Essays on International Capital Flows

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Declaration

I declare that this thesis has not been submitted as an exercise for a degree at this or any other university and it is entirely my own work.

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Rogelio Mercado Jr.

To the loving memory of my mother,

Didinia Jocelyn Ventura-Mercado

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Summary

The core of this thesis consists of three papers. Although independent, these papers highlight the importance of looking into foreign-driven capital flows in understanding the transition to and from various episodes of gross capital inflows as well as their impact on output and credit growth.

Chapter 2 extends the literature on gross capital flows by looking into domestic factors that covary significantly with cross-country differences in the transitional likelihoods of moving between episodes of capital inflows. Applying a state-transition framework, we view states of gross capital inflows as "normal", "surge", and "stop". Following Forbes and Warnock (2012a and 2012b), we identify extreme episodes for a sample of 55 advanced and emerging economies from 1980Q1 to 2014Q4. The empirical findings show that cross-country differences in transitional likelihoods are strongly associated with state-dependence variables such as duration and occurrence. There is evidence to suggest the presence of negative duration dependence on the transitional likelihood of moving between episodes such that the longer an economy spends in a given episode, the less likely it will exit that episode. However, duration and occurrence of total gross inflow episodes are also significantly correlated with domestic factors such as output volatility, de facto and de jure financial openness, and foreign reserves.

Chapter 3 looks into the transition of a surge episode to a stop episode and differentiates between two types of surges, namely surges that end in stops and surges that end in normal episodes. Previous studies on capital flows show that surges end in output contraction, crises, and reversals of capital inflows. However, when one looks closely at the data, not all surges of gross capital inflows end in reversals or stops. In fact, more than half of surges end in normal episodes at least four quarters following the last surge quarter. The chapter looks into global and domestic factors that strongly correlate with the transition of surges to either stop or normal episodes (as well as which factors correlate with the magnitude of gross inflows for these two types of surges). The results show that the higher likelihood of experiencing surges ending in stops is significantly correlated with lower global risk aversion and with higher domestic output gap. Higher likelihood of surges ending in stops is significantly related with higher global growth for emerging economies, but with lower

global growth for advanced economies. The results also indicate that surges ending in stops are different from surges ending in normal episodes. For instance, while global risk aversion and domestic credit are significant for both surges, larger gross capital inflows are significantly correlated with higher global commodity prices for surges ending in stops, but with lower commodity prices for surges ending in normal episodes. Therefore, not all surges are alike.

Chapter 4 sets out to assess whether gross capital inflows to the Philippines are expansionary or contractionary in line with the model predictions and empirical findings of Blanchard et al. (2015). The results indicate that gross inflows are expansionary to output and credit growth. But contrary to the model predictions and empirical findings of Blanchard et al. (2015), we find that private bond inflows to the Philippines are expansionary. Bond inflows may have expansionary impact on output and credit growth if the exchange rate is managed, if the domestic capital market is underdeveloped, if the country receives small bond inflows, and if proceeds from debt issuance are channelled to productive investments. Similar to Blanchard et al. (2015), non-bond inflows have a positive overall impact on output and credit growth despite receiving relatively small foreign direct investment inflows.

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Chapter 1

General Introduction

This thesis extends the literature on capital inflows. Chapter 2 considers the factors that correlate with the transitional likelihood of moving between different episodes of gross capital inflows. Chapter 3 focuses on factors that correlate with the occurrence of surges ending in stops as well as differentiates between two types of surges. Chapter 4 examines the impact of gross capital inflows on output and credit growth in the Philippines. These chapters extend the literature in several ways.

Chapter 2 views episodes of gross capital inflows, namely "surge", "stop" and "normal" episodes from a state-transition framework. Specifically, it studies the factors that correlate with the transitional likelihood of moving between episodes of gross capital inflows. The stylized facts indicate that transitional likelihood from a normal to an extreme episode is small, but once a country enters an extreme episode, the likelihood of it transitioning to a normal episode is lower than the likelihood of it staying in that extreme episode.

Understanding cross-country variation in the transitional likelihood of moving between episodes of gross capital inflows requires looking at state-dependence from the labour economics perspective. By considering how long (duration) and how often (occurrence) a country experienced an episode in the past, we find that the transitional likelihood of moving between episodes are strongly associated with these state-dependence variables. In fact, Chapter 2 offers evidence that there is negative duration dependence such that the longer a country experiences an episode, the less likely it will exit from the episode.

Unlike most studies focusing on the patterns of capital inflows, Chapter 2 looks at the transitional likelihoods of capital-inflow episodes from a cross-sectional approach. The cross-sectional set-up pertains to a fixed transitional likelihood of moving between episodes computed from 1980Q1 to 2014Q4 for each of the 55 advanced and emerging economies in the sample. This has profound implication on which factors to consider in explaining cross-country variation in transitional likelihoods and state-dependence variables. Under a cross-sectional approach, global factors are common across countries, and so there is no covariation between transitional likelihoods or state dependence variables and global factors. What the chapter highlights is the relevance of domestic factors in explaining cross-country variation. The findings suggest that cross-country differences in transitional likelihoods of moving between episodes of gross capital inflows highly correlate with the duration and occurrence of episodes, which in turn, covary with domestic factors.

Chapter 3 focuses on the occurrence of surges ending in stops. A common theme in the literature on capital flows is that surges, more often than not, end in contraction and reversal of capital inflows. But when one looks at the data, one sees that almost 60 percent of surge episodes end in normal episodes at least one year after the last surge quarter. Extending the criteria to two years, almost 50 percent of surge episodes still end in normal episodes. Hence, there is reason to believe that surges, more often than not, end in a reversal of gross capital inflows.

Differentiating between surges that end in normal episodes from those that end in stop episodes for 55 advanced and emerging economies from 1982Q4 to 2014Q4, a crucial finding in Chapter 3 is that although global interest rate, global risk aversion, and domestic credit are common to both surge types, higher global commodity prices are significantly correlated with larger gross capital inflows during surges ending in stops, but significantly associated with smaller gross capital inflows during surges ending in normal episodes. This contrasting relevance of global commodity prices for both surge types can have important policy implications. In addition, Chapter 3 finds that higher domestic output gap is significantly associated with larger gross inflows during surges ending in stops but not for surges ending in normal episodes. The varying relevance of global and domestic factors accounts for the differences in the magnitude of gross inflows during these surge types. Therefore, not all surges are alike as the conditions related to how large gross inflows are during surges vary.

