerging economies with less developed financial systems. For example, surges are correlated with real estate booms, banking crises, debt defaults, inflation and currency crises (Aizenman and Jinjarak, 2009, Caballero, 2010 and Reinhart and Reinhart, 2009) and sudden stops are correlated with currency depreciations, slower growth, and higher interest rates (see Edwards, 2005, and Freund and Warnock, 2007). For policymakers hoping to reduce these vulnerabilities and prevent negative outcomes, a clear identification of episodes and an understanding of their causes is vital. How capital flows respond during crises can also be important determinants of how countries manage and recover—as seen during the Great Recession when capital flight in some countries aggravated the crisis while a domestic retrenchment in other countries provided some stability. Our results suggest that certain the size and strength of the financial system may be important characteristics of the domestic economy which determine a country's probability of experiencing an episode of extreme capital movements. It finds little support that capital controls can effectively insulate an economy against these capital flow cycles. In fact, there is some evidence that countries that are more (instead of less) financially integrated are less likely to experience a sudden stop in capital inflows. Finally, the results indicating a significant role for global and contagion factors in driving these episodes—even after controlling for domestic fundamentals—suggest an important role for global institutions and cross-country cooperation for policymakers hoping to reducing the sharp volatility of global capital flows.

The remainder of the paper is as follows. Section 2 discusses how previous work defined episodes of sudden capital flow movements, and then develops our new methodology based on gross capital flows and compares the two approaches. Section 3 summarizes the theoretical literature attempting to explain different types of episodes, and then analyzes the data and performs a series of empirical tests to differentiate between these theories. This section includes a descriptive analysis, a regression analysis of the relative importance of global, contagion, and domestic effects, and then a

[4] For example, Chuhan, Claessens, and Mamingi (1998) studies "push/pull" effects during the short period between 1988 and 1992. Edison and Warnock (2008) used a slightly longer sample (1989 – 1999), but focused on one type of event (liberalizations).

more detailed regression analysis disaggregating these effects. Section 4 extends the analysis to different types of capital flows. Section 5 concludes.

2. Measuring Abnormal Capital Flows Episodes

This section summarizes the measures of abnormal capital flows episodes traditionally used in the literature. It places our new measure in the context of previous work on sudden stops and bonanzas and presents several examples of the additional insights possible by using data on gross instead of net flows.

2.1 Earlier Measures Using Proxies for Net Inflows: Sudden Stops and Capital Flows Bonanzas

The measure of abnormal capital flows that is most well-known in the literature is of "sudden stops" as initially developed in Calvo (1998) and then further developed by Calvo and various coauthors. As a typical example of this approach, we show how Calvo et al. (2004) calculate this measure. First, construct a proxy for monthly net private capital inflows, P_t, by subtracting monthly changes in international reserves from the quarterly current account balance. Then define C_t to be a 12-month moving sum of lagged values and compute annual year-over-year changes in C_t:

$$C_t = \sum_{i=1}^{12} P_{t-i} \qquad t = 1, 2, \ldots, N \ . \tag{1}$$

$$\Delta C_t = C_t - C_{t-12} \qquad t = 1, 2, \ldots, N \ . \tag{2}$$

In the sudden stops literature, episodes are generally defined as periods when there are marked slowdowns in net capital inflows.[5] Anyone working in this literature must make at least two ad hoc decisions to operationalize "marked slowdown". First, a slowdown relative to what? Second, how sharp must the slowdown be? For "relative to what", Calvo et al. (2004) compare the current ΔC_t (the amount of net private inflows in the last 12 months compared to the amount in the preceding 12 months) to its historical mean, with the mean computed by using all available historical data up to month t (and

[5] Recent papers have also expanded on this definition of sudden stops. For example, Calvo, Izquierdo and Mejía (2008) define "systemic sudden stops" as sudden stops using the traditional definition that occur in conjunction with a sharp rise in aggregate interest rate spreads to capture a global component of the shock.

requiring at least 24 months of ΔC_t to start).[6] For "marked slowdown", Calvo et al. (2004) mark the beginning of an episode at the month *t* when ΔC_t falls one standard deviation below its rolling historical mean, providing that at some point within the episode ΔC_t falls at least two standard deviations below its mean. The episode ends once ΔC_t again exceeds one standard deviation below its mean.

Figure 1 depicts how the standard sudden stop indicator is constructed for one country, Argentina. The solid line plots ΔC_t, with one and two standard deviations below the mean depicted by the upper and lower dashed lines, and sudden stop episodes depicted by the shaded bars. Argentina experienced a sudden stop in 1995. Net capital inflows decreased, the episode began when net inflows fell one standard deviation below the historical mean (provided they eventually fell below the two standard deviation line, which they did), and the episode ended late in the year when net inflows rose above the one standard deviation line. Note that the criteria require net inflows to slow, but a reversal is not necessary.

In addition to the papers analyzing when net capital flows suddenly stop, another series of papers examine episodes when net capital flows "surge". Reinhart and Reinhart (2009) call these periods "bonanzas" and, using a proxy for net capital inflows (built from annual data), define episodes in a way similar to the stops literature albeit with two important differences. First, they omit the adjustment for reserves accumulation in their baseline measure, so theirs is a proxy for total net inflows, rather than private inflows. Second, rather than a standard-deviation-from-mean cutoff, they label as bonanzas all annual flows that are in the upper 20th percentile.[7]

Rothenberg and Warnock (2010) builds on the stops literature by pointing out that measures constructed from proxies for net inflows are not able to differentiate between sharp changes in net inflows that are due to the actions of foreigners and those that are due to the actions of locals. The main point of Rothenberg and Warnock (2010) is simple: while some traditionally defined sudden stop episodes were driven mainly by foreigners (as is typically presumed in the literature), many others were driven by locals fleeing the domestic market (which has largely been ignored). Rothenberg and Warnock (2010) use the standard approach to define sudden stops, and then break these down into "true sudden

[6] Other papers use a rolling window rather than all historical data to define the trend, or use some type of filtering technique.
[7] More recent papers that also examine bonanzas are Aizenman and Jinjarak (2009) and Caballero (2010). Also related to this work on bonanzas is a series of papers that focus on domestic credit booms and credit cycles, such as Gourinchas, Valdés and Landerretche (2001) and Mendoza and Torrones (2008). These papers tend to take a slightly different approach and define episodes as increases in credit relative to a trend constructed using an HP filter.

stops" (when gross capital inflows decrease more than gross capital outflows increase) and "sudden flight" (when gross capital outflows increase more than gross capital inflows decrease). In this paper we go a number of steps further. We use gross flows from the outset, rather than relying on net flows proxies to identify episodes. We also focus on waves of inflows and outflows, not just periods of reduced net inflows. By using data on gross capital flows, instead of proxies for net capital inflows, the analysis in this paper will be able to capture distinctions in the behavior of domestic and foreign investors in order to provide a more nuanced view of abnormal capital flows episodes.

2.2 Our Measures Using Gross Flows: Surges, Stops, Flight and Retrenchment

We use quarterly gross flows data in a sample of 58 countries over the period from 1980 through 2009 to identify four types of episodes:[8]

- "Surges": a sharp increase in capital inflows by foreigners;
- "Stops": a sharp increase in capital outflows by foreigners;
- "Flight": a sharp increase in capital outflows by domestic residents; and
- "Retrenchment": a sharp increase in capital inflows by domestic residents.[9]

To identify these four types of episodes, we follow the traditional approach used to measure sudden stops as developed in Calvo (1998, 2004), but with three important differences. First, we utilize capital flows data, rather than current-account-based proxies for flows. Second, we utilize data on gross flows instead of net flows.[10] Third, we examine all types of episodes, including both sudden increases and decreases in capital flows by domestic as well as foreign residents.

We calculate year-over-year changes in four-quarter gross capital flows by domestic and foreign investors and define episodes by three criteria: (1) current year-over-year changes in four-quarter gross capital flows by the relevant group of investors is more than two standard deviations above or below the historical average during at least one quarter of the episode; (2) the episode is defined as lasting for all consecutive quarters for which the year-over-year change in annual gross capital flows by the relevant

[8] We start with as broad a sample as possible and only exclude countries that do not have detailed quarterly gross flows data.
[9] Recall that in BOP accounting terms an outflow is a negative value. Milesi-Ferretti and Tille (2010) also use the term retrenchment to capture the sharp increase in foreign investments brought home during the recent crisis.
[10] Note that gross capital inflows are net purchases of domestic assets by foreign investors and gross outflows are net purchase of foreign assets by domestic investors.

set of investors is more than one standard deviation above or below the historical average; and (3) the length of the episode is greater than one quarter.[11]

To provide a more concrete example of our methodology, consider the calculation of surge and stop episodes. Let C_t be a 4-quarter moving sum of gross capital inflows from foreigners (GINFOR), and compute annual year-over-year changes in C_t:

$$C_t = \sum_{i=0}^{3} GINFOR_{t-i} \ , \qquad \text{with} \quad t = 1, 2, \ldots, N \ . \tag{3}$$

$$\Delta C_t = C_t - C_{t-4} \ , \qquad \text{with } t = 1, 2, \ldots, N \ . \tag{4}$$

Next, compute rolling means and standard deviations of ΔC_t over the last 5 years. A "surge" episode is defined as starting the first month t that ΔC_t increases more than one standard deviation above its (rolling) mean. The episode ends once ΔC_t falls below one standard deviation above its mean. In addition, in order for the entire period to qualify as a surge episode, there must be at least one quarter t when ΔC_t increases at least two standard deviations above its mean.

A stop episode, defined using a symmetric approach, is a period when gross inflows from foreigners fall one standard deviation below its mean, providing it reaches two standard deviations below at some point. The episode ends when gross inflows from foreigners are no longer at least one standard deviation below its mean.

Episodes of flight and retrenchment are defined similarly, but using gross private outflows rather than gross inflows, and taking into account that in BOP accounting terms outflows by domestic residents are reported with a negative value. In other words, when domestic investors are acquiring foreign securities, gross flows by domestic investors are negative. A sudden flight episode therefore occurs when gross outflows (in BOP accounting terms) fall one standard deviation below its mean, providing it reaches two standard deviations at some point, and end when gross outflows come back above one standard deviation below the mean. Finally, a sudden retrenchment episode occurs when gross outflows increase one standard deviation above its mean, providing it reaches two standard deviations above at some point, and end when gross outflows come back below one standard deviation above the mean.

[11] We sum capital flows over four quarters in order to avoid seasonal fluctuations. The historical average is calculated over the last five years (20 quarters) and we require that countries have at least 4 years worth of data to calculate a "historic" average.

To calculate these episodes, our primary source is data from the International Monetary Fund's International Financial Statistics (accessed through Haver Analytics on 11/15/10) on quarterly gross capital inflows and outflows (expressed in billions of U.S. dollars). We include all countries for which quarterly data for the balance of payments flow data is available for at least ten years. Data end in Q42009. For missing countries and observations, we augment this data with information from the country authorities. The resulting sample consists of 58 countries listed in Appendix Table 1 with the corresponding dates for which quarterly capital flow data is available.[12] As noted in the table, some countries do not provide data until later in the sample period. More specifically, 32 countries provide data in 1980, 39 countries in 1990, 53 countries in 1995 and the full sample of 58 countries by 2000. In our baseline measure, we define gross capital inflows as the sum of inflows of direct investment, portfolio inflows and other inflows; gross private capital outflows are defined analogously as the sum of direct investment outflows, portfolio outflows, and other outflows, with reserve accumulation omitted. We conduct a series of sensitivity tests using alternative measures as well, but will initially focus on these inclusive measures of gross capital outflows and gross private capital inflows.[13] In 2007, our sample includes $10,886 billion of gross capital inflows, capturing about 97% of global capital inflows recorded by the IMF.[14]

Using this data and methodology, Figure 2 shows an example of how surges and stops are defined for Brazil from 1990 through the end of 2009. The solid black line is the change in annual capital inflows as defined in equation (4). The dashed red lines are the bands for mean capital inflows plus or minus one standard deviation, and the dotted green lines are the comparable two-standard-deviation bands. An episode is classified as a sudden stop if annual capital flows falls below the lowest line (the two standard deviation line) for at least one quarter, with the episode starting when it initially crosses the one-standard deviation line and ending when it again crosses back over the same line. Similarly, an episode is classified as a sudden surge if annual capital flows rise above the highest line

[12] China is not in our sample, as it only recently began to publish quarterly capital flow data. Appendix Table 1 also lists countries with some gaps in IFS capital flows data. For now, we assume no episodes occur during a data gap. We will revisit these gaps (and that assumption) in a future draft.

[13] There are a number of reasonable alternative measures of gross flows. For example, one might want to exclude the impact of transactions by the monetary authorities from the 3rd quarter of 2008 through the end of the sample that are associated with the currency swap arrangements by the Federal Reserve Board. Doing so has a minimal effect on the definitions of episodes. Alternatively, one might want to include changes in reserves in the measure of capital outflows, making the measure of total outflows rather than private outflows. Doing so affects the definitions of flight and retrenchment episodes for a number of countries; we explore the impact of these changes in the empirical analysis.

[14] Estimates based on worldwide financial account liabilities (inflows) of $11,249 bn in 2007 as reported in IMF, BOP (CD-ROM for 01/10).

(the two standard deviation line), with the episode starting when it initially crosses the one-standard deviation line and ending when it again crosses back over the same line.

According to the criteria, four periods qualify as sudden stops: from 1993Q1 to 1993Q3 (a period of hyperinflation in Brazil), from 1995Q1 to 1995Q2 (the Mexican peso crisis), from 1999Q1 to 1999Q2 (the Brazilian devaluation) and from 2008Q2 to 2009Q3 (the most recent global crisis). Four other periods qualify as sudden surges: from 1990Q2 to 1991Q1 (after Brazil elected a new president, Fernando Collor de Mello, in its first democratic election in decades and had high hopes that inflation would be defeated), from 1994Q1 to 1994Q3 (just before the Mexican peso crisis), from 1995Q4 to 1996Q2 (a period of strong capital flows to many emerging markets before the Asian crisis), and from 2006Q3 to 2007Q4 (just before the recent crisis). The episodes highlight that stops might be caused by a mix of domestic, regional, and global shocks, while surges might be driven by domestic or global factors and can precede crises.

2.3 The Episodes: Surges, Stops, Flight and Retrenchment

Using the quarterly gross flows data and the definitions discussed above, we construct episodes of surges, stops, flight, and retrenchment. Appendix Table 2 lists results for the episode definitions for each country in the sample from 1980 through 2009. There are 167 episodes of surges, 221 of stops, 194 of flight and 215 of retrenchment. Table 1 aggregates these results and reports summary statistics on the incidence of episodes for the full sample and on the average length of each episode for the full sample and by income group and region.[15] On average, given how we identify episodes (specifically, by using a two standard-deviation cutoff), a country's gross flows will be in an episode about one-third of the time with half being on the high side (surges for inflows; retrenchment, in BOP terms, for outflows) and half on the low side (stops and flight); the table shows that stops and retrenchment are slightly more prevalent than surges and flight. For the full sample, the average length of each type of episode is roughly one year, with surges lasting the longest with an average length of 4.5 quarters and retrenchments the shortest with an average length of 3.8 quarters. The breakdowns by income group also

[15] We use income classifications in the year 2000 based on GNI per capita as reported by the World Bank, with "lower income" referring to countries classified as "Low income" and "Middle/lower income", "Middle income" referring to countries classified as "Middle/higher income", and "Higher income" referring to countries classified as "High income". We combine lower income and middle/lower income into the group "lower income" because there are only four countries in our sample that qualify as lower income based on the original World Bank classification. We focus on six regions: North America, Western Europe, Asia, Eastern Europe, Latin America and Other. The "Other" region is South Africa and Israel.

indicate that lower income countries experienced shorter episodes than the high and middle income groups over the full sample period, even for episodes such as sudden stops and flight.

2.4. A Comparison of Measures based on Gross and Net Flows

The periods of surges, stops, flight and retrenchment discussed above are defined using information on gross capital flows by domestic and foreign investors. The episodes identified using gross flows are substantially different from those in previous work (discussed in Section 2.1) that used proxies for net capital flows and did not differentiate between the behavior of domestic and foreign investors. That the two techniques yield different episodes is not surprising given that the aggregated net flows proxies comingles different types of flows.

To better understand these differences in methodology, we examine episodes during the height of the Great Recession—the two quarters from 2008 Q4 to 2009 Q1. Table 2 lists the countries defined as having a surge or stop episode using net capital flows (similar to the measure used in previous work) and gross flows (as used in this paper). For each column we use the methodology discussed in Section 2.2, except the net flows measures of surges and stops are defined as periods when net capital flows are above or below the threshold, respectively, while the episodes defined using gross flows are periods when gross inflows are above or below the threshold. Intuitively, the main difference is that the surge and stop episodes based on the gross data only incorporate changes in capital flows by foreign investors, while the net data also include changes in capital flows by domestic investors.

Net flows data for this example of the Great Recession identify many more surge episodes and many fewer stop episodes than identified using gross flows data. The left columns of Table 2 show that measures based on net flows data identify eleven surges from 2008 Q4 to 2009 Q1, while gross flows data identify only one surge (Bolivia). For stops, net flows identify about half as many episodes as gross flows (22 stop episodes based on net flows versus 48 based on gross flows). The reason for the wide disparity in episode definitions is that the net flow data comingle domestic residents' flows with foreigners. During the Great Recession, many countries' domestic investors retrenched from foreign markets, bringing money home. Indeed, each of the ten countries defined as having a surge episode based on the net flow data—but not using the gross data—had a retrenchment episode. The sudden inflow of capital as domestic investors sold their foreign holdings and brought the money back home is classified as "retrenchment" in our definitions based on gross flows, but if the retrenchment effect outweighs actions by foreign investors, it can show up as a "surge" using the older net flows

methodology. Similarly, most of the countries identified as having a stop episode based on the gross data, but not the net data, also had a large retrenchment in capital flows. Foreigners did pull back from these countries—gross inflows slowed—but the retrenchment by domestic investors counteracted the sudden stop of investment. Even though the foreign capital inflows suddenly stopped, retrenchment meant that net capital flows did not fall enough to qualify as a "sudden stop" episode based on the older methodology.

To clarify these differences, Figure 3 shows gross and net capital flows for Chile, a country identified as having a surge episode based on net capital flows (but not gross flows) during the Great Recession and also defined as having a sudden stop based on gross (but not net) capital flows. The figure shows that during the Great Recession, gross capital inflows suddenly dropped to almost zero, while gross capital outflows moved from large to almost zero, reflecting a sudden retrenchment as domestic investors brought money home (or ceased to send money abroad). The retrenchment by domestic investors outweighed the stop in capital inflows by foreign investors. Episodes identified using net capital flow data would describe this as a "surge", while gross capital flow data would instead define this period as a "stop" in foreign capital inflows combined with a "retrenchment" by domestic investors.

3. What Explains the Episodes?

The previous section identified a series of surge, stop, flight and retrenchment episodes in our sample of 58 countries since 1980. What causes these episodes? Are global, contagion, or domestic characteristics more important in determining the occurrence of waves in capital flows? How do these factors differ for episodes of surges, stops, flight and retrenchment and in countries of different income levels? This section briefly discusses the theoretical literature providing different explanations for extreme movements in capital flows. Then it provides a descriptive analysis of the relevant trends and patterns in the data. The end of the section performs more formal regression analysis, using a logistic model to test for the various roles of global, regional and domestic factors in causing each type of episode and then disaggregating these factors into underlying components.

3.1 The Theory

This analysis builds on a number of different literatures, including work on the cross-country allocation of investment, on contagion through capital flows, on capital flow cycles, and on the causes of

specific episodes such as lending booms, sudden stops, and financial crises.[16] Each of these literatures is extensive. A major theme that runs through each is whether the forces driving capital flows are "'push" factors that are external to the country (including global or contagion effects) or domestic "pull" factors.

Much of the recent literature on the Great Recession has focused on "push" factors driving capital flows, and especially on the role of four (related) global factors: risk, liquidity, interest rates, and growth. First, several papers develop theoretical models highlighting the role of changes in global risk or risk appetite, usually caused by a technology shock or a change in the probability of a disaster.[17] Second, several papers focus on how an initial change in global liquidity can be amplified due to bank-run type models and/or to rapid changes in global leverage, either of which can cause sudden shifts in capital flows.[18] Third, an older series of papers, such as Calvo, Leiderman and Reinhart (1993, 1996), and Fernandez-Arias (1996), focuses directly on the role of global interest rates in affecting capital flows through portfolio channels or through default probabilities. A final focus of several papers, whether embedded in the models mentioned above or modeled directly, such as in Albuquerque, Loayza and Serven (2005), highlights the role of changes in global growth, often caused by global productivity shocks, in driving capital flows. All of these models focus on the role of global factors and include little or no role for domestic factors in causing crises or sudden changes in capital flows, an approach which has recently been popular due to the finding in papers such as Rose and Spiegel (2009) that individual country exposure to U.S. assets and trade was insignificant in determining how each country was affected by the crisis in 2008.

In addition to these global factors, contagion effects are another set of "push" factors outside a country's control that could influence a country's capital flows. These are generally defined as factors resulting from circumstances in another country or group of countries (but not the entire world). The literature on contagion has identified a wide variety of reasons why events in one country can spread to other countries; summaries of these models and explanations for contagion are captured in Claessens, Dornbusch and Park (2001) and Claessens and Forbes (2001). The various transmission mechanisms can be broadly broken into three categories: contagion through trade channels (which include direct trade,

[16] [16] For examples of analyses of the cross-country allocation of investment, see Burger, Warnock and Warnock (2010), Forbes (2010), Leuz, Lins and Warnock (2009), Lane and Milesi-Ferretti (2008), Lane (2006), Aggarwal, Klapper and Wysocki (2005), Bertaut and Kole (2004) Edison and Warnock (2004), and Faruqee, Li and Yan (2004).
[17] See Gourio, Siemer and Verdelhan (2010), Bacchetta and Van Wincoop (2010), Dedola and Lombardo (2010), Devereux and Yetman (2010), and Blanchard, Das and Faruqee (2010).
[18] See Devereux and Yetman (2010), Calvo (2009), Giannetti (2007), Kalemli-Ozcan, Papaioannou, and Perri (2010), and Brunnermeier (2009).

competition in third markets, and changes in import prices), contagion through financial channels (including through bank lending or portfolio flows), and contagion due to "country similarities" (such as a shared regional location or similar macroeconomic characteristics).[19] A number of papers assess the relative importance of each of these mechanisms in explaining why a crisis spreads from one country to another, such as Blanchard, Das, and Faruquee (2010), Forbes (2004), and Van Rijckgehem and Weder (2001), with different papers highlighting the role of different transmission channels.

In contrast to the papers that focus on "push" factors through contagion or global effects in driving capital flows, another literature emphasizes the importance of "pull" factors. These pull factors can include a range of different domestic fundamentals, five of which have received either greater focus in the theoretical literature or stronger empirical support. First, the theoretical literature has recently highlighted the size and depth of a country's financial system in either attracting capital flows from abroad (for developed financial markets) or driving capital flows out of the country (for less developed financial markets).[20] Second, and closely related, countries that have more fragile financial systems, such as higher leverage or weaker lending standards, are more vulnerable to large movements in capital flows (see Dekle and Kletzer, 2001, and Mendoza and Terrones, 2008). Third, the extent of financial market liberalization and integration with global financial markets is an important factor determining capital flow movements.[21] Fourth, the country's fiscal position and overall risk of a debt crisis can be important in attracting capital flows as well as causing sudden stops in capital flows. Finally, business cycle models highlight how technological or terms-of-trade shock affect growth and in turn generate lending booms and busts and corresponding shifts in capital flows (as in Aguair and Gopinath, 2007 for a theoretical model and Broner et al., 2010 for an empirical assessment).

A number of papers have also tried to tie together these various literatures by simultaneously analyzing the role of various push and pull factors during certain periods or to explain certain types of capital flow episodes. For example, Calvo, Leiderman and Reinhart (1996) focus on the surge in capital inflows into emerging markets in the early 1990's and argue that although this was initially attributed to

[19] For papers that focus on contagion through trade, see Glick and Rose (1999) and Forbes (2002), and Abeysinghe and Forbes (2005). For papers that focus on the role of financial linkages, see Peek and Rosengreen (1997) Kaminsky, Lyons and Schmukler (2001), and Broner, Gelos and Reinhart (2006).

[20] For theoretical models of this effect, see Bacchetta and Benhima (2010), Ju and Wei (2011), Caballero et al. (2008), and Mendoza, Quadrini, and Rios-Rull (2009). For empirical support, see Forbes (2010).

[21] See Milesi-Ferretti and Tille (2010), Calvo, Izquierdo, and Mejía (2008), and Aghion, Bacchetta and Banerjee (2004). Some of this literature argues that this relationship is nonlinear; as countries become more integrated with global financial markets, capital flow volatility will initially increase and then decrease.

domestic developments (such as better policies and economic performance), the more important driver was global factors, especially cyclical movements in interest rates. Calvo, Leiderman, and Reinhart (1993) also argue that 'push' factors are more important than domestic fundamentals in driving waves of capital inflows and outflows. Griffin, Nardari and Stulz (2004) analyze the role of domestic and global equity market performance empirically and in a theoretical model and argue that both are important in understanding cross-border equity flows. Chinn and Forbes (2004) find a role for global as well as contagion effects. Dungey et al. (2011), one of the few analyses that simultaneously considers the role of domestic, contagion and global factors in explaining crises, finds a role for all three channels, although global market factors often outweigh contagion effects.

The analysis in this paper helps evaluate the relative importance of global, contagion, and domestic factors in driving waves in capital flows. It also takes this analysis one step further by not only testing for the role of each of these broad groups of factors, but also disaggregating each group into underlying components. More specifically, this literature review suggests that the global factor can be divided into effects due to global changes in risk, liquidity, interest rates, and growth; the contagion factor can be divided into effects due to trade linkages, financial linkages, and country similarities; and the domestic factor can be divided into effects due to the country's financial market depth, financial system soundness, integration with global financial markets, fiscal position, and growth shocks. Our empirical analysis will therefore help shed light on the relevance of the different theoretical approaches and specific models, such as whether the recent focus on purely global shocks due to changes in risk or liquidity are, in fact, the appropriate framework to understand the sudden shifts in capital flows during the Great Recession and other crises.

3.2 The Evidence: Descriptive

To better understand the role of global, contagion, and domestic effects in driving capital flow episodes, this section begins by discussing trends and patterns and in the data. It examines the incidence of episodes across time and examines differences across individual countries. Are the patterns consistent with an important role for global factors (that is, are there simultaneous waves of episodes across a wide range of countries)? Or are episodes dispersed across time in ways that suggest important regional or country-specific factors are at work?

Figure 4 shows trends in the incidence of each type of episode in the sample over time, broken down by income group. Most episodes are in high income countries, especially in the earlier years of the

sample, which is not surprising as these are the countries that have more complete historical data and that have been most open to international capital flows. Perhaps more importantly, these graphs show waves in the incidence of capital flow episodes, with large swings in the percent of the sample experiencing an episode in different periods. For example, in some years no countries experience a stop or a retrenchment, while at other times a majority of the sample experiences these episodes. These cycles are supportive of models that have an important role for global factors. They are also supportive of the recent emphasis in the theoretical literature on the role of global factors in driving capital flow movements during the recent crisis, as the size of a shared global component may have increased over time, especially during the Great Recession. The crisis of 2008-9 was defined by an unprecedented number of countries experiencing "sudden stops" and "retrenchments"—perhaps owing to a general increase in risk aversion and/or need for liquidity that forced investors to bring capital home.

This retrenchment effect is not unique to the crisis of 2008-2009 and has happened during other periods, although never before has it occurred in so many countries at the same time. With so many countries retrenching during the crisis of 2008-2009, it is not surprising that there was a spike in the incidence of sudden stops to 78% of the sample in the 4th quarter or 2008; if most countries are retrenching, gross inflows by foreigners will also fall in most countries. The historical patterns, however, suggest that this strong correlation between stops and retrenchment does not exist during all crises. For example, in 1998q4 the incidence of stop and retrenchment episodes were both elevated (at 33% and 20%, respectively) as risk aversion increased after the collapse of LTCM. But as risk aversion abated, by the 3rd quarter of 1999 the number of retrenchment episodes declined rapidly to 2%, while the number of stop episodes fell more slowly to 15%.

Next, to get a better sense of whether contagion factors, as well as global factors, are important in understanding the incidence of episodes across time, Figure 5 repeats the exercise in Figure 4, except divides the sample by region instead of income group. Many of the cycles in capital flows appear to be dominated by trends in Western Europe, which is not surprising as this region not only encompasses a large number of countries with more complete data coverage, but also as most of this region has been open to capital flows for much of the sample. This graph also shows preliminary evidence of regional patterns, possibly indicating the role of contagion or common regional characteristics in explaining these episodes. For example, countries in Eastern Europe rarely experience surges until starting in 2003, after which 45% and 38% of the region, respectively suddenly experiences surges in 2003 and 2004.

This series of graphs indicates that global and possibly regional factors are important in causing episodes, and a finer look at the episodes by country suggests that domestic fundamentals also play some role. For example, even though a majority of the sample experienced a retrenchment episode during the Great Recession, there are important differences across countries and many countries' residents did not unwind foreign positions. During late 2008 and early 2009, there was more widespread concern about the outlook for Eastern Europe and Poland than Greece; Poland, however, experienced a sudden retrenchment episode as Polish citizens brought a substantial amount of money home, while Greek citizens sent their money abroad. Other countries that did not have a retrenchment episode during this period include Argentina, Australia, Brazil, India, New Zealand, Norway, Portugal, Romania, Russia, the Slovak Republic, South Africa, and Turkey. What caused these differences? Moreover, while three-quarters of the sample experienced a "sudden stop" during the recent crisis, others still received large inflows from foreigners. Why did investment by foreigners into these countries not slow as dramatically during the most recent crisis? These different patterns across countries—even for countries in the same region—suggest that even in the presence of substantial global shocks and possibly regional contagion, domestic characteristics can also be important in determining whether a country experiences a surge, stop, flight or retrenchment episode.

3.3 The Evidence: Regression Analysis

In this section we more formally assess the roles of global, contagion and domestic factors in determining the conditional probability of having a surge, stop, flight or retrenchment episode in a given quarter.

We estimate the model:

$$Prob(e_{it} = 1) = F(\beta_1 \phi_t + \beta_2 \gamma_{it} + \alpha_i) \qquad (5)$$

where e_{it} is an episode dummy variable that takes the value of 1 if the country i is experiencing an episode (surge, stop, flight or retrenchment) in quarter t; ϕ_t is a measure of the global factor; γ_{it} is a contagion variable that is equal to 1 if there is the same type of episode for another country in the region in the previous quarter; and α_i are country dummy variables. The appropriate methodology to estimate equation (5) is determined by the distribution of the cumulative distribution function, $F(\cdot)$. Because episodes occur irregularly (about 85 percent of the sample of episodes is zeros), $F(\cdot)$ is asymmetric.

Therefore we estimate equation (5) using the complimentary logarithmic (or cloglog) framework, which assumes that $F(\cdot)$ is the cumulative distribution function (cdf) of the extreme value distribution.[22] In other words, this estimation strategy assumes that:

$$F(z) = 1 - exp[-exp(z)] \quad . \qquad (6)$$

Each regression also includes robust standard errors with standard errors clustered by country.

One important question is how to measure the global factor. For our initial baseline analysis, we measure the global factor as the Volatility Index or VXO calculated by the Chicago Board Options Exchange.[23] This measures implied volatility by using prices for a range of options on the S&P 100 index and is generally interpreted as capturing overall "risk". To simplify the following discussion, we will refer to periods of global "calm" as periods when the VXO is low, and periods of global "volatility" when the index is high.

Table 3 reports results for the complimentary logarithmic regressions of equation 5 to test for the role of global, contagion, and domestic factors in explaining surge, stop, flight and retrenchment episodes. Probit and logit estimators yield very similar results.[24] The row labeled "Country dummies χ^2" reports results of a χ^2 test for the joint significance of the country dummy variables. The coefficient estimates in the table indicate the direction and significance of the global, regional and domestic factors in explaining different episodes. Interpreting the magnitude of the coefficients is not straightforward, however, because interpretation depends on the slope of the cumulative distribution function (as also occurs with Logit and Probit estimation). Therefore, in order to get a better sense of the magnitude of

[22] Caballero (2010) also uses this approach. Earlier work uses the more standard approach of estimating a Logit or Probit model which assumes that the distribution of $F(\cdot)$ is logistic or normal, respectively, and therefore symmetric around zero. We have also estimated the model using the standard Logit and Probit estimators, with no significant impact on the key results.

[23] The VXO, as the old VIX is now known, is similar to the better-known new VIX, with the following differences. VIX is only available from 1990, while the VXO begins in 1986. VXO is based on the prices of eight S&P 100 index put and call options. VIX is calculated using a wide range of strike prices in order to incorporate information from the volatility skew; VXO uses only at-the-money options. VIX uses a newly developed formula to derive expected volatility directly from the prices of a weighted strip of options; VXO extracts implied volatility from an option-pricing model. The correlation between VXO and VIX is extremely high, both in levels and first differences.

[24] Coefficient estimates obtained using a logit estimator are basically the same, although standard errors are slightly higher, providing further evidence that the cloglog estimation is the appropriate strategy.

these estimates, it is also useful to consider the exponentiated coefficients.[25] For the complimentary logarithmic function, the relevant exponentiated coefficient is the hazard ratio, which is calculated as:

$$h = Pr(y=1|X) / Pr(y=0|X) \quad (7)$$

The hazard ratio in equation (7) is the probability of a positive outcome compared to the probability of no positive outcome. These hazards ratios are reported below the standard errors for each coefficient on Table 3 and indicate the marginal effects in multiplicative form after controlling for differences in the baseline odds of a crisis for each country.

The coefficient estimates and χ^2 test statistics for the country dummies in Table 3 are each highly significant, indicating an important role for global, regional, and domestic factors in determining the incidence of surges, stops, flight and retrenchment across countries. More specifically, the positive and significant coefficients on the contagion variable for each of the four episodes supports a strong role for contagion effects in driving each type of episode. When a neighboring country has an episode of extreme capital movements, there is a higher probability of each country having the same type of episode in the following quarter. Not surprisingly, the hazard ratios suggest that the effect of contagion may be somewhat greater for surges and stops than for flight and especially retrenchment episodes. The country dummy variables are also jointly highly significant in each specification, indicating a strong role for domestic effects.

Although the coefficient estimates for the global factors are all highly significant, the signs vary across different types of episodes. The significant positive coefficients on the global factors in regressions predicting stops and retrenchment is as expected; capital is more likely to "stop" going into countries from abroad and domestic citizens are more likely to bring investment back home during periods of high global volatility. The negative and significant coefficient on the global factor in regressions predicting surges is also as expected; capital is more likely to "surge" into countries from abroad during periods of global calm. The negative and significant coefficient on the global factor in regressions predicting flight episodes suggests that flight occurs not during poor global conditions but rather during calm episodes. Also, the hazard ratios reported under each of the coefficients for the global

[25] For example, when interpreting coefficients for a Logit regression, it is useful to examine the exponentiated coefficient calculated as the odds ratio (p/1-p), with $p=Pr(y = 1/X)$ as the probability of a positive outcome.

factors suggest that the effect of an increase in global volatility on the probability of each type of event occurring is similar.

We have repeated all of the estimates reported above using different variable definitions for the global factor. Instead of measuring the global factor using the VXO, we used the CSFB global risk index (described in more detail below), the VIX (which starts in 1990 instead of 1986), the variance risk premium[26] (which is also only available since 1990), and the quality spread. We have also implemented different approaches to identify the episodes of surges, stops, flight and retrenchment. First, instead of a historic moving average to calculate the episodes, we used an HP filter with episodes defined by 30% deviations from the stochastic trend. Second, we use the ratio of capital inflows or outflows divided by country GDP, instead of simply capital inflows or outflows, to calculate each episode. Third, we used a three-standard deviation cutoff for changes in capital flows to qualify as an episode instead of the traditional two-standard deviation cutoff. Not surprisingly, this decreases the number of episodes. Fourth, we excluded transactions by the monetary authorities from the 3rd quarter of 2008 through the end of the sample in order to remove any effect of the currency swap arrangements by the Federal Reserve Board.[27] This has a minimal effect on the definitions of episodes. Fifth, we included reserves in our definition of outflows by domestic residents, which can affect the definition of flight and retrenchment episodes. Finally, we calculated our measures for surge and stop episodes using the traditional approach of using net capital flows proxies instead of gross capital flows (as discussed in Section 2).