More importantly, Chapter 3 contributes to the literature on capital flows by looking into the occurrence of surges that end in stops. Unlike in Chapter 2 which considers the transitional likelihood of surges ending in stops, Chapter 3 looks into the global and domestic factors correlated

with the occurrence of surges ending in stops versus surges ending in normal episodes since it is such transition that have relevant policy implications. Both queries are different. Chapter 2 looks into the likelihood, whereas Chapter 3 focuses on the occurrence of a specific episode transition. The results indicate the prime importance of global risk aversion and domestic output gap on the occurrence of surges ending in stops. But we also find differences between advanced and emerging economies.

Chapter 4 assesses the impact of gross capital inflows on output and credit growth, which are the two main variables of importance to macroeconomic stability. Standard open macroeconomic models point to the contractionary impact of capital inflows as these put upward pressure on the exchange rate. But more recent literature as well as actual experience of emerging economies also point to the expansionary impact of capital inflows through the lending or banking channel. As capital inflow increases, borrowing costs go down leading to credit and output expansions. Given these contradictory impacts of capital inflows, Blanchard et al. (2015) develop a model that tries to explain under what conditions capital inflows can be expansionary or contractionary. Central to their proposed portfolio choice model is the premise that the impact of capital inflows on growth and credit depends on the type of capital inflows.

Under a cross-country empirical test such impact offers inconclusive results as different countries receive different amounts and types of capital flows and respond to those flows differently. As such, testing Blanchard's et al. (2015) model on a single country is warranted. Among the 19 emerging economies considered by Blanchard et al. (2015), Chapter 4 focuses on the Philippines. The Philippines is unique among emerging economies as it is relatively less open in terms of trade and finance, yet it is highly vulnerable to external factors. Furthermore, it never sustained robust economic growth, unlike its peers in the East Asia region.

Looking at the impact of capital inflows on Philippine output and credit growth on an annual basis from 1977 to 2015, the results in Chapter 4 validate the theoretical and empirical tests of Blanchard et al. (2015) in the case of non-bond inflows. The estimates show that non-bond inflows, particularly other debt inflows, are expansionary in the Philippines. However, foreign direct investment is insignificant which is in line with the fact that the Philippines have restrictions on foreign direct investments. But the crucial finding in Chapter 4 is that bond inflows can have expansionary effect on output and credit growth, which is contrary to the model predictions and empirical tests of Blanchard et al. (2015). There are several possible explanations as to why bond inflows may have

expansionary impact. First, the link between capital inflows and currency appreciation is weak under a managed exchange rate regime. Second, the contractionary impact of bond inflows does not hold when a country has less developed capital markets or receives small amount of bond inflows. Third, bond inflows might not necessary be contractionary if proceeds from debt issuance are channelled to productive investments.

Therefore, Chapter 4 contributes to the literature by providing a counter example on the potential expansionary impact of bond inflows on output and credit growth. This implies that differentiating between different types of capital inflows might not necessary be the right approach in assessing the expansionary or contractionary impact of capital inflows on output and credit growth.

Chapter 2

Domestic Factors and Episodes of Gross Capital Inflows

2.1 Introduction

The onset of financial liberalization that started in the 1980s has sparked waves of cross-border capital flows, bringing in costs and benefits to both advanced and emerging economies. Among the benefits are risk-sharing, efficient allocation of financial resources, and adherence to best practices. But financial globalization also comes at a price. As cross-border financial flows increased, countries have become more vulnerable to extreme episodes of financial flows due to domestic, global and contagion factors. In fact, both the global financial crisis of 2008-09 and emerging market crises in the early 1980s and mid-1990s illustrate how economies can transition from receiving huge foreign capital to a sudden and severe reversal of foreign capital inflows. However, the experiences of countries are varied. Given adverse changes in global factors, some countries experience more reversals of foreign capital flows alongside deep recessions while others do not. Conversely, given positive developments in global factors, some countries receive more foreign capital "bonanzas" or "surges" while others do not. It is then important to look into cross-country differences in their likelihood of transitioning between episodes of capital inflows.

Capital flows have been studied at various dimensions, including their impact on growth, relevant drivers, policy tools in addressing their adverse effects, and the nature of capital flows.[1] On more specific area of research, several papers draw attention to the determinants and effects of extreme

[1] See Koepke (2015) for a survey of literature on capital flows; Ostry et al. (2010) on capital controls; Kaminsky et al. (2005) and Bluedorn (2013) on nature of capital flows including size, composition, cyclicality and volatility.

episodes of capital flows.[2] For instance, literature on "sudden stops" shows that when global factors deteriorate, economies face painful adjustments, exchange rate depreciation, bankruptcies, and economic contractions. At the other extreme, literature on "surges" indicates that capital inflows are related to asset price inflation, currency appreciation, commodity price booms, and higher probability of experiencing "stops" especially in emerging economies.

However, these studies do not discuss differences in the likelihood of countries in transitioning from one episode to another. We note two reasons on the importance of this research. First, recent papers highlight the strong correlation between global factors, such as global risk aversion, with the occurrence of extreme episodes of capital flows.[3] In contrast, some papers argue that although global factors drive capital flows, whether a country actually experiences an extreme episode ultimately depends on its domestic factors.[4] This paper supports the latter view by bringing back domestic factors at the centre but from a different angle. Instead of focusing on what factors determine the occurrence of extreme episodes, we look into which factors relate to cross-country covariation in transitional likelihoods of moving between episodes of gross capital inflows. Specifically, we look at the covariation between transitional likelihoods and state-dependence variables; and the covariation between state-dependence variables and domestic factors. This topic has not been fully explored in the literature.

Second, knowing which domestic factors relate to cross-country differences in transitional likelihoods imply a country's vulnerability or fragility in experiencing extreme episodes. For instance, one stylized fact presented in this chapter shows that advanced economies tend to have, on average, higher transitional likelihood of moving from "normal" to an extreme episode. Knowing which factors covary with cross-country differences in transitional likelihoods suggest cross-country propensity in experiencing extreme episodes.

This paper sets out three tasks. First, it identifies extreme episodes, namely "stops" and "surges", following the approach of Forbes and Warnock (2012a and 2012b) using quarterly data on gross capital inflows for 55 advanced and emerging economies from 1980Q1 to 2014Q4. Second, it

[2] Throughout this thesis, we follow the naming convention of Forbes and Warnock (2012a and 2012b) in calling "stops", "surges", "flights" and "retrenchments" as "extreme" episodes of gross capital flows. However, we only focus on "stops" and "surges" which relates to gross capital inflows.

[3] See Forbes and Warnock (2012a), Fratzscher (2012), and Milesi-Ferretti and Tille (2011).

[4] This conjecture was first emphasized by Calvo et al. (2006) for systemic sudden stops, and later on by Ghosh et al. (2014) on surges.

computes fixed transitional likelihood and provides stylized facts on cross-country variation.[5] Third, it considers state-dependence variables (duration and occurrence) in the context of capital flow episodes. Lastly, it looks at the correlations between transitional likelihoods of moving between episodes, state-dependence variables and domestic factors. Four questions are considered. First, are there differences in transitional likelihoods across countries such that do some countries have higher or lower transitional likelihood than others? Second, what factors significantly covary with the transitional likelihoods of moving between episodes? Third, which domestic factors covary with state-dependence variables? Lastly, do we see any difference between debt and equity inflows?

In order to address the key questions in this paper, we step back from the literature on capital flows and look into state-transition framework used in labour economics and business cycle literature.[6] In labour economics, we find employment transition models where individuals move between different states of employment like from employment to unemployment. In the business cycle literature, economies move between contractions and expansions. We can then view "normal", "surge", and "stop" episodes of gross capital inflows as different states and derive their fixed transitional likelihood of moving from one state to another. Next, we see from the labour economics literature the relevance of individual characteristics for the transitional probabilities of moving between employment states. We consider the same for episodes of capital flows where individual characteristics now pertain to domestic factors. Similar to transition studies of employment, we consider the role of state-dependence variables (duration and occurrence) in the transition process. Intuitively, we are abstracting from global factors which are common across countries, and assess which factors significantly covary with transitional likelihood.

Our computed transitional likelihoods reveal that the likelihood of moving from normal episode to either extreme episode is low, but the likelihood of staying in an extreme episode is relatively high. In addition, we also note cross-country differences in transitional likelihood such that some countries have higher transitional likelihood while others have lower. To know which domestic factors are relevant for transitional likelihood, we first regress transitional likelihood on state-dependence variables to know how strongly these variables covary. Next, we estimate state-dependence variables on domestic factors to establish the extent of how strong domestic factors covary with state dependence variables, which in turn correlate with transitional likelihood.

[5] We use "likelihood" instead of "probability" as we do not specify a specific probability function.

[6] See Ballen and Freeman (1986), Blau (1998), Bradley et al. (2003), Heckman and Borjas (1980), Lynch (1989), Martinez-Granado (2002), on labour transitions literature; and Diebold and Rudebusch (1990), Filardo (1994), and Filardo and Gordon (1998) on business cycle transitions.

The results reveal a strong link between the transitional likelihoods and the state-dependence variables (duration and occurrence). We find evidence of negative duration dependence such that a country that experiences an episode longer will most likely remain in that episode and less likely move to another episode. We also find evidence that state-dependence variables are significantly correlated with domestic factors such as output volatility, de facto and de jure financial openness, and foreign reserves for episodes of total gross inflows. We note that domestic factors can operate either through one or both state-dependence variables. For instance, higher foreign reserves are strongly correlated with longer duration of normal episodes of total gross inflows; but significantly correlated with more frequent occurrence of debt and equity stop episodes. In contrast, for equity inflows, financial openness is significant for both duration and occurrence. These findings indicate strong cross-country covariation between transitional likelihoods and state-dependence variables. In turn, state-dependence variables significantly covary with domestic factors.[7]

This chapter makes several contributions to the literature on capital flows. First, using state-transition framework, we are able to know and draw cross-country stylized facts on the likelihood of transitioning from various episodes of gross capital inflows. Second, by focusing on fixed transitional likelihood, we are able to abstract from factors common across countries and then assess which domestic factors correlate with the propensity of experiencing various capital flow episodes. Third, unlike in the labour literature, this paper looks at the factors that covary with state-dependence variables.

This chapter is structured as follows. Section 2.2 provides conceptual framework on capital flows and the application of state-transition framework for episodes of gross capital inflows. Section 2.3 provides the empirical specification. Section 2.4 discusses data source and stylized facts. Section 2.5 discusses empirical analysis and sensitivity tests; while Section 2.6 concludes.

2.2 Conceptual Framework

2.2.1 Capital Flows "Push" and "Pull" Framework

A key area of research on capital flows pertains to its determinants. In this area, the overarching theme is what factors matter most for capital flows. These factors are broadly categorized as "push"

[7] However, given our small sample size, we find few domestic factors significant and, in most cases, they are marginally significant. Nonetheless, the results hold under several sensitivity tests.

factors which are external to an economy, such as global or contagion factors, and domestic "pull" factors that pertain to domestic macroeconomic fundamentals. The prevailing consensus in the literature points to the relevance of both factors. For instance, Calvo et al. (1993 and 1996) and Fernandez-Arias (1996) find global factors, such as interest rates related to business cycles in advanced economies, matter more than domestic factors. In contrast, Chuhan et al. (1998) argue more for domestic factors like domestic returns. But most studies found the relevance of both factors not only for the size but also for the volatilities of total and components of capital flows. [8]

A narrower branch of literature on capital flows looks at the "push" and "pull" factors in the context of unusually large foreign capital inflows or outflows, known as either "surges" or "stops" which are broadly grouped as extreme episodes. Understanding the determinants and consequences of these extreme episodes in the context of global and domestic factors has become important in the literature as they have significant policy implications. For example, if global factors are more relevant during episodes of large foreign capital outflows than domestic factors, then it implies that policy makers have little influence over such huge foreign outflows. The same goes for large foreign capital inflows. But if domestic factors are more pertinent, then domestic policy makers have more control over the adverse consequences of stops and surges.

On the causes and effects of extreme episodes, the early literature on "stops" is motivated by the crises experience of emerging economies in the 1990s, including Mexico in 1994, Asian economies in 1997-98, and Russia in 1998, as these economies experienced sharp withdrawal of foreign capital inflows. Calvo (1998), Calvo et al. (2006), and Calvo et al. (2008) argue that "stops" occur through balance-sheet effects, where any deterioration in global factors triggers large real exchange rate depreciation which increases the burden of debt payment of countries with large foreign currency denominated debt liabilities. These authors argue that "sudden stops" have detrimental consequences as firms face insolvencies and bankruptcies, caused by disruptions of credit that lowers capital productivity leading to output loss.

In contrast, studies on "surges" or "bonanzas" came earlier than those on "stops". This was motivated by the increase in capital flows to emerging Latin America economies in the early 1990s, following domestic policy reforms and the implementation of debt relief programs. Calvo et al. (1993 and 1996) trace the factors driving "surges" as well as their impact on the domestic economy. They find that huge foreign capital inflows, when triggered by global factors such as low global interest

[8] See Koepke (2015) for a comprehensive review on the literature of capital flows under the push and pull framework.

rates, increase private consumption and domestic investment which, in turn, raise the price of non-tradable goods, leading to real exchange rate appreciation. Their study highlights the impact of "surges" on the rapid growth of monetary base through sterilization and reserve accumulation.