The main results reported above are highly robust across episode definitions—except when using episodes defined using net capital flows. In almost all other cases, the global, contagion, and domestic factors are significant (at the 5% level) in predicting surges, stops, flight and retrenchment episodes for the full sample of countries.[28] The most significant change occurs when proxies for net capital flows are used to define surge and stop episodes as reported on the right of Table 3. Using this older approach for defining the episodes, the global and contagion factors are no longer significant in predicting surges and

[26] See Zhou (2010). The variance risk premium is defined as the difference between the risk-neutral and objective expectations of realized variance, where the risk-neutral expectation of variance is measured as the end-of-month observation of VIX-squared and de-annualized and the realized variance is the sum of squared 5-minute log returns of the S&P 500 index over the month. Both variance measures are of monthly basis in percentage-squared and are available in real time at the end of the observation month. One advantage of this measure over the VXO and VIX is that it attempts to isolate risk aversion by stripping out expectations of future volatility.

[27] See McGuire and von Peter (2009) for analysis of the swap arrangements.

[28] The only exceptions are (1) when the more stringent 3-standard deviation criteria are used to define episodes, the global factors are only significant at the 10% level in predicting surges; and (2) when alternate techniques are used to calculate flight episodes, the contagion variable is occasionally no longer significant at the 5% level.

the contagion factors are only marginally significant (at the 10% level) in predicting stops. This supports the discussion in Section 2 that focusing on net capital flows instead of gross capital flows may miss important dynamics in understanding capital flow movements.

But do these results apply to countries of all income levels? Table 4 repeats the regressions in Table 3, except we now interact the global and contagion factors with dummy variables for middle and low income countries. The χ^2 tests for the joint significance of the country dummy variables are also performed separately for high, middle and low income countries. These results suggest that there may be some differences across country groups, but many of these results are not robust to the different definitions of episodes discussed above. One difference across income groups which is highly robust is the positive and significant coefficient on the contagion variable interacted with the lower income dummy when predicting stops. Lower income countries appear to be more vulnerable to sudden stops when their neighbors are also experiencing stops. There is also some evidence that when global risk increases, low income countries may be less likely to experience retrenchment episodes than high and middle income countries. There also is some evidence that there is less contagion in flight and retrenchment episodes in low and possibly middle income countries—although the last two findings are not robust across all episode definitions. [29]

Even more noteworthy than these differences between high, middle, and low income countries, however, are the similarities. Domestic factors are important in explaining surges, stops, flight and retrenchment episodes for each group of countries. This suggests that country policies do matter and global or contagion factors can not be entirely blamed for sudden shifts in capital flows. Estimates in the first column show no significant difference in the role of global and contagion factors in explaining surge episodes (which is also robust across episode definitions). This suggests that it is not just middle and/or low income countries that are subject to these sudden increases in capital flows from abroad (although this does not present any evidence on the different types of countries' *ability* to adjust to these flows). Moreover, the coefficients on the global factor are not significantly different for high and middle income countries for each of the episodes. This suggests that both foreign and domestic investors

[29] These results are also not all robust to the different definitions of surges, stops, flight and retrenchment. There continues to be few significant differences across the income groups in the importance of global, contagion and domestic factors, except when measures of net capital flows are used instead of gross flows. The other noteworthy changes occur when reserves are added to the measure of capital outflows or when swaps during the recent crisis are excluded. In these cases, lower income countries are not always differentially affected by global and contagion effects than higher income countries when predicting flights and retrenchment episodes, although middle income countries appear to be more affected. There are also a few moderate changes, usually in the significance of a coefficient on the interaction terms for the income groups, with some of the results based on the more stringent three-standard definition criteria for episodes.

respond in similar ways to changes in global volatility for each set of countries. More specifically, domestic investors are just as likely in high and middle income countries to send money abroad during periods of low risk aversion, and to bring money home during periods of heightened volatility.

To summarize, these results suggest that all types of extreme episodes in capital flows appear to have some global, contagion and domestic components. Surges and flight episodes occur when global conditions are calm, while stops and retrenchments occur during more volatile global conditions. But what explains the global, contagion, and domestic effects? Are global effects from changes in risk aversion, liquidity, interest rates or global growth? Are contagion effects through trade or financial links? What are the country characteristics that matter most?

3.4 The Evidence: Disaggregating the Global, Contagion and Domestic Factors

The literature review in Section 3.1 suggested that the global, contagion and domestic factors explaining capital flows could each be further divided into various components. More specifically, theory and empirical research suggest that the global factor can be divided into effects due to global risk, liquidity, interest rates, and growth and the contagion factor can be divided into effects due to trade linkages, financial linkages, and country similarities. The domestic factor can be divided into effects due to the country's financial market depth, financial system soundness, integration with global financial markets, fiscal position, and growth shocks.

There are a number of statistics that could be used to capture each of these variables. We focus on measures that are available over the full sample period (1980 to 2009) and for most of the countries in the sample. Also, each variable is lagged by one quarter unless noted otherwise.[30] Beginning with the global variables, to measure global risk we use the "risk appetite index" from Credit Suisse First Boston, which is the beta coefficient of a cross-sectional regression of a series of risk-adjusted asset price returns in several countries on the past variance of these assets. [31] If the beta is positive, it means that the price of riskier assets is rising relative to the price of safer assets, so risk appetite among investors is higher. To measure global liquidity we use private credit by deposit money banks and other financial

[30] Market statistics that are available at a high frequency are calculated as the average value over the previous quarter. Economic statistics that are only available on an annual basis (such as private credit growth) are calculated by approximating quarterly values based on the annual frequencies. This disaggregation has its problems, so we also repeat tests using only annual data.

[31] This calculation is based on 64 global assets, including almost equities and bonds for all developed countries and the major emerging markets. It is also available since 1980, unlike many popular risk measures (such as the VIX) which only begin mid-way through our sample. For more information, see "Global Risk Appetite Index" a Market Focus Report by Credit Suisse First Boston, February 20, 2004.

institutions to GDP from Beck and Demirgüç-Kunt (2009). Global interest rates are measured using the average rate on long-term government bonds in the United States, euro area and Japan (as reported in the IMF's *International Financial* Statistics or IFS) and global productivity shocks are measured by global growth in real economic activity (quarterly real GDP growth where available, else quarterly growth in industrial production, both from the IFS).

To measure the contagion variables, we continue to use a measure of geographic proximity, with a dummy variable equal to one if a country in the same region has an episode in the previous quarter. We also calculate the financial linkages (FL) and trade linkages (TL) between countries as:

$$FL_x = \sum_{i=1}^{n} \left(\frac{BANK_{xn}}{GDP_x} * Episode_n \right) \text{, and} \qquad (8)$$

$$TR_x = \sum_{i=1}^{n} \left(\frac{Exports_{xn}}{GDP_x} * Episode_n \right), \qquad (9)$$

where $BANK_{xn}$ is total bank flows between country x and n in the previous quarter, $Exports_{xn}$ is exports from country x to country n in the previous quarter, GDP_x is GDP for country x in the previous quarter, and $Episode_n$ =1 if country n had an episode in the last quarter. These measures are calculated for each country x for each type of episode (surge, stop, flight, and retrenchment). The banking data is from the Bank of International Settlements and the trade data is from the IMF's Direction of Trade Statistics. While no measure of financial linkages is perfect (Cecchetti, Fender, and McGuire 2010), we focus on banking data because it is the only cross-country financial data that is of reasonable quality and widely available across countries and time periods. (NOTE THAT THE MEASURES OF CONTAGION THROUGH FINANCIAL LINKAGES IS STILL BEING CONSTRUCTED AND NOT CURENTLY INCLUDED IN THE REPORTED REGRESSION RESULTS.)

To measure the variables determining the country effects, we measure the size and depth of the financial system as the sum of each country's stock market capitalization divided by GDP. We measure the soundness of the country's financial system as bank return on equity. Both of these variables are based on information from Beck and Demirgüç-Kunt (2009). We measure financial market integration

as the total of foreign assets and liabilities divided by GDP from Lane and Milesi-Ferretti (2007). [32] Real GDP growth is from the IFS, and we measure the growth shock as the deviation between actual and trend growth.[33] We measure country indebtedness as public debt to GDP from the new database described in Abbas, Belhocine, ElGanainy and Horton (2010). We also include a control for GDP per capita.

Regression results estimating which of these global, contagion, and country factors affect the probability of having a surge, stop, flight or retrenchment episode are reported in Table 5. We continue to use the complimentary logarithmic estimator described in Section 3.3., with robust standard errors clustered by country. We also report results with and without country dummy variables.[34] The table shows a number of noteworthy results. The only variable that is consistently significant (usually at the 5% level) in predicting each type of episode is global risk appetite. Higher levels of global risk appetite are positively correlated with surges and flight, and negatively correlated with stops and retrenchment. The other variables that are consistently significant across episodes and specifications are the contagion variables; in each specification the coefficient on either regional contagion or trade contagion (and sometimes on both coefficients) is significant (usually at the 5% level). Additional analysis (in progress) will further differentiate if this contagion effect is driven primarily by financial linkages (which tend to be highly correlated with regional location and trade linkages). These variables—global risk appetite and contagion—appear to be the primary causes of surges, stops, flight and retrenchment episodes. Glboal growth also appears to be positively correlated with surges, although not other types of episodes.

The significance of variables measuring the domestic factors varies across episodes. In many ways this is not surprising; different domestic characteristics could be expected to be more or less correlated with different types of episodes. One set of domestic variables that is most often significantly correlated with the probability of an episode is the country's financial system—either its size or soundness. More specifically, countries with larger financial systems are significantly more likely to experience sudden stops, and countries with sounder financial systems may be more likely to experience

[32] The financial integration data is from an updated and extended version of the dataset constructed by Lane and Milesi-Ferretti (2007), available at: http://www.philiplane.org/EWN.html.

[33] We also measure the growth shock as the deviation between actual and forecasted growth, where forecasted growth is from the IMF WEO forecast from the spring of the previous year.

[34] These country dummy variables should theoretically not be needed if we were able to capture all of the country-specific factors determining whether a country has an episode in the control variables. These dummy variables are usually jointly significant, however, indicating that we are (not surprisingly) unable to capture all country factors that determine the incident of a crisis. Including these fixed effects, however, could cause a downward bias on coefficient estimates for country-specific variables that have a significant effect on the probability of an episode but do not change significantly over time. Therefore, it is useful to report results both with and without the country fixed effects.

surges and flight (although this result is not robust across all specification). These results do not indicate, however, whether these countries are better able to manage the impact of these waves of capital flows on their overall economies.

Just as noteworthy are the variables that are usually insignificant. Global liquidity and global interest rates do not appear to be significantly correlated with episodes; this does not support the general assumption that low interest rates or a large increase in liquidity in the major economies (such as the United States today as it begins additional quantitative easing) is the primary factor driving surges in other economies. Also noteworthy is the general insignificance of a country's real GDP growth rate and fiscal position. The effects of growth and fiscal solvency on capital flows, however, may be non-linear and therefore not captured in these specifications.

We also do an extensive series of sensitivity tests of these results, focusing on different measures for key control variables, different techniques for calculating the episodes and including addition control variables. To begin, instead of measuring global risk using the CSFB index, we also use the VXO index, the VIX index (which limits the sample to starting in 1993), the Variance Risk Premium (which also limits the sample to starting in 1993) and the Quality Spread (the difference between Moody's Baa and Aaa corporate bond yields). Second, to measure global interest rates, instead of using the average rate on long-term government bonds in the United States, euro area and Japan, we simply use the rate for the United States. Third, to measure the size of the financial system, instead of using just the country's stock market capitalization to GDP, we use the sum of the countries stock market capitalization and private and public bond market capitalization to GDP (which limits the sample size due to data availability). Fourth, to measure a country's integration with global financial markets, instead of using the sum of the country's international assets and liabilities to GDP, we use a measure of the country's capital controls as calculated in Chinn and Ito (2008).[35] Fifth, to measure a country's strength of its financial system, instead of using the return on equity for the banking system, we use the return on assets (which is also from Beck and Demirgüç-Kunt, 2009). Sixth, instead of measuring a country's shock to GDP growth versus trend, we control for quarterly GDP growth. Finally, we also exclude the control for GDP per capita.

[35] We focus on the KAOPEN measure of capital controls in Chinn and Ito (2008), which is based on the principal components from four binary variables reported by the IMF (1) the openness of a country's capital account, (2) the openness of the current account, (3) the stringency of requirements for the repatriation and/or surrender of export proceeds, and (4) the existence of multiple exchange rates for capital account transactions. This statistic is one of the few measures of capital controls available for a broad sample of countries since 1980.

Next, we also include a series of additional control variables in the regressions to test if other factors could determine the probability of capital flow episodes. First, a number of models focus on the role of demographics in driving capital flows, usually in an OLG framework, such as Brooks (2003), Domeij and Flodén (2006) and Krueger and Ludwig (2007).[36] Therefore, we follow Chinn and Prasad (2003) and include two controls for demographic trends—the "youth dependency ratio" and "old dependency ratio" defined as the population aged under 15 or over 65 respectively, both divided by the population aged 15 to 65. Second we include a control for a country's reserves as a share of GDP.[37] Third, we include a measure of the country's credit rating to capture country risk that may not be captured in its debt ratio and other measures. We use the country's Moody's or S&P rating, with a numerical value assigned to each rating and a lower value indicating a higher ranking.[38] Fourth, we include a dummy variable equal to one if the country has a pegged exchange rate, based on the exchange rate classification in Shambaugh (2004).[39]

As a final series of sensitivity tests, we use different techniques for identifying the episodes of surges, stops, flight and retrenchment. More specifically, we excluded transactions by the monetary authorities from the 3rd quarter of 2008 through the end of the sample in order to remove any effect of the currency swap arrangements by the Federal Reserve Board; we included reserves in our definition of outflows by domestic residents; we used a three-standard deviation cutoff for changes in capital flows to qualify as an episode instead of the traditional two-standard deviation cutoff; we used the ratio of capital inflows or outflows divided by country GDP, instead of simply capital inflows or outflows; we used an HP filter instead of a historic moving average to calculate the episodes; and we calculated our measures for surge and stop episodes using the traditional approach of using net capital flows proxies instead of gross capital flows. This is the same series of tests reported in Section 3.3 for the regressions explaining the episodes based on global, contagion and country-effects (but not disaggregated), and the definitions and justifications for each sensitivity test are explained above.

The results of a sample of these sensitivity tests are reported in Appendix Table 3 and confirm the conclusions discussed above. The global risk variable—whether measured as the CSFB global risk

[36] We do not include a demographic variable in the main analysis as the theoretical and empirical work indicates that the demographics affects capital flows over the medium and long term, but not necessarily over the shorter periods which are the focus of this paper.
[37] Reserves are taken from the IMF's IFS and GDP data is taken from the Lane and Milesi-Ferretti dataset.
[38] For example, for Moody's an "aaa" rating is scored as a 1, a "aa1" rating is scored as a s 2, etc. In each case a 17 is the lowest rating.
[39] Updated classification data was kindly provided by the author. A country is classified as having a pegged exchange rate if it (a) has no fluctuation at all; (b) moves within 2% bands or (3) has a one-time devaluation with 0% change after 11 months.

appetite, the VIX, the VOX, the quality spread, or the Variance Risk Premium—continues to be highly significant in predicting all types of episodes. One of the contagion variables is highly significant in predicting all episodes, except occasionally in predicting flight episodes. Both of the contagion variables—through trade linkages or regional location—are always significant in predicting stop episodes. The global growth variable is usually highly significant in predicting surges and stops, although has mixed significance in predicting flight and retrenchments. Financial system size or soundness (although usually not both) is usually significant in predicting surges, stops and flight, although usually not significant in predicting retrenchment. Global liquidity, global interest rates (whether measured as just U.S. rates or an average of major economies) and country GDP growth are usually not significant in predicting episodes. Financial market integration—whether measured as de facto integration through holdings of foreign assets and liabilities or through direct measures of capital controls, generally has mixed signs and significance, although there is some evidence that more financially integrated countries may be less likely to have stop episodes. A country's fiscal position also generally has mixed significance, although there is some evidence that country's with great debt to GDP ratios are less likely to have surge episodes and flight episodes.

The one exception to these results reported above are when capital flow episodes are defined using net capital flows—as previously done in past work (and discussed at length in section 2)—instead of gross flows. When the episodes are defined based on net capital flows, most of the explanatory variables included in Table 5 and Appendix Table 3a are insignificant. Even the global risk variables, contagion variables, and financial system variables are usually insignificant. This further suggests that in order to understand the patterns in capital flow movements, it is necessary to focus on gross flows instead of net flows.

To summarize, this series of tests analyzing which global, contagion, and domestic factors cause surges, stops, flight and retrenchment episodes has yielded several results. First, the primary global factors driving these waves in capital flows—both by foreigners and domestic residents—appears to global risk. This supports the focus of much of the recent theoretical literature that changes in global risk can be a key factor driving crises. Global growth is also important in driving the surges and stops which are driven by capital flows by foreigners. The results, however, do not support theoretical work or the widespread presumption that changes in interest rates or liquidity in a major economy, such as the United States, is the most important factor driving surges in capital flows. The results also find a significant role for contagion in explaining the coincidence of episodes, although additional analysis

needs to be done to better understand the causes of this contagion. The results suggest that a country's financial system—whether it's size or soundness—may be an important factor driving waves of capital flows, and especially surges, stops and flight. This supports a recent focus of the theoretical literature on global imbalances on the role of financial system development in driving capital flows. There is no evidence that reduced integration with global financial markets, including through the use of capital controls, reduces a country's vulnerability to surges, stops and other capital flow episodes. If anything, there is evidence that greater integration reduces country vulnerability to stop episodes. Finally, the results find little role for a country's GDP growth. This does not support theoretical work focusing on domestic productivity shocks as key determinants of capital flows, such as the real business cycle literature.

4. Episodes and Analysis: By Type of Capital Flow

4.1 The Episodes by Type of Flow: Descriptive Analysis

The discussion above focused on trends in total gross or net capital flows. These aggregate measures of capital flows can, however, mask important differences for different types of capital flows. Therefore, as a next step Figure 6 graphs the incidence of each of the four episodes (surges, stops, flight and retrenchment) for four major types of capital flows (direct investment, debt, equity and banking). We are just beginning our analysis of these episodes for various types of capital flows, but an initial look at these graphs suggests that a decomposition of the types of capital flows may be useful in order to better understand these episodes.

For example, Figure 6 suggests that the large number of stop and retrenchment episodes in total capital flows during the Great Recession (as shown in Figures 3 and 4) are largely driven by a sudden stop and retrenchment in banking and equity flows. Flows in debt and direct investment also show an increase in stop and retrenchment episodes, but these are not as widespread as for banking and equity flows. Another noteworthy pattern in these graphs is the volatility in the percent of the sample having surge, stop, flight and retrenchment episodes for direct investment. Capital flows through direct investment are generally believed to be less volatile than capital flows through equity or debt, but Figure 6 suggests that flows in direct investment may also experience substantial fluctuations.