In later literature, Caballero (2014), Magud et al. (2014), and Reinhart and Reinhart (2009) look at the relation between "surges" and domestic credit expansions. They argue that high foreign capital inflows improve financial conditions and increase domestic bank credit. However, as domestic credit expands through foreign lending, the probability of banking crises rises because of greater risk-taking which exacerbates problems of asymmetric information and moral hazard. Sula (2010) investigates the direct link between "surges" and "stops". He finds that "surges" increases the probability of experiencing "stops" especially if foreign inflows are channelled to private loans.

On the empirical tests of drivers of extreme episodes, existing studies looked into global, domestic, and contagion factors. The findings indicate that the high occurrence of "stops" relates to lower domestic growth, more financially open economies, large dollarization of domestic liabilities, dependence on commodity exports, low global growth, high global risk aversion, foreign-driven, huge banking inflows, large exchange rate depreciation, and contagion effects. In contrast, economies more open to trade are less vulnerable to "stops" as foreign investors associate trade openness with lower probability of debt default, while those with more stable economies also experience less "stops".[9]

For "surges", low global interest rates that make debt payment and access to international funding easier, low global risk aversion, and business cycle expansions in advanced economies are the relevant global factors. Policy reforms, trade and financial openness, sound macroeconomic policy, growth shocks, external financing needs, and exchange rate regime are the significant domestic factors. In addition, contagion factor is also significant.[10]

Most of these studies use pooled dataset with several countries and periods in testing the relevance of global, domestic, and contagion factors in the occurrence of extreme episodes.[11] The key question

[9] Refer to the studies of Calderon and Kubota (2013), Calvo et al. (2008), Cavallo and Frankel (2008), Forbes and Warnock (2012a), Levchenko and Mauro (2007), Milesi-Ferretti and Tille (2011), and Rothenberg and Warnock (2011).

[10] See the papers of Caballero (2014), Calvo et al. (1993 and 1996), Forbes and Warnock (2012a and 2012b), Ghosh et al. (2014), Magud et al. (2014), and Reinhart and Reinhart (2009).

[11] See Calderon and Kubota (2013), Calvo et al. (2008), Cavallo and Frankel (2008), Forbes and Warnock (2012a and 2012b), Ghosh et al. (2014), and Sula (2010).

addressed by this approach is what factors lead to the occurrence of extreme episodes across economies through time. Most of these studies use pooled probit regression where the dependent variable is a binary variable taking the value of 1 if the period corresponds to an extreme episode. This method has several advantages and implications for the results. First, such method offers substantial data points for consistent and robust estimation. Second, it allows factors to vary across time. This has important implications for the results as both domestic and global factors do change over time, more so when they are cyclical in nature, such as global growth, global risk aversion, and domestic shocks.[12] Under this approach, one could directly establish that an increase in global risk aversion, for example, is significantly correlated with a higher occurrence of "stops" as shown by Forbes and Warnock (2012a and 2012b) and Milesi-Ferretti and Tille (2011).

Few studies have used time-series approach in looking at the evolution or pattern of key macroeconomic variables around periods of extreme episodes. The relevant question under this set-up is how domestic factors behave around extreme episodes. An example would be Reinhart and Reinhart (2009), where they study the behaviour of current account, real GDP growth, inflation, and real exchange rate before, during, and after "surges". They find a distinct V-shaped pattern for current account as it deteriorates into the "surge" year and then improves steadily after. Domestic growth rises into the "surge" but then slows and settles back into the pre-surge growth rate. Similarly, Broner et al. (2013) looks into the pattern of capital inflows and their components around crises periods and find that capital inflows tend to be higher in the pre-crisis period and then collapse during and after crises.

The literature has not yet dealt with cross-country variation in experiencing extreme episodes. Considering cross-sectional set-up allows us to identify factors that are important in explaining cross-country differences or factors that are relevant in explaining cross-country heterogeneity in the occurrence of capital inflow episodes. It is this type of query that this chapter addresses.

2.2.2 State-Transition Framework

The lack of empirical studies dealing with sources of cross-country differences in transitional likelihood of moving between episodes of capital flows can be addressed by looking into different fields of economics such as labour economics and business cycle theory. Both fields have applied a

[12] Some studies consider structural domestic factors in their pooled dataset. For instance, Forbes and Warnock (2012a and 2012b) included per capita income and financial system; while Ghosh et al. (2014) considered exchange rate regime, capital account openness, and quality of institutions. These are, in fact, structural in nature as they change slowly over time.

Markovian state-transition framework in their respective fields. The labour economics literature uses state-transition framework in analysing individual transitions between various employment states. The business cycle literature also applies the Markovian framework in assessing transitions between economic expansions and contractions.

The labour economics literature offers considerable insights into transitions between employment states.[13] Several key themes are noted. First, transitions between states depend on observed individual characteristics such as the level of education, age, ethnicity, among others.[14] Second, the empirical approaches in estimating the determinants of transitions between states are broadly classified into two. One pertains to the use of fixed transitional probabilities as the dependent variable such as those employed by Ballen and Freeman (1986), while others use a pooled probit approach including Blau (1998), Bradley et al. (2003), Lynch (1989) and Martinez-Granado (2002). Under the latter approach, overall labour market conditions are included in the regression specification; but not in the former. The key distinction is that the former looks at the sources of variation of individual's transitional probabilities, while the latter focuses on factors that relate to an individual's transitions from one state to another. Third, to account for past employment history, state-dependence variables are considered in the empirical specification. Of importance is the presence of positive or negative duration dependence.

Accounting for state-dependence variables has been crucial in the application of the Markovian state transition framework in labour economics. A critique of the state-transition framework is how to account for past experiences. Heckman and Borjas (1980) develop theoretical foundations to account for state-dependence in the labour economics. They differentiate different types of state-dependence, including: (i) occurrence dependence which suggests that as the number of previous unemployment spells increases, the probability that a worker will become or remain unemployed increases since employers use employment records in their hiring and firing decisions; (ii) duration dependence proposes that the probability of remaining unemployed depends on the length of time the worker has been unemployed in his current unemployment spell; and (iii) lagged duration dependence which suggests that the probabilities of remaining unemployed or becoming unemployed depends on the length of previous unemployment spells due to loss of productivity-enhancing work experience.

[13] Refer to the studies of Ballen and Freeman (1986), Blau (1998), Bradley et al. (2003), Lynch (1989) and Martinez-Granado (2002).

[14] Unobserved individual attributes correlated with the transitions are controlled for in their empirical approach. For instance, Heckman and Borjas (1980) use differences in duration or length between two employment and unemployment spells.