5. Discussion and Conclusions

This work is still preliminary, but a number of interesting results emerge. First, the paper develops a new methodology to compute extreme movements in capital flows using data on both inflows and outflow by domestic and foreign investors. This new methodology yields substantially different definitions of periods of "surges" and "stops" in capital flows than previous work which focused only on net capital flows. The new methodology provides a more detailed disaggregation of capital flows, defining not only periods of surges and stops, but also periods of flight and retrenchment, thereby facilitating a more thorough understanding of what drives capital flow waves.

The descriptive results and regression analysis find a role primarily for global and contagion factors in explaining capital flow episodes, with a more moderate role for domestic variables. The primary global factor driving these waves in capital flows is global risk, with a role for global growth in driving capital flows by foreigners. The results also find a significant role for contagion through trade or through geographic location in explaining the coincidence of episodes, although additional analysis is needed to better understand the causes of this contagion. The results suggest that a country's financial system—either its size or soundness—is also important, especially in driving surges, stops and flight.

This series of results provides evidence on which approaches in the theoretical literature are most relevant to explaining capital flow waves. The significance of global risk in driving all types of capital flow episodes supports the recent focus in several theoretical papers on global risk as a primary factor driving crises—although many of these papers do not include a role for contagion or domestic factors, which are also supported in these results. The results do not find a significant role, independent of global risk and global growth, of global interest rates or liquidity in causing episodes. This does not support other theoretical models and the widespread presumption that changes in interest rates or liquidity in a major economy, such as the United States, are important factor driving surges in capital flows. The results also do not find a significant role of domestic country growth in determining the incidence of surges, thereby providing little support for theoretical work focusing on domestic productivity shocks as key determinants of capital flows, such as the real business cycle literature. Finally, the results showing some evidence of a role of the domestic financial system (either its size or soundness) in predicting most types of episodes supports a recent focus of the theoretical literature on global imbalances that highlights the importance of different levels of financial system development in driving capital flows.

These results also have important implications for policymakers concerned about capital flow volatility. One country characteristic which can be important is the size and soundness of a country's financial system. Another country characteristic which has recently received substantial support—

capital controls or other forms of reducing integration with global financial markets—does not seem to significantly reduce the occurrence of surges, stops or other capital flow episodes. (If anything, greater financial integration appears to reduce a country's chance of having a sudden stop.) Many other significant drivers of capital flows, however, are outside of the control of policymakers in most countries, such as changes in global risk, global growth, and contagion from neighbors. This suggests an important role for global institutions and cross-country cooperation for policymakers that hope to reduce the sharp volatility of global capital flows.

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Table 1
Summary Statistics for Episodes (1980-2009)

		Surge	Stop	Flight	Retrenchment
		% of sample with			
Full sample		15%	18%	16%	17%
		Average length of time for each (in quarters)			
Full sample		4.5	4.0	4.1	3.8
By Income Group	High income	4.5	4.1	4.1	4.1
	Med income	4.6	3.9	4.3	3.3
	Low income	4.3	3.8	3.8	3.4
By Region	North America	3.8	3.9	3.8	3.8
	Western Europe	4.5	4.2	4.2	4.1
	Asia	4.6	4.0	4.1	3.9
	Eastern Europe	4.8	3.8	4.2	3.5
	Latin America	4.4	4.0	3.7	3.2
	Other	4.3	3.7	4.4	3.7

Notes: Income groups are based on World Bank definitions, with "Lower income" including both low income and middle/low income; "Middle income" is middle/high income; "Higher income" is high income.

Table 2

Surge and Stop Episodes Based on Net and Gross Capital Flow Data from 2008Q4 to 2009Q1

The "Net Flows" columns show episodes that would be identified were one to use net inflows data, as is done in the traditional sudden stops and capital flows bonanzas literatures. The "Gross Flows" columns show episodes based on gross flows data, as in this paper. The difference between the two is that episodes based on net flows include the actions of domestic investors, who in many countries were retrenching during the crisis.

Surges		**Stops**		
Net Flows	**Gross Flows**	**Net Flows**	**Gross Flows**	
Belgium/Lux	Bolivia	Argentina	Argentina	Austria
Canada		Brazil	Brazil	Belgium/Lux
Chile		Estonia	Estonia	Canada
Finland		India	India	Chile
France		Ireland	Ireland	Colombia
Israel		Korea	Korea	Czech Rep
Netherlands		Latvia	Latvia	Denmark
Sweden		Lithuania	Lithuania	France
Taiwan		Malaysia	Malaysia	Germany
UK		New Zealand	New Zealand	Guatemala
Venezuela		Norway	Norway	Hong Kong
		Peru	Peru	Hungary
		Philippines	Philippines	Iceland
		Poland	Poland	Israel
		Romania	Romania	Italy
		Russia	Russia	Japan
		South Africa	South Africa	Mexico
		Spain	Spain	Netherlands
		Thailand	Thailand	Nicaragua
		Turkey	Turkey	Panama
		Croatia		Portugal
		Greece		Singapore
				Slovenia
				Sweden
				Switzerland
				Taiwan
				UK
				US

Table 3
Regression Results: Episodes and Global, Regional & Country Factors

	Episodes based on Gross Flows				Episodes based on Net Flows	
	Surge	**Stop**	**Flight**	**Retrenchment**	**Surge**	**Stop**
Global factor	-0.041**	0.047**	-0.037**	0.046**	-0.002	0.013**
	(0.009)	(0.004)	(0.009)	(0.004)	(0.007)	(0.006)
	[0.960]	[1.048]	[0.964]	[1.047]	[0.998]	[1.007]
Contagion	1.025**	0.938**	0.537**	0.492**	0.266*	0.299**
	(0.189)	(0.127)	(0.181)	(0.162)	(0.139)	(0.139)
	[2.788]	[2.555]	[1.712]	[1.636]	[1.305]	[0.583]
Country dummies χ^2	67.98**	2002.09**	204.19**	535.61**	1685.13**	291.61**
Sample Size	***4,060***	***4,181***	***4,080***	***4,126***	***4,171***	***4,251***
Likelihood Ratio	***-1673.55***	***-1763.90***	***-1775.97***	***-1707.59***	***-1827.24***	***-1920.48***

Notes: The dependent variable is a 0-1 variable indicating if there is an episode (either surge, stop, flight or retrenchment). Episodes based on gross flows following the methodology developed in paper using gross flows to define the episodes, while episodes based on net flows use previous methodology using net capital flows. Global factor is measured as the VXO, lagged by one quarter. Regional contagion is a dummy variable equal to 1 if another country in the region had the same type of episode in the previous quarter. Country dummies χ^2 is the result of a χ^2 test for the equality of the country dummy variables. Estimates are obtained using the complimentary logarithmic (or cloglog) framework which assumes that $F(\cdot)$ is the cumulative distribution function (cdf) of the extreme value distribution. Regressions include country dummy variables and robust standard errors are clustered by country. The hazard ratio, is reported in brackets below each estimate. ** is significant at the 5% level and * at the 10% level.

Table 4
Regression Results By Income Group

	Surge	Stop	Flight	Retrenchment
Global Factor	-0.037**	0.048**	-0.037**	0.049**
	(0.012)	(0.005)	(0.010)	(0.004)
Global * Middle Income	0.003	0.007	-0.009	0.000
	(0.022)	(0.010)	(0.022)	(0.011)
Global * Lower Income	-0.025	-0.012	0.017	-0.022**
	(0.027)	(0.011)	(0.026)	(0.010)
Contagion Factor	0.962**	0.781**	1.060**	0.866**
	(0.253)	(0.178)	(0.245)	(0.230)
Contagion * Middle Income	0.031	0.087	-1.036**	-0.388
	(0.415)	(0.270)	(0.398)	(0.352)
Contagion * Lower Income	0.202	0.735**	-0.857**	-1.287**
	(0.547)	(0.367)	(0.421)	(0.372)
Country dummies χ^2				
High Income	181.26**	50.19**	157.75**	50.13**
Country dummies χ^2				
Middle Income	103.90**	1560.09**	1097.28**	62.70**
Country dummies χ^2				
Low Income	94.89**	1487.33**	63.38**	605.99**
F-Test for difference between middle and low income countries				
Global Factor	0.82	1.88	0.70	2.74*
Contagion	0.09	2.91*	0.15	5.17**
Sample Size	***4,060***	***4,181***	***4,080***	***4,126***
Likelihood Ratio	***-1671.50***	***-1758.94***	***-1763.24***	***-1689.44***

Notes: The dependent variable is a 0-1 variable indicating if there is an episode (either surge, stop, flight or retrenchment). Global factor is measured as the VXO, lagged by one quarter. Regional contagion is a dummy variable equal to 1 if another country in the region had the same type of episode in the previous quarter. Country dummies χ^2 is the result of a χ^2 test for the equality of the country dummy variables. Estimates are obtained using the complimentary logarithmic (or cloglog) framework which assumes that $F(\cdot)$ is the cumulative distribution function (cdf) of the extreme value distribution. Regressions include country dummy variables and robust standard errors are clustered by country. Income groups are based on World Bank definitions, with "Lower income" including both low income and middle/low income; "Middle income" is middle/high income; "Higher income" is high income. ** is significant at the 5% level and * at the 10% level.

Table 5
Regression Results: Explaining the Global, Contagion and Domestic Factors

Global Factors	**Surge**		**Stop**		**Flight**		**Retrenchment**	
Global risk	0.074**	0.067**	-0.134**	-0.128**	0.053**	0.049*	-0.133**	-0.126**
	(0.026)	(0.026)	(0.024)	(0.025)	(0.027)	(0.027)	(0.027)	(0.030)
Global liquidity	-0.271	-0.809*	0.429**	0.590	-0.026	-0.904*	0.226	0.310
	(0.255)	(0.459)	(0.207)	(0.495)	(0.235)	(0.478)	(0.200)	(0.374)
Global interest rates	0.051	0.066	0.001	0.123**	0.039	-0.053	0.044	0.191**
	(0.055)	(0.108)	(0.033)	(0.061)	(0.056)	(0.080)	(0.041)	(0.075)
Global growth	10.928**	11.176**	-9.445**	-6.374	1.595	0.335	-5.633	-0.744
	(3.873)	(4.094)	(4.035)	(4.042)	(4.225)	(4.254)	(3.740)	(3.599)
Contagion Factors								
Regional contagion	0.895**	1.092**	0.830**	0.786**	0.155	0.380*	0.111	-0.057
	(0.221)	(0.223)	(0.135)	(0.166)	(0.178)	(0.211)	(0.185)	(0.196)
Trade contagion	1.702	2.759**	3.012**	4.134**	3.405**	2.560	4.186**	6.687**
	(1.212)	(1.170)	(0.756)	(1.067)	(1.286)	(1.564)	(0.857)	(1.235)
Domestic Factors								
Financial system size	-0.059	-0.128	0.183**	1.165**	-0.085	-1.020**	0.097	1.071**
	(0.203)	(0.458)	(0.083)	(0.244)	(0.230)	(0.442)	(0.108)	(0.306)
Financial system soundness	0.717*	1.002	-0.151	-0.254	0.953*	2.117**	-0.273	-0.325
	(0.408)	(0.669)	(0.209)	(0.313)	(0.493)	(0.790)	(0.278)	(0.467)
Financial market integration	-0.009	-0.037	-0.048**	0.077	-0.029	-0.087	-0.037**	0.142**
	(0.045)	(0.053)	(0.020)	(0.057)	(0.054)	(0.056)	(0.017)	(0.043)
Real GDP growth	0.557*	0.381	-0.603	-0.629	-0.058	0.046	0.697	0.502
	(0.338)	(0.347)	(0.690)	(0.708)	(0.502)	(0.535)	(0.455)	(0.449)
Country fiscal position	-0.005*	-0.009	0.002	-0.000	-0.004**	-0.013	-0.001	-0.004
	(0.002)	(0.008)	(0.002)	(0.005)	(0.002)	(0.009)	(0.002)	(0.006)
GDP per capita	0.006	0.029	0.000	-0.011	0.001	0.037*	0.016**	0.004
	(0.008)	(0.022)	(0.005)	(0.010)	(0.009)	(0.019)	(0.007)	(0.009)
Country dummies?	***N***	***Y***	***N***	***Y***	***N***	***Y***	***N***	***Y***
# Observations	***3,026***	***2,939***	***3,031***	***3,014***	***2,976***	***2,900***	***2,976***	***2,959***
Likelihood Ratio	***-1238.76***	***-1160.61***	***-1300.60***	***-1227.01***	***-1281.18***	***-1203.90***	***-1212.91***	***-1126.42***

Notes: The dependent variable is a 0-1 variable indicating if there is an episode (either surge, stop, flight or retrenchment). Variables are defined in Section 3.4. Estimates are obtained using the complimentary logarithmic (or cloglog) framework which assumes that $F(\cdot)$ is the cumulative distribution function (cdf) of the extreme value distribution. Regressions include robust standard errors are clustered by country. ** is significant at the 5% level and * at the 10% level.

Figure 1. Construction of a Traditional Sudden Stops Measure
The figure shows the construction of a traditional sudden stops indicator for Argentina. Shaded areas are episodes, which begin when the capital flows proxy (the solid line) drops one standard deviation below its historical mean (the upper dashed line), provided the proxy eventually falls two standard deviations below its mean (the lower dashed line). The episode ends when the proxy again crosses the one standard deviation line.

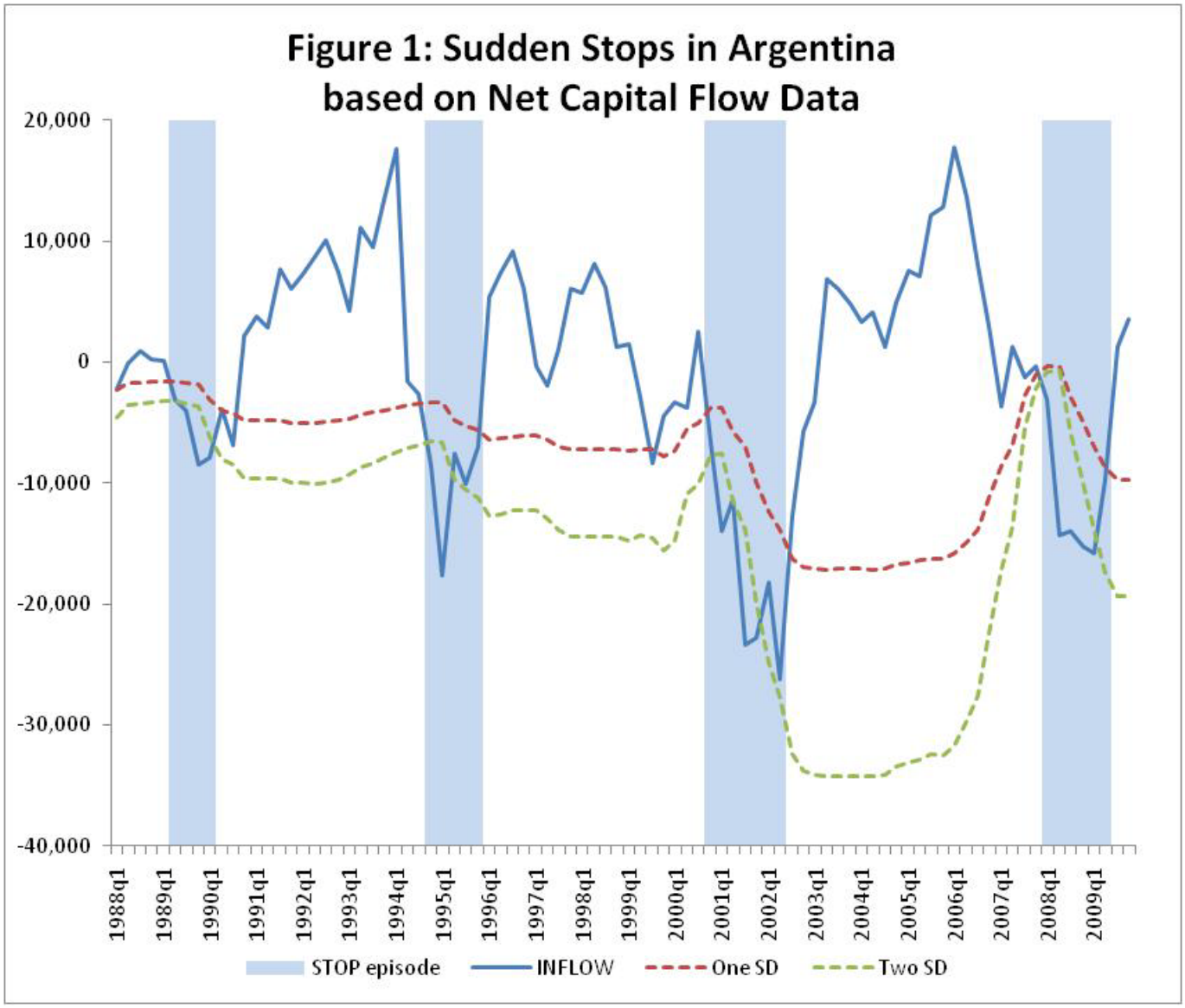


Figure 2. Construction of Our Surges and Stops Measures
The figure shows the construction of our measures of surges and stops for Brazil. A surge episode begins when gross inflows (the black solid line) exceed one standard deviation above its rolling mean, provided they eventually exceed two standard deviations above the mean. The surge episode ends when gross inflows again crosses the one standard deviation line. Stops are defined analogously; a stop episode begins when gross inflows falls one standard deviation below its rolling mean, provided they eventually fall two standard deviations below the mean, and ends when gross inflows again crosses the one standard deviation line. Flight and retrenchment episodes, not shown, are constructed analogously but with gross outflows rather than gross inflows.