Among the abovementioned state-dependence variables, duration dependence matters most for transitions between employment states. Positive duration dependence implies that the longer one spends in a given state, the more likely one will exit that state; while negative duration dependence suggests that the longer one spends in a given state, the less likely one will exit that state. The test for negative duration dependence is then crucial since if one is unemployed, the more likely one will remain unemployed. In contrast, if positive duration dependence exists, then an unemployment spell will most likely be followed by an employment spell. Blau (1998) and Lynch (1989) confirmed the significance of negative duration dependence in the labour market transitions.

Following Heckman and Borjas (1980), we show the relation between transitional likelihoods and state-dependence variables. Transitional probabilities stem from hazard functions in state-transition literature. Hazard functions are defined as the conditional density of exit time from a given state based on time spent in the state in the current spell. For a Weibull exponential time distribution, Heckman and Borjas (1980) proposed a general model which combines duration, occurrence, and lagged duration dependence for a hazard function, given by

$$h_{xy}^{(l)}(t_{xy}^{(l)}) = g_{xy}^{(l)}(t_{xy}^{(l)},...,t_{xy}^{(1)},t_{yx}^{(l)},...,t_{yx}^{(1)}),, \quad (1)$$

where t is time, *x* and *y* are two different states, and *l* are spells. If $\partial h_{xy}(t_{xy})/\partial t_{xy} > 0$, then we have positive duration dependence. This means that if one spends more time in a given state, the more likely one will exit that state. If $\partial h_{xy}(t_{xy})/\partial t_{xy} < 0$, then we have negative duration dependence, which implies that the longer one stays in a given state, the less likely it will exit that state. If $\partial h_{xy}(t_{xy})/\partial t_{xy} = 0$, then there is no duration dependence. For occurrence dependence, if the function $g(\cdot)$ is stationary across spells (l) then there is no occurrence dependence.

The state transitional framework has also been applied in the business cycle literature, particularly for the transitions between expansions and recessions. Several contrasting themes are noted in the application of transitional framework in this literature. First, the use of time-varying transitional probabilities is more appropriate to account for time-varying factors critical in identifying turning points along the business cycle. Therefore, time-varying transitional probabilities have more predictive power in business cycle forecasts. This view has been emphasized by Filardo (1994) and Filardo and Gordon (1998). In contrast to the labour economics literature, individual characteristics tend to change slowly and, therefore, fixed transitional probabilities have been used such as those

from Ballen and Freeman (1986). Second, unlike in the labour economics literature, there remains considerable debate as to whether positive or negative duration dependence exists. Filardo and Gordon (1998) argue that contractions have positive duration dependence, while expansions do not. In contrast, Hamilton (1989) offers evidence of negative duration dependence such that the longer an economy experiences an expansion, the less likely it will experience a contraction. But Diebold and Rudebusch (1990) provide evidence that positive duration dependence exists in a complete cycle, while negative duration dependence exists in a half cycle.

In summary, both labour economics and business cycle literature have applied state-transition frameworks. Two approaches have been used. The first pertains to explaining the sources of variation in individual's transitional probabilities of moving between states, while the second deals with the factors related to the transitions between states.

2.2.3 Application of State-Transition Framework on Capital Flows

We first identify at each point in time whether a country is in a "normal", "surge" or "stop" episode of gross capital flows. Based on individual country series, we derive the individual transitional likelihood of moving from one episode to another. We then seek to understand which factors covary with the cross-country differences in transitional likelihoods. For illustration, Norway has a transitional likelihood of moving from "normal" to "stop" episode of gross capital inflows of around 6.8 percent, while Australia has about 1.2 percent. Pinning down the factors that explain this cross-country variation is the primary goal of this paper.

In this regard, we also consider the role of state-dependence variables. However, we make several distinctions between labour economics state-dependence variables and those that are used in this chapter. First, the assessment of state-dependence entails a pooled probit set-up that considers common factors across individuals like labour market conditions. It addresses questions like which factors increase or decrease the probability of moving between employment states. In contrast, this paper looks at the factors explaining the transitional likelihood themselves. Specifically, it focuses on factors that explain cross-sectional variation of transitional likelihood of moving between states.

Second, Heckman and Borjas (1980) differentiate between current and lagged duration dependence since they allow for time variation. In this paper, we consider duration as the total number of periods in a given state. We do not differentiate between current and lagged duration as we are

interested in the cross-sectional covariation.[15] For duration, we mean the total length of time a country spends in a given state. For occurrence, we mean the total number of times a country experiences a specific episode. These depart from Heckman and Borjas (1980).

In applying state-transition framework on episodes of capital flows, we consider two important aspects. First, we highlight the link between transitional likelihood and state dependence, consistent with Ballen and Freeman (1986) and Heckman and Borjas (1980). Specifically, higher transitional likelihood tends to be correlated with shorter episodes but more frequent occurrence. In contrast, lower transitional likelihood are associated with longer episodes but less frequent occurrence.

Second, crucial to the application of this conceptual framework is the focus on domestic factors. In the labour economics literature of employment transitions, overall economic conditions such as economic growth or unemployment rate do matter when one considers the transition from one state to another (Blau 1998, Bradley et al. 2003, and Martinez-Granado 2002). Their inclusion is motivated by the fact that they act as controls. But when we look at the transitional probabilities themselves in a cross-sectional set-up, common factors, say unemployment rate, are experienced by all individuals and so they do not change across sample (Ballen and Freeman, 1986). A similar line of reasoning can be applied to the transitional likelihood of episodes of capital flows. Global factors such as global growth, global liquidity, global interest rates, and global risk factor are common across countries and, therefore, are excluded in the empirical analysis. We show this by

$$CF_{i,t} = \alpha_i + X_t\gamma + Y_{i,t}\beta + \varepsilon_{i,t} \tag{2}$$

where $CF_{i,t}$ captures capital inflows to country *i* at time *t;* X_t is a vector of global factors at time *t*; $Y_{i,t}$ is a vector of domestic factors for country *i* at time *t*; α_i is a constant; and $\varepsilon_{i,t}$ is the error term. Suppose, we take the mean of Equation (2) through time (t),

$$\overline{CF_i} = \alpha_i + \overline{X}\gamma + \overline{Y_i}\beta + \overline{\varepsilon}_i \tag{3}$$

Since $\overline{X}\gamma$ is a constant which does not vary across country (i), we denote

[15] In the labour economics literature with current and lagged duration dependence, common factors are included since there is time variation. However, in applying duration dependence in a cross-sectional set-up, adding the total number of quarters or periods where an economy experiences a particular episode removes common factors.

$$\alpha_i^* = \alpha_i + \overline{X}\gamma \tag{4}$$

So, we have:

$$\overline{CF_i} = \alpha_i^* + \overline{Y}_i\beta + \overline{\varepsilon}_i \tag{5}$$

Based on Equations (3) and (4), the average of global factors does not vary across countries in the sample. Hence, global factors are dropped from our empirical specification. Equation (5) tells us that average of capital flows for country *i* is related to its domestic factors; and some country-specific constant α_i^* as shown in Equation (4). Similarly, other fixed-time statistics such as transitional likelihood will only depend on domestic factors.

The focus on domestic factors in explaining cross-country variation in transitional likelihoods or state-dependence factors can be best discussed using an example. Consider five economies in a surge episode from 1Q2007 to 3Q2008 and only four economies transitioned to a stop episode when global risk aversion rose in 4Q2008. Cross-country differences in transitional likelihoods would have then been explained by domestic factors in this case as global risk is common to all. Specifically, what is with the fifth economy that caused it to remain in a surge episode given that global risk is high. For that economy to remain in a surge episode must be caused by its own idiosyncratic factor.

Figure 2.1 illustrates our conceptual framework on the relevance of domestic factors to state-dependence variables and transitional likelihoods. Our findings show strong covariation between transitional likelihoods and state-dependence variables. However, both duration and occurrence also covary with domestic factors. We then illustrate that a domestic factor, such as less capital account restrictions, is significantly correlated with more frequent stops. More frequent stops are significantly correlated with lower likelihood of remaining in a stop episode but higher likelihood of transitioning to another episode. In contrast, higher foreign reserves are significantly associated with longer normal episodes, which also relate to lower likelihood of transitioning to an extreme episode. This demonstrates that domestic factors can operate through either “duration” or “occurrence” which, in turn, covary with transitional likelihood of moving between episodes.

2.3 Empirical Specification

To answer the second to fourth questions set out in this paper, we estimate two regression specifications. First, we estimate conditional correlations of transitional likelihoods on state-dependence variables in order to assess the importance of past experience, in terms of length and frequency, of being in an episode on the likelihood of transitioning between types of episode. We follow the specification

$$\mathrm{P}_{i,x,y} = \alpha_0 + \beta_1 D_{i,x} + \beta_2 D_{i,y} + \beta_3 O_{i,x} + \beta_4 O_{i,y} + \varepsilon_i \tag{6}$$

Second, given the strong correlation between transitional likelihood and state-dependence variables, we test which domestic factors are significantly correlated with state-dependence variables following the specification

$$\begin{aligned} Z_i = {} & \alpha_0 + \beta_1 VOL_i + \beta_2 GDPPC_i + \beta_3 CRED_i + \beta_4 MKCAP_i + \beta_5 TRADE_i + \\ & \beta_6 FINOPEN_i + \beta_7 KAOPEN_i + \beta_8 NFA_i + \beta_9 FXR_i + \varepsilon_i \end{aligned} \tag{7}$$

where $P_{i,x,y}$ refers to the transitional likelihood from episode *x* to episode *y* of country *i*; Z_i refers to state-dependence variables such as $D_{i,x}$, $D_{i,y}$, $O_{i,x}$, and $O_{i,y}$; $D_{i,x}$ is the duration for episode *x* of country *i*; $D_{i,y}$ is the duration for episode *y* of country *i*; $O_{i,x}$ is the occurrence for episode *x* of country *i*; $O_{i,y}$ is the occurrence for episode *y* of country *i*. VOL_i is output volatility; $GDPPC_i$ is per capita income; $CRED_i$ is domestic credit; $MKCAP_i$ refers to stock market capitalization; $TRADE_i$ is trade openness; $FINOPEN_i$ is de facto financial openness; $KAOPEN_i$ is de jure capital account openness; NFA_i is net foreign assets; FXR_i is foreign exchange reserves; and ε_i is the error term. To address whether the pattern holds for different types of capital flows, we estimate equation (7) separately for total, debt, and equity inflows. Equations (6) and (7) are estimated using ordinary least squares with robust standard errors.[16]

Given our empirical specifications and variable choices, we note several caveats. First, domestic variables pertain to structural characteristics of a country. This is consistent with the use of fixed

[16] We cannot run a seemingly unrelated regression as our dependent variable for both transitional likelihoods and state-dependence variables sum to 100 percent, in which case the results indicate near singular matrix.

transitional likelihoods. As pointed out by Koepke (2015), most domestic variables in the literature on capital flows can be broadly classified as either cyclical or structural. Domestic factors included in Equation (7) pertain to structural variables as they change slowly through time.

Second, the empirical specifications are limited to conditional correlations and do not establish causation. We do not make any attempt to establish causation as we are simply interested in looking at covariation between transitional likelihoods and state-dependence variables; and between state-dependence variables and domestic factors. Although we do not claim causality, the analysis remains relevant as we are able to say which domestic factors are correlated with longer and more frequent episodes, which covaries with transitional likelihood of moving between episodes. We can, thereby, infer a country's vulnerability in experiencing extreme episodes.

Third, we do not rule out that domestic factors can also be correlated with transitional probabilities. In fact, when we ran a separate regression of transitional likelihoods on domestic and state-dependence variables and transitional likelihoods on domestic variables, some domestic factors appear statistically significant.[17] But the significance of state-dependence variables holds and the residual sum of squares for the regression of transitional likelihoods on domestic factors is very large while the R-square is lower. We take these as evidence of a stronger covariation between transitional likelihood and state-dependence variables. Hence, we estimate equation (6).

Fourth, Equation (6) does not necessary imply mechanical results. Since we are also interested to know whether there is evidence of positive or negative duration dependence, the signs of the coefficients will be indicative. For occurrence, the sign of the estimated coefficients are also indicative on whether the more frequent one experiences an episode that more or less likely one will exit that episode. But there is no a priori reason to assume the relation of both state-dependence variables for it is possible that a country could have experienced long duration of a given episode but could have experienced that episode spell more or less frequently.[18] Given these two reasons, the regression results in Equation (6) may not necessarily be mechanical.

[17] Results are presented in Tables 2.A1 and 2.A2 in Appendix 2.1.

[18] Given that transitional likelihoods and state-dependence variables stem from hazard (exit) functions as shown in Equation (1), we estimate the correlations of transitional likelihoods on both duration and occurrence in Equation (6). But given that there could be an implied negative correlation between duration and occurrence, we also regressed transitional likelihoods on each of the two state-dependence variables (duration and occurrence) separately in Tables 2.A3 and 2.A4 in Appendix 2.1. We note that the estimated results are in line with the baseline results presented in Table 2.4.

Fifth, Equation (7) allows us to assess under which state-dependence variables domestic factors relate to transitional likelihood. It would be possible that some factors may correlate more with either or both state-dependence variables.