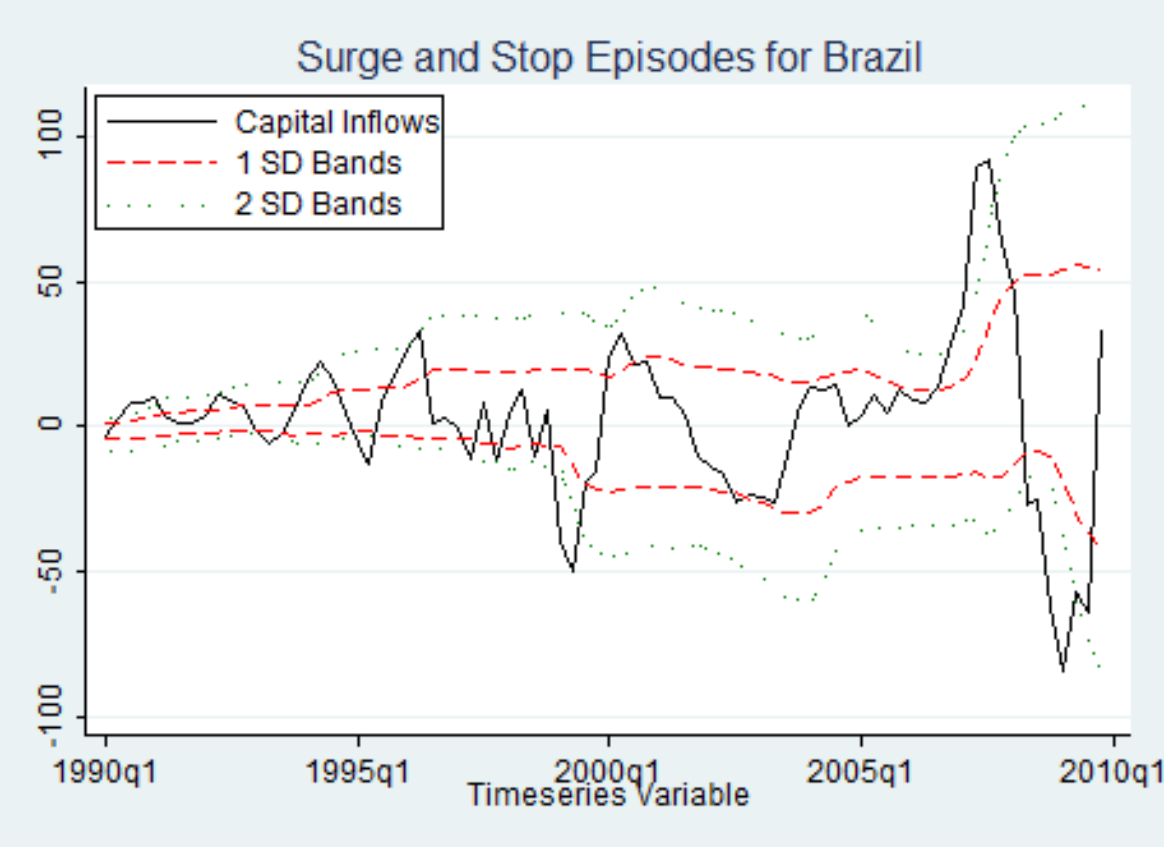


Figure 3. Net and Gross Capital Flows for Chile

This graph shows net capital flows and gross inflows and outflows for Chile from 1990 to 2010. Each flow is calculated as the 2-quarter moving average.

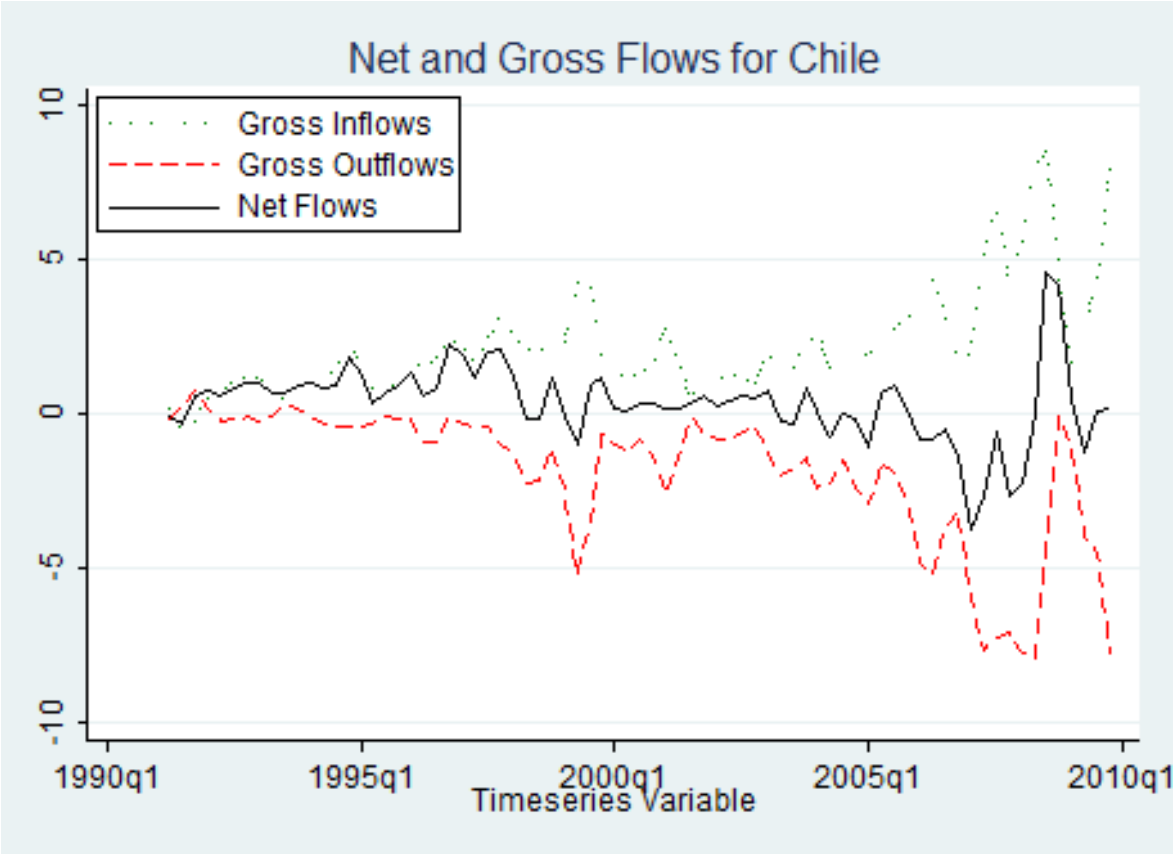
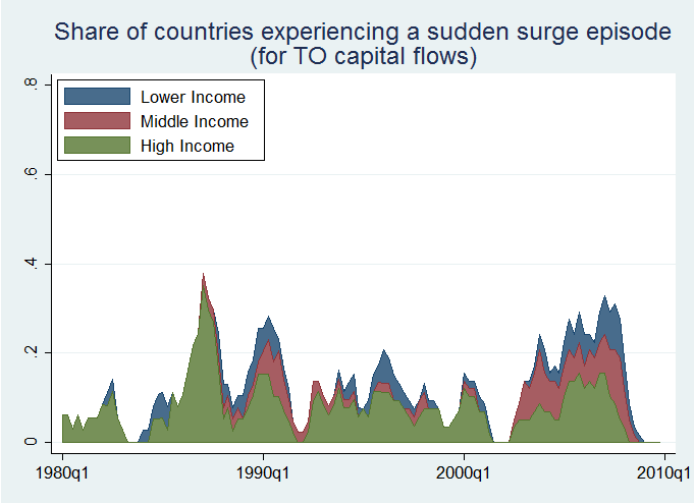
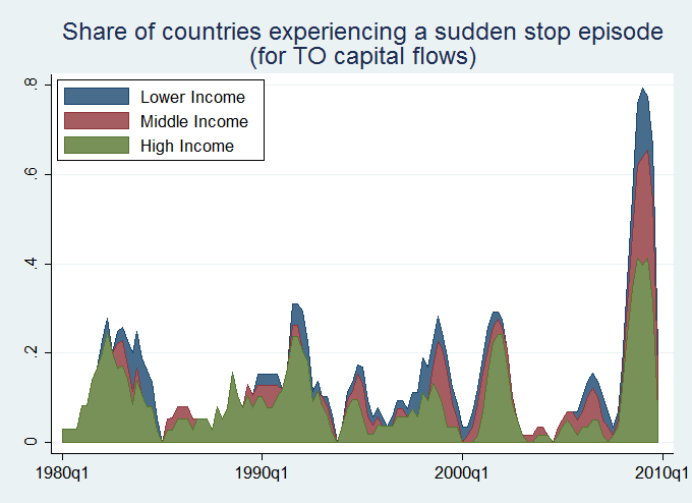
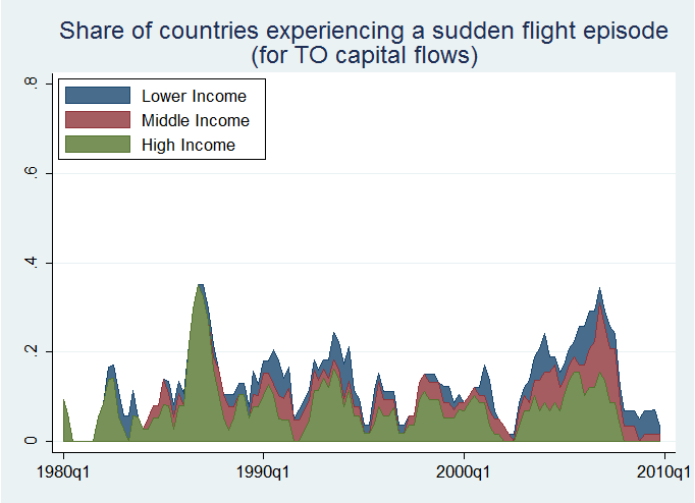


Figure 4
Percent of Countries with Each Type of Episode: By Income Level
Based on Total Capital Flows







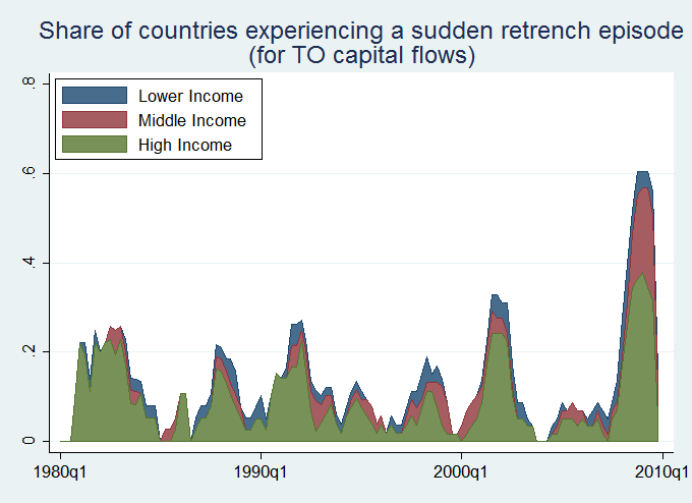


Figure 5
Percent of Countries with Each Type of Episode: By Region
Based on Total Capital Flows

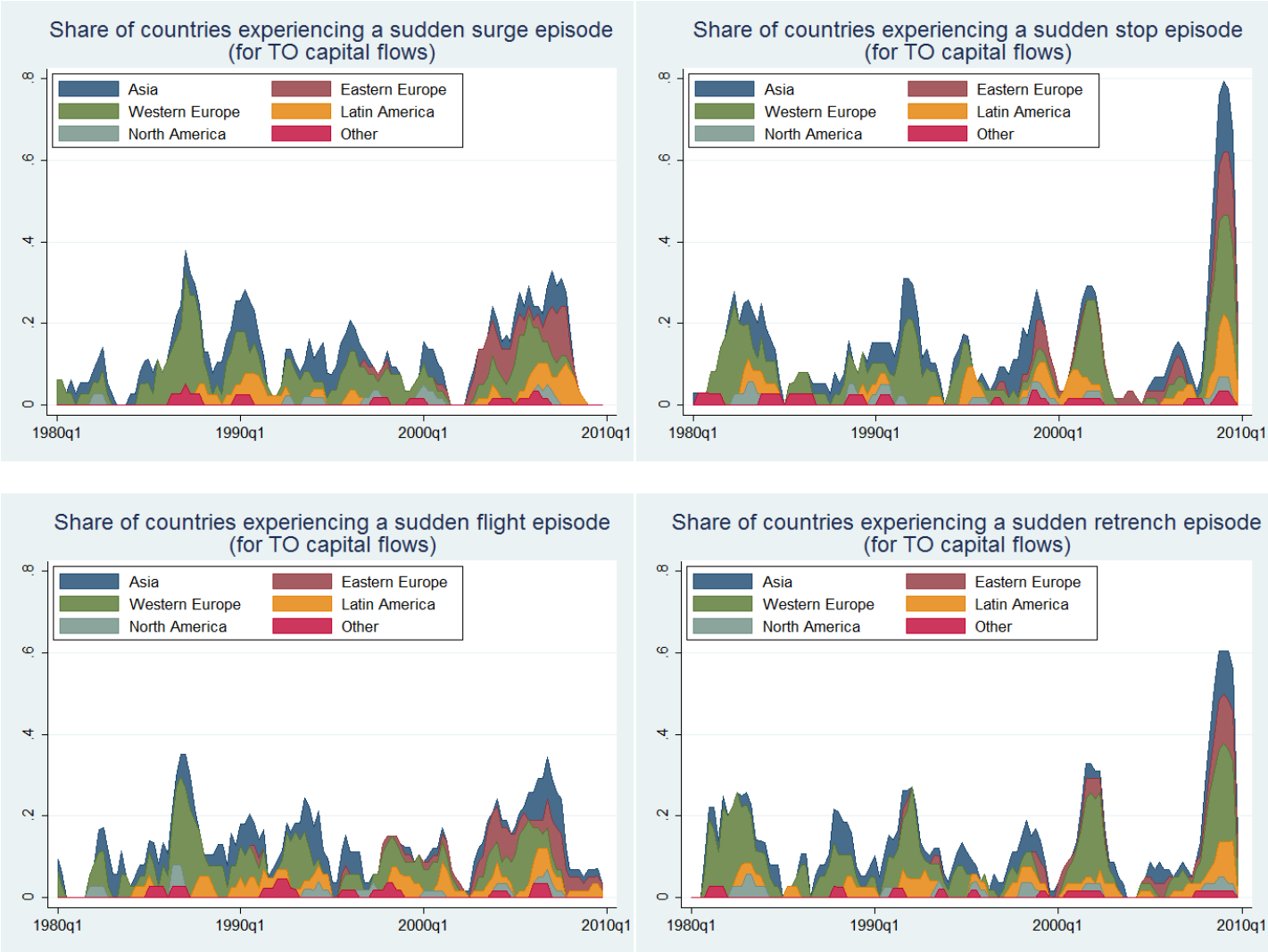


Figure 6a
Percent of Countries with Each Type of Episode:
Based on Debt Flows

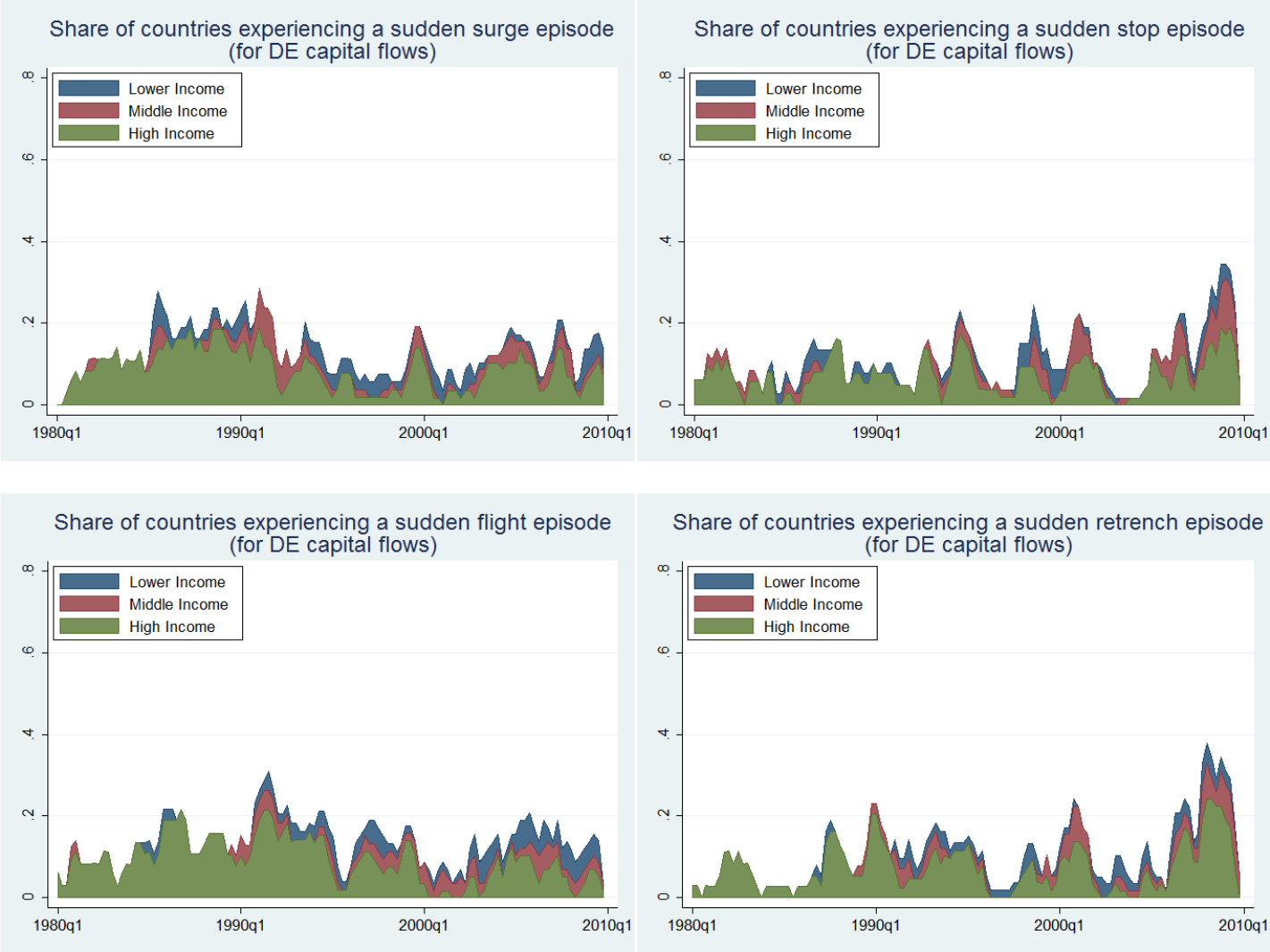


Figure 6b
Percent of Countries with Each Type of Episode:
Based on Equity Flows

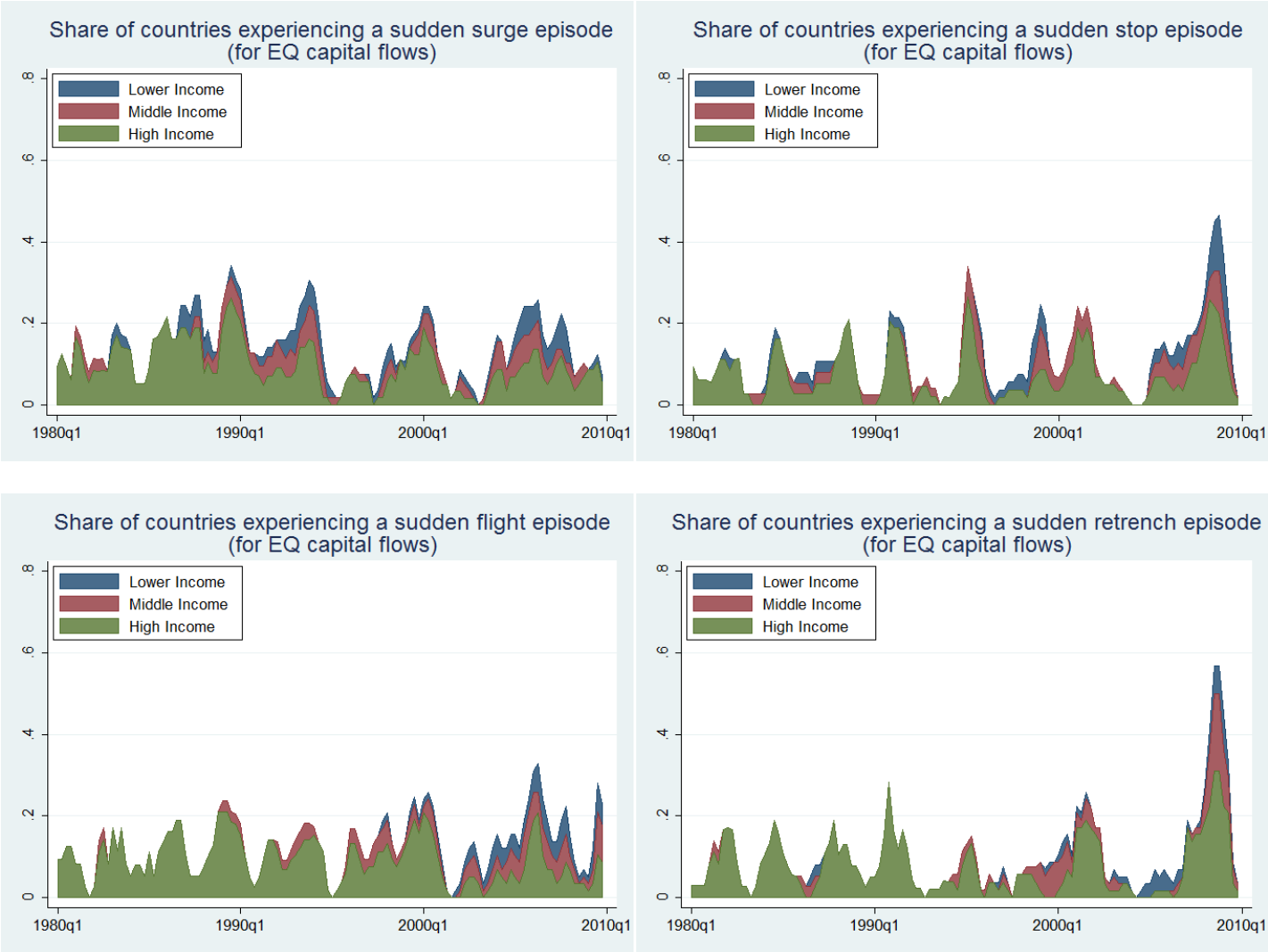


Figure 6c
Percent of Countries with Each Type of Episode:
Based on Direct Investment Flows

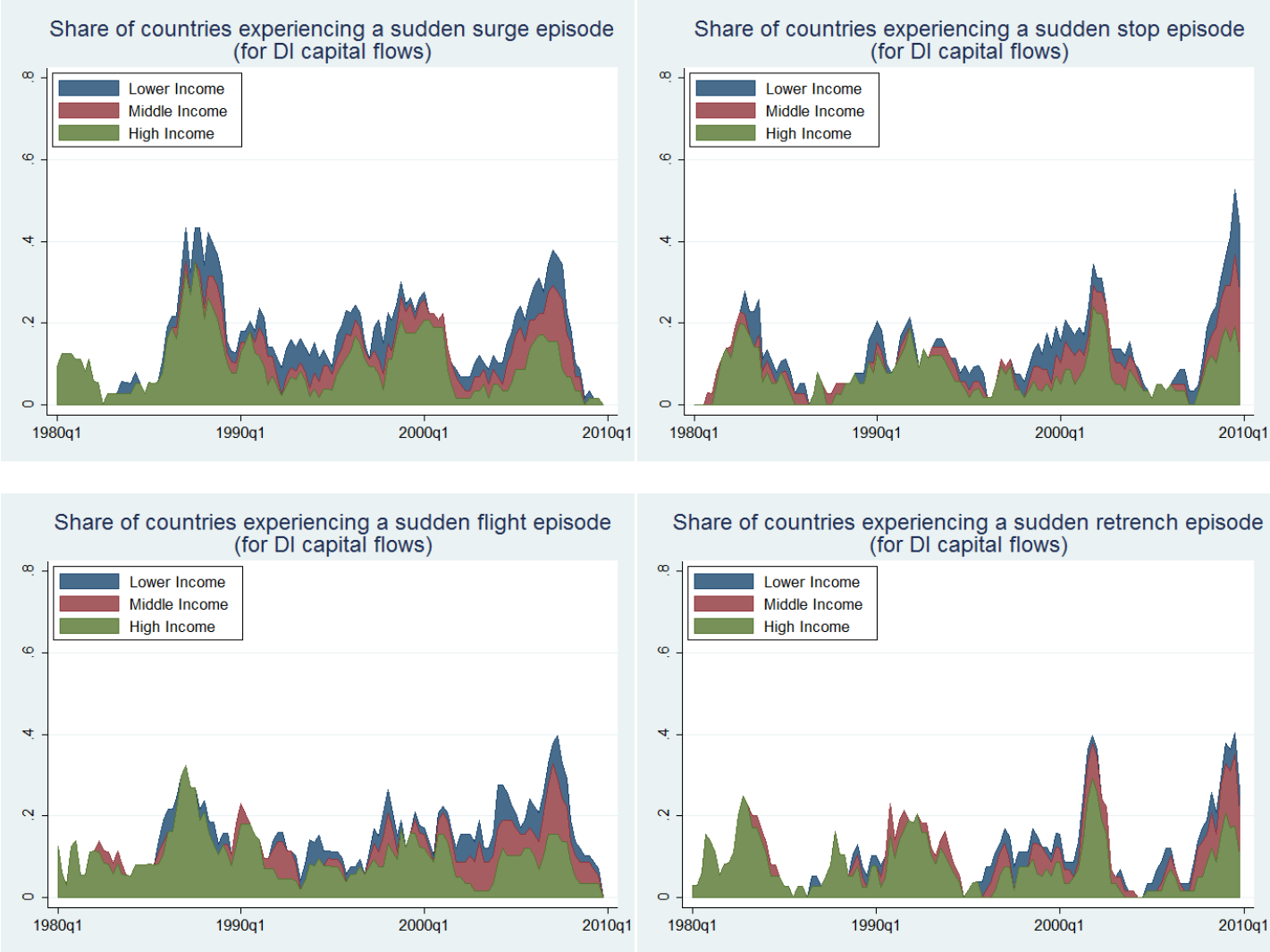
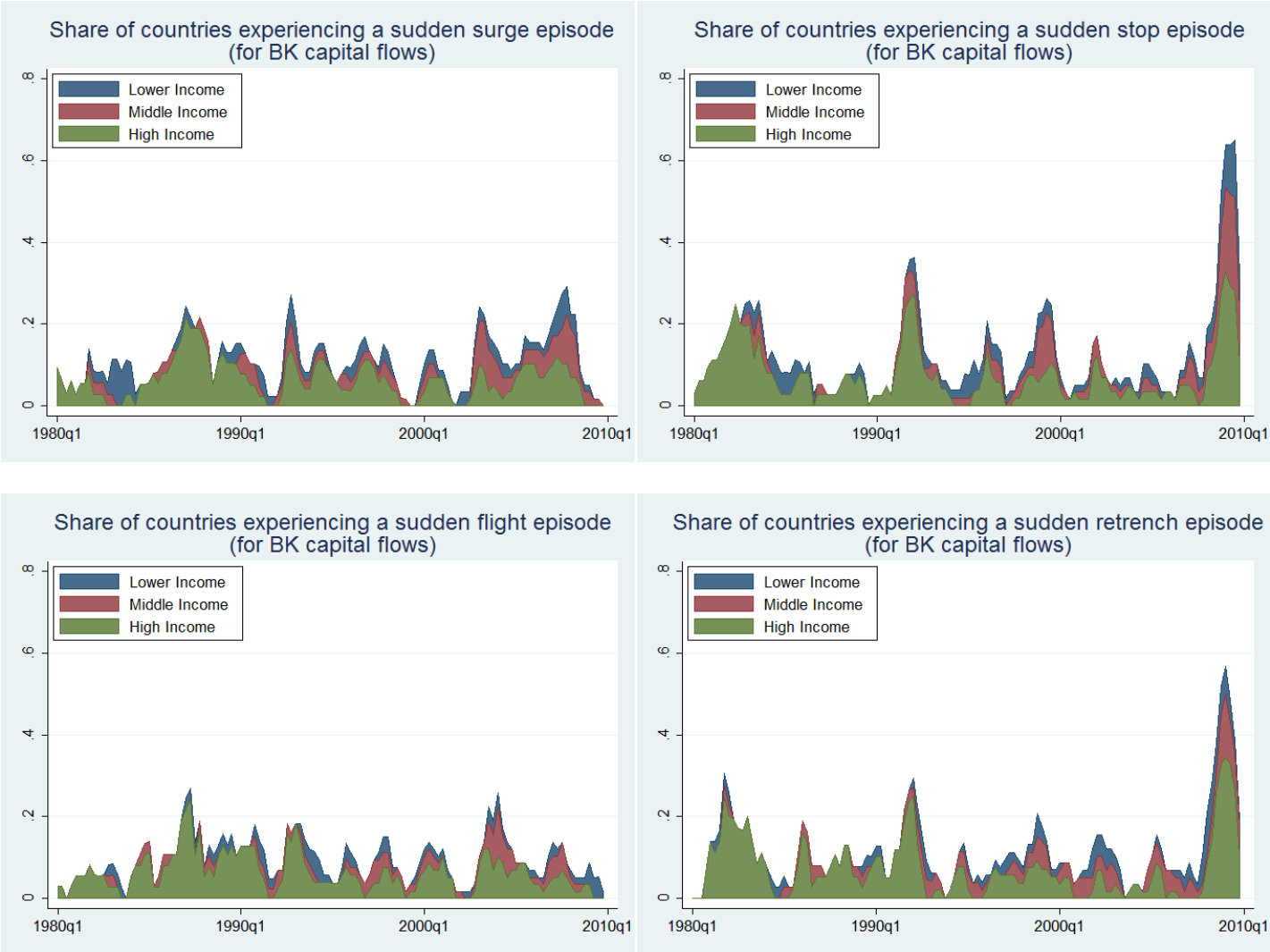


Figure 6d
Percent of Countries with Each Type of Episode:
Based on Banking Flows



Appendix Table 1: Country and Time Period Representation

The table shows the 58 countries in our sample, as well as the dates for which quarterly gross capital flows data are available. All data are from IFS unless noted.

Country	Start year	End year	Country	Start year	End year
Argentina	1980	2009	Latvia	1993	2009
Australia	1980	2009	Lithuania	1993	2009
Austria	1980	2009	Malaysia	1999	2009
Bangladesh[+]	1980	2009	Mexico+	1980	2009
BelLux	1980	2009	Netherlands	1980	2009
Bolivia[*]	1988	2009	New Zealand	1980	2009
Brazil	1980	2009	Nicaragua	1992	2009
Canada	1980	2009	Norway[*]	1980	2009
Chile	1991	2009	Panama	1998	2009
Colombia	1996	2009	Peru[*]	1980	2009
Croatia	1993	2009	Philippines	1980	2009
Czech Republic	1993	2009	Poland[*]	1985	2009
Denmark	1981	2009	Portugal	1980	2009
Estonia	1992	2009	Romania	1991	2009
Finland	1980	2009	Russia	1994	2009
France	1980	2009	Singapore[++]	1995	2009
Germany	1980	2009	Slovak Rep.[++]	1993	2009
Greece[*]	1980	2009	Slovenia[*]	1992	2009
Guatemala[+]	1980	2009	South Africa	1980	2009
Hong Kong	1999	2009	Spain	1980	2009
Hungary	1989	2009	Sri Lanka	1980	2009
Iceland	1980	2009	Sweden	1980	2009
India[*]	1980	2009	Switzerland	1999	2009
Indonesia[+]	1981	2009	Taiwan[++]	1981	2009
Ireland	1981	2009	Thailand[+]	1980	2009
Israel	1980	2009	Turkey	1984	2009
Italy	1980	2009	UK	1980	2009
Japan	1980	2009	US	1980	2009
Korea	1980	2009	Venezuela	1994	2009

[*] Gaps in both inflows and outflows: Norway (92q1-93q4), Greece (98q1-98q4), Bolivia (85q1-87q4), Peru (85q1-90q4), Gaps in outflows only: India (91q1-99q4). Gaps in inflows only: Slovenia (94q4-96q1).

[+] Gaps in outflows filled with zeros: Guatemala (95q1-00q4), Mexico (94q1-95q4), Bangladesh (01q3-01q4), Indonesia (952-954, 033-034), Thailand (921-924).

[++]Data from non-IFS sources: Slovak Rep. (01q1-01q4) http://www.nbs.sk/en/statistics/balance-of-payments-statistics/en-platobna-bilancia; Singapore BOP dataset; Taiwan http://www.cbc.gov.tw/ct.asp?xItem=2070&ctNode=512&mp=2

Appendix Table 2: Surge, Stop, Flight and Retrenchment Episodes by Country (1980 to 2009)

	Surges		Stops		Flight		Retrenchment	
	Start	End	Start	End	Start	End	Start	End
Argentina	1990q4	1992q3	1982q4	1983q1	1989q3	1990q1	1982q3	1982q4
	2003q1	2003q4	1989q2	1990q3	1991q2	1992q3	1988q3	1989q1
			1994q4	1995q1	2002q4	2003q1	1992q4	1993q2
			1998q4	1999q3	2006q3	2007q3	1998q3	1999q2
			2000q4	2002q2	2008q1	2008q3	2009q2	2009q4
			2008q2	2009q3				
Australia	1980q4	1983q1	1983q2	1984q1	1980q1	1980q2	1980q4	1981q2
	1993q4	1994q3	1989q3	1991q3	1984q2	1985q1	1989q2	1991q1
	1995q3	1996q3	1997q3	1998q1	1995q4	1996q3	1994q4	1995q2
	2002q3	2002q4	1998q3	1998q4	2004q1	2004q3	2003q1	2003q3
	2003q4	2004q3	2005q1	2005q4	2006q2	2007q1	2005q1	2005q4
	2006q2	2007q1						
Austria	1980q3	1980q4	1981q3	1982q3	1992q2	1993q1	1981q4	1982q3
	1992q2	1993q1	1996q4	1997q1	1997q2	1998q1	1986q1	1986q2
	1999q2	2000q1	2001q1	2002q1	1999q2	2000q1	1993q3	1993q4
	2005q1	2005q4	2006q1	2006q4	2005q1	2005q4	1998q2	1998q3
			2008q3	2009q3			2001q2	2002q1
							2006q1	2006q4
							2008q4	2009q4
Bangladesh	1989q1	1989q4	1982q4	1983q3	1987q1	1987q3	1992q2	1993q1
	1998q1	1998q3	1991q3	1992q1	1988q2	1989q3	2001q1	2001q4
	2003q4	2004q1	2006q1	2006q2	1995q3	1997q1	2009q3	2009q4
	2005q1	2005q2			2005q4	2006q3		
					2008q2	2008q4		
Belgium -	1987q1	1987q4	1981q1	1982q2	1987q1	1987q4	1981q1	1982q2
Luxembourg	1999q3	2000q3	1988q2	1989q1	1999q3	2000q3	1988q2	1989q1
			1994q1	1995q1	2005q2	2006q1	1994q1	1995q1
			2001q4	2002q3			2001q4	2002q3
			2008q2	2009q3			2008q2	2009q3
Bolivia	1996q1	1996q3	1995q1	1995q2	1994q1	1994q4	2004q3	2005q1
	2007q3	2008q4	1999q2	2001q2	2001q1	2001q2	2006q2	2006q3
			2006q3	2007q2	2003q3	2004q1		
					2008q4	2009q3		
Brazil	1988q1	1988q4	1982q4	1983q4	1984q2	1985q1	1982q4	1983q4
	1990q2	1991q1	1993q1	1993q3	1987q4	1988q3	1985q2	1985q4
	1994q1	1994q3	1995q1	1995q2	1994q2	1994q4	1992q1	1992q4
	1995q4	1996q2	1999q1	1999q2	1998q3	1999q2	1995q2	1996q1
	2006q3	2007q4	2008q2	2009q3	2006q4	2007q3	1997q4	1998q2
							2008q2	2008q3

	Surges		Stops		Flight		Retrenchment	
	Start	**End**	**Start**	**End**	**Start**	**End**	**Start**	**End**
Canada	1996q4	1997q3	1982q2	1983q2	1986q2	1986q4	1982q2	1983q2
	2000q1	2001q1	1991q2	1991q3	1994q2	1994q4	1993q2	1993q3
	2006q2	2007q1	1995q2	1996q1	1996q3	1997q2	1995q2	1996q1
			1999q1	1999q4	2000q1	2001q1	1998q1	1998q3
			2008q4	2009q2	2006q2	2007q1	2008q4	2009q3
Chile	2005q4	2006q3	2000q2	2001q1	1998q2	1999q4	1997q2	1997q3
	2007q4	2008q3	2007q1	2007q2	2006q1	2006q4	2000q2	2000q4
			2009q1	2009q3			2008q3	2009q3
Colombia	2005q4	2006q3	2008q2	2009q1	2006q2	2006q3	2002q2	2003q1
							2007q2	2007q3
Croatia	2002q4	2004q1	1998q4	1999q2	2000q1	2000q4	2001q3	2002q1
			2004q4	2005q3	2002q4	2003q4	2004q4	2005q4
					2006q4	2007q3		
Czech	2002q3	2003q1	2003q2	2004q1	2003q3	2005q1	2000q1	2000q4
Republic			2006q2	2006q4			2002q1	2002q3
			2008q4	2009q3			2008q4	2009q4
Denmark	1993q3	1994q2	1986q4	1987q2	1993q3	1994q2	1986q4	1987q2
	1995q3	1996q2	1989q2	1989q4	1999q4	2001q1	1992q2	1993q2
	2005q1	2005q4	1991q4	1993q2	2005q2	2005q4	1994q3	1995q1
			1994q3	1995q1			2001q2	2002q2
			1998q3	1999q1			2008q3	2009q4
			2001q2	2002q1				
			2008q4	2009q4				
Estonia	1997q4	1998q1	1998q3	1999q3	1997q4	1998q1	1998q4	1999q1
	2003q1	2005q1	2008q2	2009q4	2001q1	2001q2	2000q1	2000q2
					2004q2	2005q3	2008q2	2009q3
Finland	1984q3	1985q1	1985q4	1986q2	1985q1	1985q2	1983q3	1984q2
	1987q1	1987q4	1991q1	1992q2	1986q3	1987q1	1985q4	1986q2
	1996q3	1997q3	2001q1	2001q4	1988q3	1989q1	1987q3	1987q4
	1998q4	1999q1	2009q2	2009q3	1993q1	1993q3	1990q3	1990q4
	2004q3	2004q4			1998q4	1999q1	1992q1	1992q3
	2006q2	2007q1			2004q3	2005q1	2001q1	2001q4
					2006q2	2006q4	2009q1	2009q3
France	1986q3	1987q4	1981q3	1982q2	1986q4	1987q4	1981q1	1983q2
	1997q4	1998q3	1991q1	1992q1	1992q3	1992q4	1991q2	1992q1
	2001q1	2001q2	2001q4	2002q3	1997q4	1998q3	2001q4	2002q3
			2008q1	2009q3	2001q1	2001q2	2008q1	2009q3