Lastly, Equations (6) and (7) are estimated using ordinary least squares against alternative methods for the following reasons. Regime switching models would consider time-varying component and would not particularly address cross-country variations. Simultaneous equations would take both state-dependence and domestic factors into account in explaining cross-country variation in transitional likelihoods at the same time. Given that the relation between state dependence and domestic factors are also important, it is better to do a step-by-step analysis wherein transitional likelihood is regressed on state dependence variables as in Equation (6); and then state-dependence variables on domestic factors as in Equation (7). Non-linear models would require choosing the right specification whether it be log, double log or log-linear form. For simplicity and clarity of estimation approach, ordinary least squares estimation is used.

2.4 Data and Stylized Facts

In order to address the questions in this chapter, three important data considerations are made. First, we define the three episodes of gross capital inflows. Second, we compute fixed transitional likelihoods for each country in the sample. Third, we derive duration and occurrence.

2.4.1 Episodes of Gross Capital Inflows

On the definition and measurement of extreme episodes, various authors have used different data sources and identification strategy. On data, Calvo et al. (1993) and Reinhart and Reinhart (2009) developed proxy data on net capital inflows to capture sudden stops and surges, respectively, using current account and foreign reserves data as these variables are available for longer period and more countries. However, more recent papers, including those from Caballero (2014), Calderon and Kubota (2013), Faucette et al. (2005), Forbes and Warnock (2012a and 2012b), and Rothenberg and Warnock (2011), use Financial Accounts data of the Balance of Payments Statistics in defining extreme episodes of gross capital inflows. In summary, data on extreme episodes found in the literature varies between the use of proxy and actual Financial Accounts data, as well as the use of gross or net capital inflows. The consequence of using proxy versus actual flow data, and gross versus net flows have profound implications on the results since the number and dating of the

identified episodes depend on these choices.[19] In this chapter, we use gross capital inflows to focus on foreign-driven capital flows and assume domestic and foreign investors could behave differently.

Various methods are used to identify extreme episodes in the literature. The most popular approach in identifying "stops", albeit with varying degrees of modifications, is the use of deviations from some benchmark value. Calderon and Kubota (2013), Calvo et al. (2008), Cavallo and Frankel (2008), Forbes and Warnock (2012a and 2012b), and Rothenberg and Warnock (2011) used one or two standard deviations from the historic sample mean in identifying and dating "stops". For "surges", the most common method is the use of top percentile of the sample inflow.[20] Reinhart and Reinhart (2009) define "surges" as the top 20th percentile, while Ghosh et al. (2014) used top 30th percentile.

On the identification of episodes of gross capital flows in this chapter, we follow Forbes and Warnock's (2012a) approach in identifying extreme episodes.[21] We follow the definition of Forbes and Warnock (2012a and 2012b) because they impose stricter conditions of what extreme episodes are. In fact, these criteria entail more disruptive impact of extreme episodes. We use Financial Accounts data from the Balance of Payments Statistics of the International Monetary Fund and national sources (for countries with unavailable IMF data) for the period 1970Q1 to 2014Q4 for 55 advanced and emerging economies. Total capital inflows refer to the sum of debt and equity inflows. Debt inflows include portfolio debt and other investment inflows, while equity inflows include foreign direct investment and portfolio equity inflows.

To restate, Forbes and Warnock (2012a and 2012b) define a "surge" as an episode where gross capital inflows increase more than one standard deviation above its historic mean provided that: (i) it reaches at least two standard deviation above at some point within that episode; (ii) the entire episode lasts more than one quarter; and (iii) there are at least four years of data to calculate the historic mean.[22] Specifically, we let C_t be the four-quarter moving sum of gross capital inflows (*GINFLOW*) and derive annual year-on-year changes in C_t:

$$C_t = GINFLOW_t + GINFLOW_{t-1} + GINFLOW_{t-2} + GINFLOW_{t-3}, \quad (8)$$

[19] As illustrated by Faucette et al. (2005) and Rothenberg and Warnock (2011), using actual gross flows significantly reduce the number of Calvo's "sudden stops" compared to using current account and reserve accumulation data as proxy for net capital inflows.

[20] See Crystallin et al. (2015) for a survey and assessment of the methodologies used in defining "surges".

[21] See Appendix 2.2 for a discussion of capital flow data and Table 2.A5 for country classifications.

[22] The value for current quarter is excluded in computing the historic mean and standard deviation.

$$\Delta C_t = C_t - C_{t-4}, \tag{9}$$

Rolling average and standard deviations of ΔC_t are computed over the last 20 quarters.[23] A "surge" episode is defined to start at the first month t when ΔC_t increases more than one standard deviation above the rolling mean. But in order for an entire episode to qualify as "surge" there must be at least one quarter t when ΔC_t increases up to two standard deviations above its historic mean. A "stop" episode is defined using the same approach but pertains to opposite direction. We define "normal" episodes as the absence of an extreme episode for a given quarter.

Several distinctions are noted from the identified episodes in comparison to Forbes and Warnock (2012a and 2012b).[24] First, for total gross flows, there are marked differences in the identified episodes accounting for the fact that Forbes and Warnock (2012a) used net error and omissions to fill in missing data. In this chapter, no such attempt to clean the data was made so as to rely primarily on the classified financial transactions in the Balance of Payments Financial Accounts. Second, unlike Forbes and Warnock (2012b), we defined extreme episodes for debt and equity inflows following the abovementioned criteria, and not whether they are debt-led or equity-led episodes. Forbes and Warnock (2012b) tested which factors hold when extreme episodes are driven by debt and equity inflows. In contrast, this chapter tests the relevance of domestic factors on transitional likelihood when there are "surges" and "stops" in gross debt and equity inflows. Following Forbes and Warnock (2012b) might not add so much to our analysis as most factors are correlated with debt-led episodes. Third, the starting and ending quarters of identified episodes can be different from Forbes and Warnock (2012a) as we reclassified extreme episodes separated by one quarter of normal episode to the succeeding extreme episode. For instance, some countries in 2008Q3 have normal episode between a surge episode in 2008Q2 and stop episode in 2008Q4. We reclassify the normal episode identified in 2008Q3 as a stop episode to account for the fact that the global and domestic conditions prevailing during that quarter actually correspond to conditions in the stop episode.

To illustrate the method of identifying extreme episodes, Figure 2.2 extends Forbes and Warnock's (2012a) data for Brazil.[25] Notice that the pattern shows striking resemblance to Figure 2 in Forbes and Warnock (2012a). Figure 2.3 shows the frequency of countries experiencing extreme episodes

[23] To maximize available data, a four-year rolling mean and standard deviation are used at the start of the series (Forbes and Warnock, 2012a and 2012b).

[24] Table 2.A6 in Appendix 2.3 presents the identified "surge" and "stop" episodes for total, debt, and equity inflows.