	Surges		Stops		Flight		Retrenchment	
	Start	**End**	**Start**	**End**	**Start**	**End**	**Start**	**End**
Germany	1980q1	1980q2	1981q4	1982q4	1984q3	1985q2	1981q4	1982q1
	1986q1	1986q4	1987q4	1988q3	1985q4	1986q4	1982q3	1983q2
	1989q2	1990q1	1994q1	1994q4	1993q1	1993q4	1987q3	1988q2
	1992q3	1993q2	2001q1	2002q2	2004q3	2005q4	1990q4	1992q2
	2005q1	2005q4	2008q3	2009q3			1994q2	1994q4
	2007q2	2008q1					2000q4	2002q2
							2008q3	2009q3
Greece	1989q4	1991q1	1981q4	1982q3	2001q3	2001q4	1997q2	1997q4
	1995q1	1995q2	1992q1	1992q4	2005q1	2005q3	2006q1	2006q4
	1996q4	1997q2	1995q4	1996q2				
	2005q1	2005q4	1997q3	1997q4				
			2006q1	2006q4				
			2009q2	2009q4				
Guatemala	1987q4	1988q1	1994q4	1995q3	1990q3	1991q2	1988q3	1988q4
	2006q1	2006q4	2008q4	2009q4	1998q2	1998q3	1989q2	1990q1
					1999q1	1999q4	1991q3	1992q1
					2001q1	2001q3	2002q2	2002q3
					2004q1	2004q4	2008q4	2009q3
Hong Kong			2008q3	2009q3			2008q3	2009q3
Hungary	2003q1	2003q4	1996q4	1997q1	1995q3	1995q4	2008q4	2009q4
	2005q1	2005q3	2002q2	2002q3	2001q2	2002q1		
	2006q3	2008q1	2009q1	2009q4	2003q4	2004q3		
					2006q1	2008q1		
Iceland	1987q1	1987q4	1982q4	1983q4	1983q3	1983q4	1981q4	1982q3
	1995q4	1996q4	1989q2	1990q1	1986q3	1987q2	1992q1	1992q3
	2003q3	2006q1	2001q2	2002q1	1993q2	1993q3	2001q3	2002q2
			2008q1	2009q2	1997q3	1998q2	2006q4	2007q1
					1999q1	1999q4	2008q2	2009q2
					2003q1	2006q1		
India	1982q2	1982q3	1989q4	1990q4	1982q2	1982q4	1981q2	1981q4
	1984q1	1985q2	1991q3	1992q1	1990q3	1990q4	1983q2	1984q1
	1993q4	1994q4	2008q3	2009q3	2005q4	2006q4	2007q4	2008q2
	2006q4	2008q1						
Indonesia	1990q3	1991q2	1993q2	1993q3	1993q3	1994q3	1997q4	1998q2
	1995q2	1996q3	1997q4	1998q3	2002q3	2003q2	2006q3	2007q1
	2005q4	2006q1	2006q4	2007q1	2005q4	2006q2		

	Surges		Stops		Flight		Retrenchment	
	Start	**End**	**Start**	**End**	**Start**	**End**	**Start**	**End**
Ireland	1986q4	1987q3	1991q3	1992q2	1987q2	1988q1	1991q4	1992q2
	1989q3	1990q2	2001q2	2001q3	1989q3	1990q1	2000q4	2001q3
	1992q4	1993q4	2008q2	2009q3	1992q3	1993q1	2008q2	2009q3
	1995q3	1996q3			1995q4	1996q3		
	1997q4	1999q1			1997q4	1998q4		
	2003q3	2004q2			2003q3	2004q2		
	2006q3	2007q3			2006q4	2007q3		
Israel	1986q2	1987q1	1980q2	1981q3	1986q2	1987q1	1981q1	1981q4
	1989q4	1990q3	1983q4	1984q4	1992q1	1992q3	1991q1	1991q3
	1999q2	2000q1	1988q3	1989q2	1998q1	1998q4	1993q3	1993q4
	2006q1	2006q4	1996q3	1996q4	2006q1	2006q4	1995q2	1995q3
			1998q3	1998q4			2001q2	2002q2
			2001q2	2002q2			2007q3	2009q3
			2007q3	2007q4				
			2008q4	2009q2				
Italy	1987q1	1987q3	1982q2	1983q1	1987q1	1987q3	1982q2	1983q1
	1996q1	1997q1	1991q4	1992q2	2003q1	2003q4	1986q1	1986q2
	2003q1	2003q4	1992q4	1993q3	2005q1	2005q4	1993q1	1993q3
	2005q2	2006q1	1999q1	1999q2			2000q3	2002q3
			2000q4	2002q3			2007q3	2009q1
			2008q2	2009q1				
Japan	1986q2	1987q3	1982q4	1983q1	1986q1	1987q2	1982q4	1983q1
	1993q4	1995q1	1990q4	1991q4	1993q4	1994q4	1987q4	1988q3
	2000q2	2001q1	1992q2	1993q1	2000q2	2001q1	1990q3	1991q3
			1998q1	1999q1			1996q3	1996q4
			2005q2	2005q3			1998q2	1999q4
			2006q3	2007q1			2008q3	2009q3
			2008q3	2009q3				
Korea	1988q2	1989q1	1986q3	1987q4	1982q2	1983q1	1984q3	1984q4
	1990q2	1991q2	1997q2	1998q3	1985q2	1985q4	1987q4	1988q1
	1994q3	1995q4	2008q2	2009q3	1988q4	1989q1	1997q3	1999q1
					1990q2	1990q3	2005q1	2005q3
					1994q2	1995q4	2008q3	2009q3
					2002q4	2003q3		
Latvia	2003q3	2005q1	1998q4	1999q2	2006q3	2007q4	1998q4	1999q2
	2006q2	2007q4	2005q3	2005q4			2005q3	2006q1
			2008q3	2009q3			2008q3	2009q2
Lithuania	2004q2	2004q3	2000q4	2001q2	2004q1	2004q4	2001q2	2001q3
	2005q4	2006q2	2008q3	2009q4			2008q3	2009q3
	2006q4	2007q4						

	Surges		Stops		Flight		Retrenchment	
	Start	**End**	**Start**	**End**	**Start**	**End**	**Start**	**End**
Malaysia			2005q4	2006q3	2006q2	2007q4	2008q3	2009q2
			2008q3	2009q2				
Mexico	1989q2	1991q2	1994q4	1995q4	1987q3	1988q2	1991q3	1991q4
	2007q3	2008q2	2008q4	2009q3	1990q1	1990q4	1992q2	1993q1
					1993q2	1994q1	1997q3	1997q4
					2001q3	2002q2	2008q4	2009q3
Netherlands	1985q3	1987q1	1981q1	1982q3	1980q1		1980q4	1981q1
	1995q3	1996q2	1990q4	1991q4	1986q2	1987q1	1981q4	1983q2
	1997q4	1998q4	2001q2	2001q3	1997q4	1998q4	1990q4	1992q1
	2005q2	2006q2	2002q1	2002q4	2005q2	2006q2	2001q2	2001q3
			2008q1	2009q3			2002q1	2002q4
							2008q1	2009q3
New Zealand	1986q3	1987q2	1987q4	1988q3	1986q4	1987q2	1986q1	1986q2
	2000q1	2001q1	1996q4	1997q2	1989q2	1990q2	1988q1	1989q1
	2006q3	2007q3	2008q2	2009q2	1993q3	1994q2	2001q2	2001q3
					2006q3	2007q3	2002q4	2003q3
							2005q3	2006q1
Nicaragua			2000q3	2001q3	2000q4	2001q2	1998q1	1998q4
			2009q1	2009q4			2002q4	2003q2
Norway	1982q3	1982q4	1988q3	1989q2	1986q3	1987q3	1981q1	1981q2
	1984q3	1985q3	1991q3	1991q4	2000q2	2001q2	1987q4	1988q4
	2002q4	2003q2	2001q3	2002q1	2005q4	2007q1	2001q4	2002q3
	2005q4	2007q1	2007q4	2008q4			2007q4	2008q3
			2009q2	2009q4			2009q2	2009q4
Panama			2008q4	2009q4			2008q4	2009q3
Peru	2006q4	2008q2	1983q3	1984q3	2001q1	2001q2	2007q1	2007q2
			1998q1	1998q2	2003q2	2004q1	2007q4	2008q3
			1998q4	1999q3	2005q4	2006q3		
			2005q4	2006q1	2009q2	2009q4		
			2008q4	2009q3				
Philippines	1984q4	1985q2	1983q2	1984q2	1991q4	1994q2	1997q3	1998q2
	1994q2	1994q3	1992q1	1992q2	1999q1	1999q2	2008q1	2008q4
	1996q1	1997q1	1997q3	1998q4	2007q1	2007q2		
	2005q2	2005q4	2008q1	2009q1				
	2007q1	2007q3						
Poland	2007q1	2008q2	2008q4	2009q3	1990q4	1991q1	1991q3	1991q4
							1993q2	1993q3
							2008q3	2009q3

	Surges		Stops		Flight		Retrenchment	
	Start	**End**	**Start**	**End**	**Start**	**End**	**Start**	**End**
Portugal	1981q2	1982q3	1983q4	1984q3	1982q2	1982q3	1980q4	1982q1
	1987q3	1988q2	1992q3	1993q2	1983q3	1984q1	1987q4	1988q1
	1988q4	1990q2	1996q2	1996q3	1990q2	1991q2	1989q4	1990q1
	1994q3	1995q3	1999q3	1999q4	1993q1	1993q4	1992q1	1992q2
	2000q1	2000q4	2002q4	2003q1	2003q3	2004q1	1996q1	1996q3
	2003q4	2004q2	2004q4	2005q2			2002q4	2003q1
	2006q1	2006q2	2008q3	2009q3			2004q3	2005q2
Romania	1996q4	1997q3	1999q4	2000q1	2003q4	2004q1	2007q4	2008q2
	2000q4	2001q2	2008q3	2009q4	2004q4	2005q3		
	2004q1	2005q3			2006q4	2007q2		
	2006q4	2007q4						
Russia	2003q2	2004q1	2006q2	2006q3	2003q2	2004q2	2001q3	2002q2
	2007q1	2008q1	2008q4	2009q3	2007q2	2009q1	2009q3	2009q4
Singapore	2006q4	2008q1	2008q2	2009q3	2006q2	2007q4	2008q2	2009q3
Slovak	2004q3	2005q2	1998q4	1999q4	2008q2	2008q3	1999q1	1999q2
Republic			2006q1	2006q4	2009q1	2009q4	2007q2	2007q3
Slovenia	2002q3	2003q3	1998q1	1998q2	1998q3	1999q2	2008q1	2009q3
	2007q1	2007q4	2003q4	2004q2	2002q4	2003q3		
			2008q3	2009q3	2007q1	2007q4		
South	1987q1	1987q4	1985q2	1986q3	1985q1	1985q4	1987q4	1988q2
Africa	1997q2	1998q1	1990q2	1990q4	1991q2	1993q1	1999q1	1999q2
	2003q4	2004q4	1998q3	1999q2	1995q3	1996q2	2000q3	2001q1
	2005q2	2006q2	2000q3	2001q1	1997q2	1998q2		
			2007q1	2007q2	2003q4	2004q3		
			2008q3	2009q3	2006q1	2006q4		
Spain	1987q1	1988q2	1982q1	1983q2	1982q1	1982q4	1981q1	1981q2
	1990q4	1991q3	1985q2	1986q2	1988q2	1989q1	1983q2	1984q1
			1992q1	1992q2	1990q1	1991q2	1987q1	1987q3
			1994q2	1995q1	1992q3	1993q4	1991q4	1992q1
			2001q3	2002q2			1994q2	1995q1
			2008q1	2009q4			2001q3	2002q2
							2007q3	2009q3
Sri	1989q4	1990q3	1983q4	1984q4	1982q4	1983q3	1990q1	1990q2
Lanka	2000q1	2000q4	1994q2	1994q3	1990q3	1991q2	1993q2	1994q3
			1995q4	1996q1	1995q1	1995q3	1998q4	1999q1
			1998q3	1999q1	2007q3	2008q1	2001q4	2002q3
			2001q2	2002q1	2009q1	2009q3		
			2008q1	2008q2				

	Surges		Stops		Flight		Retrenchment	
	Start	**End**	**Start**	**End**	**Start**	**End**	**Start**	**End**
Sweden	1985q3	1987q3	1983q4	1984q3	1981q4	1982q3	1984q1	1984q4
	1989q2	1990q4	1991q2	1992q2	1986q2	1988q1	1991q1	1992q1
	1998q1	1998q4	1997q1	1997q3	1988q4	1990q3	1997q1	1997q3
	2004q4	2005q2	2001q4	2002q4	1995q3	1996q3	2000q2	2000q3
			2008q4	2009q3			2001q1	2002q3
							2008q1	2009q3
Switzerland	2005q3	2006q2	2008q1	2009q1	2005q3	2006q1	2008q1	2009q1
Taiwan	1999q2	2000q2	1997q4	1998q3	1996q1	1996q3	1991q4	1992q1
	2003q3	2004q2	2001q1	2001q2	2000q1	2000q4	1997q1	1997q4
			2005q1	2005q2	2003q3	2004q1	2002q2	2002q3
			2008q4	2009q2			2008q2	2009q2
Thailand	1987q4	1990q3	1982q1	1982q2	1983q2	1983q3	1984q2	1984q4
	1995q2	1996q1	1992q1	1992q4	1985q2	1986q1	1986q4	1988q4
	2004q3	2006q1	1996q3	1998q2	1989q3	1990q2	1991q2	1991q4
			2007q1	2007q4	1993q2	1994q2	1994q4	1995q1
			2008q3	2009q3	2005q1	2006q1	1996q3	1997q2
							2008q1	2009q2
Turkey	1990q1	1990q4	1991q3	1991q4	1991q1	1991q2	1994q3	1995q3
	1992q3	1993q4	1994q2	1995q1	1995q4	1996q3	2007q4	2008q2
	2000q1	2000q3	2001q1	2001q4	2006q4	2007q3	2009q2	2009q4
			2007q4	2008q2				
			2008q4	1980q1				
UK	1980q1	1980q2	1990q1	1990q3	1980q1	1980q2	1982q2	1983q1
	1985q3	1987q2	1991q3	1992q1	1985q4	1987q2	1991q3	1992q2
	1992q3	1993q4	1994q2	1994q4	1992q4	1993q2	1998q1	1998q4
			1998q1	1998q4	2000q3	2000q4	2001q3	2002q2
			2001q3	2002q2			2008q2	2009q2
			2008q2	2009q2				
US	1982q1	1982q3	1983q1	1983q3	1981q4	1982q3	1983q1	1984q1
	1992q3	1992q4	1988q3	1988q4	1986q2	1986q4	1990q3	1990q4
	1993q3	1994q3	1989q4	1990q4	1993q3	1994q2	1998q1	1998q4
	1999q4	2000q3	1998q1	1999q1	2004q1	2004q4	2001q3	2002q2
	2006q4	2007q2	2001q3	2002q2	2006q4	2007q3	2008q1	2009q1
			2008q1	2009q2				
Venezuela	2003q4	2004q1	2006q2	2006q4	2005q2	2006q2	2001q1	2001q4
	2005q2	2005q4					2006q4	2007q1
	2007q2	2008q1					2008q4	2009q3

Appendix Table 3a: Sensitivity Tests—Explaining Surge Episodes

Global Factors	HP Filter[1]	Risk: VXO[2]	Risk: Variance Risk Premium[2]	Interest Rates[3]	Financial Size[4]	Financial Integration[5]	Add Demographics[6]	Add Reserves[6]	Add Moodys[6]	Add ER Regime
Global risk	0.050**	-0.045**	-0.016**	0.072**	0.081**	0.076**	0.074**	0.074**	0.093**	0.074**
	(0.024)	(0.014)	(0.008)	(0.026)	(0.034)	(0.026)	(0.026)	(0.026)	(0.029)	(0.025)
Global liquidity	0.024	-0.286	-0.275	-0.265	0.092	-0.279	-0.262	-0.290	-0.490	-0.262
	(0.361)	(0.256)	(0.264)	(0.251)	(0.288)	(0.256)	(0.267)	(0.250)	(0.314)	(0.264)
Global interest rates	0.013	0.014	0.015	0.061	-0.016	0.046	0.050	0.034	0.028	0.055
	(0.060)	(0.057)	(0.057)	(0.064)	(0.073)	(0.054)	(0.054)	(0.058)	(0.070)	(0.055)
Global growth	14.369**	8.924**	8.303*	10.075**	8.613*	9.894**	10.876**	10.716**	8.905**	10.678**
	(4.147)	(4.531)	(4.989)	(4.050)	(4.808)	(4.146)	(3.859)	(3.847)	(4.301)	(3.888)
Contagion Factors										
Regional	0.851**	0.742**	0.892**	0.897**	0.710**	0.761**	0.894**	0.907**	0.769**	0.925**
	(0.213)	(0.220)	(0.224)	(0.222)	(0.270)	(0.216)	(0.220)	(0.216)	(0.255)	(0.220)
Trade	6.784**	1.104	1.834	1.710	2.302	1.436	1.716	2.255*	1.560	1.726
	(1.069)	(1.257)	(1.190)	(1.214)	(1.465)	(1.210)	(1.208)	(1.212)	(1.301)	(1.226)
Domestic Factors										
Financial system size	0.376*	-0.050	-0.045	-0.064	-0.162	-0.050	-0.055	0.023	-0.067	-0.098
	(0.202)	(0.197)	(0.204)	(0.203)	(0.182)	(0.180)	(0.206)	(0.196)	(0.212)	(0.190)
Financial system soundness	0.133	0.649	0.724*	0.730*	1.255*	0.874**	0.727*	0.661	0.922*	0.626
	(0.446)	(0.436)	(0.421)	(0.416)	(0.718)	(0.444)	(0.418)	(0.426)	(0.526)	(0.422)
Financial market integration	-0.032	-0.004	-0.012	-0.009	-0.016	0.048	-0.008	-0.007	0.000	0.009
	(0.081)	(0.044)	(0.047)	(0.045)	(0.041)	(0.074)	(0.047)	(0.040)	(0.046)	(0.039)
Real GDP growth	0.602	0.529	0.754	0.572*	0.999**	0.601*	0.551	0.559*	0.648	0.574*
	(0.574)	(0.339)	(0.486)	(0.339)	(0.474)	(0.346)	(0.338)	(0.330)	(0.406)	(0.331)
Country fiscal position	0.001	-0.005**	-0.005*	-0.005**	0.001	-0.005*	-0.005*	-0.005**	-0.006**	-0.005**
	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
GDP per capita	-0.007	0.006	0.008	0.006	0.008	0.004	0.005	0.002	0.004	0.008
	(0.010)	(0.007)	(0.007)	(0.007)	(0.010)	(0.008)	(0.011)	(0.008)	(0.012)	(0.007)
							0.145	-1.534	-0.016	-0.371**
							(0.929)	(1.074)	(0.031)	(0.168)
							0.500			
							(2.439)			
Sample Size	***1,916***	***3,026***	***2,995***	***3,026***	***2,060***	***2,881***	***3,026***	***3,026***	***2,581***	***3,026***

Notes: The dependent variable is a 0-1 variable indicating if there is an episode (either surge, stop, flight or retrenchment). Variables are defined in Section 3.4. Estimates are obtained using the complimentary logarithmic (or cloglog) framework which assumes that $F(\cdot)$ is the cumulative distribution function (cdf) of the extreme value distribution. Regressions include robust standard errors are clustered by country. ** is significant at the 5% level and * at the 10% level. (1) HP filter with a 30% boundary is used to construct the episodes (instead of a rolling standard deviation and mean cutoff). (2) Global risk measured by the VXO or Variance Risk Premium as calculated in Zhou (2010). (3) Global interest rates measured by U.S. interest rates instead of an average of U.S., euro area and Japanese rates.(4) Financial system size measured by the sum of stock market plus bond market capitalization divided by GDP (instead of just stock market capitalization). (5) Financial market integration measured by capital controls in China and Ito (2005). (6) Additional control variables are included in the regression; for demographics the controls are the share of the working age population (aged 15 to 65) that is younger (below 15) or older (over 65); for reserves the control is the ratio of reserves to GDP; for Moody's the control is a numerical value for Moody's index, with a higher value indating lower credit; for ER regime the control is a dummy equal to 1 if the country has a pegged exchange rate regime as defined in Shambaugh (2004).

Appendix Table 3b: Sensitivity Tests—Explaining Stop Episodes

Global Factors	HP Filter[1]	Risk: VXO[2]	Risk: Variance Risk Premium[2]	Interest Rates[3]	Financial Size[4]	Financial Integration[5]	Add Demographics[6]	Add Reserves[6]	Add Moodys[6]	Add ER Regime
Global risk	-0.062**	0.034**	0.012**	-0.133**	-0.150**	-0.134**	-0.131**	-0.133**	-0.138**	-0.134**
	(0.025)	(0.005)	(0.003)	(0.024)	(0.029)	(0.027)	(0.024)	(0.024)	(0.026)	(0.024)
Global liquidity	0.208	0.435**	0.429**	0.440**	0.187	0.337	0.509**	0.419**	0.667**	0.431**
	(0.299)	(0.202)	(0.206)	(0.206)	(0.237)	(0.228)	(0.208)	(0.208)	(0.258)	(0.205)
Global interest rates	-0.055	0.053	0.028	-0.042	0.102**	0.036	-0.000	-0.003	0.043	-0.002
	(0.076)	(0.032)	(0.031)	(0.040)	(0.050)	(0.036)	(0.034)	(0.034)	(0.046)	(0.034)
Global growth	-19.558**	-7.713**	-11.757**	-8.253**	-7.866*	-13.255**	-10.140**	-9.373**	-9.453**	-9.396**
	(3.681)	(3.510)	(4.499)	(3.981)	(4.701)	(4.847)	(3.976)	(4.063)	(3.974)	(4.047)
Contagion Factors										
Regional	1.092**	0.830**	0.836**	0.847**	0.770**	0.747**	0.813**	0.835**	0.807**	0.820**
	(0.180)	(0.141)	(0.137)	(0.136)	(0.162)	(0.138)	(0.134)	(0.135)	(0.139)	(0.138)
Trade	4.047**	2.734**	3.315**	2.899**	3.779**	2.786**	3.150**	3.061**	3.138**	3.030**
	(0.980)	(0.797)	(0.798)	(0.753)	(0.719)	(0.670)	(0.716)	(0.798)	(0.747)	(0.746)
Domestic Factors										
Financial system size	0.025	0.176**	0.183**	0.169**	0.248**	0.145	0.231**	0.209**	0.169*	0.195**
	(0.245)	(0.078)	(0.086)	(0.081)	(0.101)	(0.123)	(0.097)	(0.086)	(0.087)	(0.088)
Financial system soundness	-0.950**	-0.195	-0.138	-0.159	-0.201	-0.259	-0.155	-0.182	0.239	-0.159
	(0.304)	(0.214)	(0.207)	(0.208)	(0.220)	(0.256)	(0.204)	(0.217)	(0.267)	(0.211)
Financial market integration	-0.019	-0.045**	-0.054**	-0.049**	-0.039	-0.016	-0.050*	-0.047**	-0.050**	-0.055**
	(0.081)	(0.018)	(0.021)	(0.020)	(0.024)	(0.053)	(0.026)	(0.018)	(0.020)	(0.023)
Real GDP growth	-0.309	-0.675	-0.169	-0.652	-1.580*	-0.835	-0.619	-0.606	-0.524	-0.603
	(0.682)	(0.691)	(0.646)	(0.699)	(0.836)	(0.726)	(0.687)	(0.691)	(0.590)	(0.691)
Country fiscal position	0.008**	0.002	0.002	0.002	0.003*	0.002	0.001	0.002	0.004**	0.002
	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
GDP per capita	-0.016	0.000	0.001	0.000	-0.002	-0.000	-0.009	-0.001	0.004	-0.000
	(0.011)	(0.006)	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)	(0.006)	(0.007)	(0.005)
							0.761	-0.359	0.037	0.108
							(0.798)	(0.539)	(0.026)	(0.130)
							3.545**			
							(1.633)			
Sample Size	***1,916***	***3,031***	***3,000***	***3,031***	***2,060***	***2,886***	***3,031***	***3,031***	***2,583***	***3,031***

Notes: The dependent variable is a 0-1 variable indicating if there is an episode (either surge, stop, flight or retrenchment). Variables are defined in Section 3.4. Estimates are obtained using the complimentary logarithmic (or cloglog) framework which assumes that $F(\cdot)$ is the cumulative distribution function (cdf) of the extreme value distribution. Regressions include robust standard errors are clustered by country. ** is significant at the 5% level and * at the 10% level. (1) HP filter with a 30% boundary is used to construct the episodes (instead of a rolling standard deviation and mean cutoff). (2) Global risk measured by the VXO or Variance Risk Premium as calculated in Zhou (2010). (3) Global interest rates measured by U.S. interest rates instead of an average of U.S., euro area and Japanese rates.(4) Financial system size measured by the sum of stock market plus bond market capitalization divided by GDP (instead of just stock market capitalization). (5) Financial market integration measured by capital controls in China and Ito (2005). (6) Additional control variables are included in the regression; for demographics the controls are the share of the working age population (aged 15 to 65) that is younger (below 15) or older (over 65); for reserves the control is the ratio of reserves to GDP; for Moody's the control is a numerical value for Moody's index, with a higher value indating lower credit; for ER regime the control is a dummy equal to 1 if the country has a pegged exchange rate regime as defined in Shambaugh (2004).

Appendix Table 3c: Sensitivity Tests—Explaining Flight Episodes

Global Factors	HP Filter[1]	Risk: VXO[2]	Risk: Variance Risk Premium[2]	Interest Rates[3]	Financial Size[4]	Financial Integration[5]	Add Demographics[6]	Add Reserves[6]	Add Moodys[6]	Add ER Regime
Global risk	0.048**	-0.041**	-0.017**	0.053**	0.060*	0.055**	0.052*	0.053**	0.076**	0.053**
	(0.023)	(0.012)	(0.007)	(0.027)	(0.032)	(0.026)	(0.027)	(0.027)	(0.029)	(0.027)
Global liquidity	-0.540**	-0.033	-0.035	-0.014	0.252	0.062	-0.026	-0.023	-0.114	-0.015
	-0.226	-0.232	(0.235)	(0.236)	(0.300)	(0.235)	(0.249)	(0.230)	(0.294)	(0.235)
Global interest rates	0.023	-0.015	0.027	0.012	0.039	0.022	0.032	0.041	0.031	0.043
	(0.061)	(0.059)	(0.054)	(0.066)	(0.073)	(0.054)	(0.055)	(0.057)	(0.074)	(0.056)
Global growth	12.242**	-5.430	-4.014	1.707	7.414*	1.145	1.397	1.607	0.430	1.396
	(4.816)	(4.084)	(5.433)	(4.027)	(4.226)	(4.097)	(4.099)	(4.219)	(4.520)	(4.170)
Contagion Factors										
Regional	0.531**	0.127	0.145	0.157	0.232	0.198	0.192	0.155	0.125	0.174
	(0.161)	(0.175)	(0.182)	(0.177)	(0.194)	(0.186)	(0.188)	(0.178)	(0.178)	(0.183)
Trade	5.744**	1.926	3.190**	3.265**	4.633**	3.121**	3.631**	3.313**	3.358**	3.409**
	(0.997)	(1.417)	(1.277)	(1.325)	(1.272)	(1.307)	(1.279)	(1.295)	(1.476)	(1.305)
Domestic Factors										
Financial system size	0.372**	-0.069	-0.080	-0.098	-0.223	-0.127	-0.132	-0.096	-0.170	-0.115
	(0.189)	(0.223)	(0.229)	(0.230)	(0.239)	(0.189)	(0.212)	(0.256)	(0.222)	(0.224)
Financial system soundness	-0.105	0.884*	0.962**	0.931*	2.296**	1.033**	0.836*	0.962*	0.842	0.914*
	(0.408)	(0.496)	(0.490)	(0.504)	(0.805)	(0.513)	(0.505)	(0.503)	(0.587)	(0.500)
Financial market integration	-0.000	-0.024	-0.028	-0.031	-0.035	-0.107	-0.032	-0.030	-0.018	-0.016
	(0.038)	(0.053)	(0.053)	(0.055)	(0.046)	(0.082)	(0.042)	(0.055)	(0.047)	(0.049)
Real GDP growth	-2.134**	0.089	-0.005	-0.054	-0.196	0.016	-0.020	-0.057	0.463	-0.047
	(0.524)	(0.524)	(0.502)	(0.496)	(0.471)	(0.497)	(0.499)	(0.503)	(0.448)	(0.490)
Country fiscal position	0.001	-0.004**	-0.004*	-0.004*	-0.002	-0.004*	-0.004*	-0.004*	-0.004	-0.004**
	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
GDP per capita	-0.009	-0.000	0.002	0.001	0.000	0.005	0.011	0.002	0.004	0.002
	(0.008)	(0.009)	(0.009)	(0.009)	(0.011)	(0.009)	(0.011)	(0.010)	(0.013)	(0.009)
							0.630	0.201	0.005	-0.226
							(0.851)	(1.173)	(0.031)	(0.180)
							-1.463			
							(1.950)			
Sample Size	***1,890***	***2,976***	***2,945***	***2,976***	***2,041***	***2,833***	***2,976***	***2,976***	***2,546***	***2,976***

Notes: The dependent variable is a 0-1 variable indicating if there is an episode (either surge, stop, flight or retrenchment). Variables are defined in Section 3.4. Estimates are obtained using the complimentary logarithmic (or cloglog) framework which assumes that $F(\cdot)$ is the cumulative distribution function (cdf) of the extreme value distribution. Regressions include robust standard errors are clustered by country. ** is significant at the 5% level and * at the 10% level. (1) HP filter with a 30% boundary is used to construct the episodes (instead of a rolling standard deviation and mean cutoff). (2) Global risk measured by the VXO or Variance Risk Premium as calculated in Zhou (2010). (3) Global interest rates measured by U.S. interest rates instead of an average of U.S., euro area and Japanese rates.(4) Financial system size measured by the sum of stock market plus bond market capitalization divided by GDP (instead of just stock market capitalization). (5) Financial market integration measured by capital controls in China and Ito (2005). (6) Additional control variables are included in the regression; for demographics the controls are the share of the working age population (aged 15 to 65) that is younger (below 15) or older (over 65); for reserves the control is the ratio of reserves to GDP; for Moody's the control is a numerical value for Moody's index, with a higher value indating lower credit; for ER regime the control is a dummy equal to 1 if the country has a pegged exchange rate regime as defined in Shambaugh (2004).

Appendix Table 3d: Sensitivity Tests—Explaining Retrenchment Episodes

Global Factors	HP Filter[1]	Risk: VXO[2]	Risk: Variance Risk Premium[2]	Interest Rates[3]	Financial Size[4]	Financial Integration[5]	Add Demographics[6]	Add Reserves[6]	Add Moodys[6]	Add ER Regime
Global risk	-0.058**	0.026**	0.004	-0.132**	-0.131**	-0.133**	-0.130**	-0.130**	-0.145**	-0.133**
	(0.022)	(0.007)	(0.004)	(0.027)	(0.034)	(0.029)	(0.027)	(0.027)	(0.032)	(0.027)
Global liquidity	0.156	0.218	0.232	0.233	0.100	0.218	0.301	0.190	0.298	0.231
	(0.192)	(0.196)	(0.200)	(0.202)	(0.229)	(0.217)	(0.215)	(0.197)	(0.240)	(0.203)
Global interest rates	-0.029	0.082*	0.051	0.014	0.083*	0.077*	0.040	0.035	0.064	0.040
	(0.050)	(0.044)	(0.042)	(0.046)	(0.048)	(0.043)	(0.041)	(0.043)	(0.050)	(0.041)
Global growth	-12.561**	-6.585*	-14.245**	-5.426	-4.401	-12.703**	-6.149	-5.429	-4.393	-5.679
	(4.377)	(3.825)	(4.427)	(3.756)	(4.598)	(4.386)	(3.771)	(3.774)	(4.182)	(3.761)
Contagion Factors										
Regional	0.464**	0.155	0.211	0.120	0.387**	0.058	0.109	0.116	0.251	0.099
	(0.210)	(0.187)	(0.184)	(0.184)	(0.193)	(0.184)	(0.180)	(0.188)	(0.184)	(0.182)
Trade	5.981**	4.197**	4.651**	4.129**	4.839**	3.843**	4.297**	4.285**	3.959**	4.184**
	(1.277)	(0.881)	(0.860)	(0.859)	(0.813)	(0.819)	(0.817)	(0.885)	(0.799)	(0.848)
Domestic Factors										
Financial system size	-0.275	0.097	0.108	0.085	0.143	0.101	0.128	0.159	0.107	0.106
	(0.205)	(0.107)	(0.111)	(0.107)	(0.097)	(0.131)	(0.110)	(0.141)	(0.109)	(0.110)
Financial system soundness	0.309	-0.273	-0.291	-0.271	-0.377	-0.525	-0.308	-0.364	-0.124	-0.277
	(0.360)	(0.280)	(0.282)	(0.282)	(0.370)	(0.375)	(0.274)	(0.268)	(0.274)	(0.274)
Financial market integration	-0.058	-0.038**	-0.046**	-0.038**	-0.042**	0.004	-0.035*	-0.035**	-0.036**	-0.043**
	(0.079)	(0.017)	(0.018)	(0.017)	(0.020)	(0.066)	(0.019)	(0.017)	(0.017)	(0.018)
Real GDP growth	1.095	0.635	1.065**	0.686	0.343	0.947*	0.673	0.673	0.690	0.705
	(0.713)	(0.463)	(0.453)	(0.460)	(0.705)	(0.506)	(0.460)	(0.457)	(0.545)	(0.456)
Country fiscal position	-0.003	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001	-0.000	-0.001
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GDP per capita	-0.006	0.016**	0.015**	0.016**	0.015*	0.012*	0.009	0.014*	0.022**	0.015**
	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)
							1.079	-0.918	0.037*	0.119
							(0.977)	(0.743)	(0.020)	(0.133)
							3.388*			
							(1.974)			
Sample Size	***1,890***	***2,976***	***2,945***	***2,976***	***2,041***	***2,833***	***2,976***	***2,976***	***2,546***	***2,976***

Notes: The dependent variable is a 0-1 variable indicating if there is an episode (either surge, stop, flight or retrenchment). Variables are defined in Section 3.4. Estimates are obtained using the complimentary logarithmic (or cloglog) framework which assumes that $F(\cdot)$ is the cumulative distribution function (cdf) of the extreme value distribution. Regressions include robust standard errors are clustered by country. ** is significant at the 5% level and * at the 10% level. (1) HP filter with a 30% boundary is used to construct the episodes (instead of a rolling standard deviation and mean cutoff). (2) Global risk measured by the VXO or Variance Risk Premium as calculated in Zhou (2010). (3) Global interest rates measured by U.S. interest rates instead of an average of U.S., euro area and Japanese rates.(4) Financial system size measured by the sum of stock market plus bond market capitalization divided by GDP (instead of just stock market capitalization). (5) Financial market integration measured by capital controls in China and Ito (2005). (6) Additional control variables are included in the regression; for demographics the controls are the share of the working age population (aged 15 to 65) that is younger (below 15) or older (over 65); for reserves the control is the ratio of reserves to GDP; for Moody's the control is a numerical value for Moody's index, with a higher value indating lower credit; for ER regime the control is a dummy equal to 1 if the country has a pegged exchange rate regime as defined in Shambaugh (2004).