[25] We note that the underlying series is stationary given that we have taken changes of the rolling average.

for total, debt, and equity inflows. We note several observations. First, similar to Forbes and Warnock (2012a), there is unprecedented number of countries who experienced "surges" before the global financial crisis of 2007-08 and also unprecedented number of countries who had "stops" during the crisis. Second, for surges, there tend to more countries experiencing equity surges than debt surges. This pattern is not observed in Forbes and Warnock (2012b) as they analysed debt- and equity-led episodes separately. Third, we observe periods when more countries experience extreme episodes compared to other periods. For example, there are spikes in the number of countries experiencing "stops" in the early 1980s, early 1990s, 1997-1998, early 2000s, and 2007-2009. These periods coincide with crises periods or economic downturns. Although there are differences between this chapter and Forbes and Warnock's (2012a and 2012b) identified episodes, the general patterns observed in this chapter are consistent with Forbes and Warnock (2012a).

2.4.2 Transitional Likelihood Data and Stylized Facts

To compute for transitional likelihoods, we use a one-step transitional likelihood specification, where we denote EP_t (episode) as taking the value of 0 for normal episode, 1 for surge episode, and -1 for stop episode. The transitional likelihood then takes the form

$$\mathrm{P}_{x,y,t} = \mathrm{P}\{EP_t = x \mid EP_{t-1} = y\}, \tag{10}$$

where *x* is the origin episode and *y* is the destination episode. We apply the above specification on our computed episode series for total, debt, and equity inflows. For illustration, the likelihood of moving from "normal" to "surge" episode is calculated as the ratio of the number of times a country transitions from "normal" to "surge" divided by the total number of transitions coming from a "normal" episode. Transitional likelihoods for "surges" and "stops" are computed in the similar way.

One important point we highlight in this approach is that we compute a single transitional likelihood for the entire sample period or what is known as "fixed transitional probability", such that each country only has one transitional likelihood of moving between an episode type to another for the entire sample period.[26] We use this approach as we want to assess which factors covary with transitional likelihoods and state dependence variables. Using such approach, a cross-section set-up

[26] Another approach would be to take time-varying transitional probability following Filardo (1994). However, this might not be an appropriate method for this study as we are more concerned with explaining cross-country differences in transitional likelihoods and not the actual transition from one episode to another.

would be reasonable as it focuses on which factors correlate with transitional likelihoods and state-dependence variables. Knowing that global factors are common to all countries, it would then highlight the relevance of domestic factors. We can then interpret the transitional likelihood as an indicator of a county's vulnerability of experiencing an extreme episode.

Another consideration pertains to the use of actual episode data in accounting for transitional likelihoods. Since we do not assume specific probability function, the computed transitional likelihoods could be interpreted based on the realized past transitions of economies across episodes. This approach warrants the interpretation of transitional likelihood as an indicator of propensity or vulnerability of transitioning to various episodes.

We note several observations in our computed transitional likelihoods.[27] First, the transitional likelihood of moving from a normal episode to an extreme episode is very low. For instance, the likelihood of transitioning from "normal" to "surge" episode for the United States is about 7 percent, while that from "normal" to "stop" is only 2 percent. Second, the likelihood of staying in an extreme episode is relatively high such that the likelihood of staying in "surge" is 73 percent and in a "stop" 81 percent for the United States. Third, the probability of exiting an extreme episode is lower than that for staying in an extreme episode. That is the likelihood of exiting a "surge" episode and moving into "normal" episode is only 14 percent for the United States but the likelihood of staying in a "surge" episode is around 73 percent. Fourth, the sudden swing from one extreme episode to another also occurs. For instance, in the United States, the likelihood of transitioning from a surge to a stop episode is around 14 percent. Fifth, these patterns hold true for both debt and equity inflows. These observations imply that the likelihood of entering an extreme episode is small, but, if it happens, the likelihood of staying in that extreme episode is high. This is a new finding obtained from applying state-transition framework on episodes of gross capital inflows.

Table 2.1 provides summary statistics on transitional likelihoods for advanced and emerging country groups for total, debt, and equity inflows. We note several facts. First, there are cross-country differences in the transitional likelihoods of moving between episodes. The standard deviation ranges from 2 to 7 percent and holds true for total, debt, and equity inflows. It is usually larger for transitions originating from extreme episodes like "surge" to "normal" or from "stop" to "normal". Second, the variation across emerging countries is mostly larger than those for advanced countries

[27] Tables 2.A7 to 2.A9 in Appendix 2.4 show the transitional likelihoods for each country in our sample for total, debt, and equity gross inflows, respectively.

for all types of flows and transitions. Third, using a neutral measure of dispersion, the coefficient of variation suggests that cross-country differences in the transitional likelihoods are largest for movements between extreme episodes. For instance, there is higher variation in the likelihood of moving from "surge" to "stop" and from "stop" to "surge" than for other transitions. These observations illustrate cross-country differences in the transitional likelihoods and these differences also vary across movements between episodes.

2.4.3 State-Dependence Variables and Stylized Facts

Given that the transition depends only on the previous state, we take into account state-dependence variables, namely "duration" and "occurrence". We define "duration" as the ratio between the total quarters a country spends in an episode to total quarters in the sample scaled to 100

$$D_i = \frac{n(EP_t = x)}{T}, \tag{11}$$

where *i* is country, *x* is episode (EP) type, *n* refers to number or count, *t* is period or quarter, and *T* is the total number of quarters or periods in the sample.[28] We define "occurrence" as the ratio between the number of times a country experiences an episode to the total number of episodes a country has regardless of type. The number of times a country experiences an episode type is given by an index function

$$S_i = 1_{\{E_1 = x\}} + \sum_{t=2}^{T} 1_{\{E_t = x, E_{t-1} \neq x\}}, \tag{12}$$

where S_i is the episode type count. Thus, occurrence is given by

$$O_i = \frac{S_i}{S}, \tag{13}$$

where *i* is country and *S* is the total number of episodes a country has regardless of episode type. Values are scaled to 100. Table 2.2 provides summary statistics on the computed state-dependence

[28] We use the total number of periods or quarters in an episode instead of averages in line with understanding of cross-country variations. Forbes and Warnock (2012a) find that, on the average, countries spend four quarters in an episode. If one considers the average duration, there will be fewer variation in a cross-country set-up as most would have 4 quarters as average.

variables.[29] Here, we find that, on average, each country spends around 71 percent of its time in a "normal" episode, around 15 percent in "surge" episode, and 14 percent in "stop" episode. Across country groupings, emerging economies spend relatively longer time in "normal" episodes than advanced economies, while advanced economies spend relatively longer time in "stop" episodes than emerging economies. In addition, we find that variation is mostly greater for emerging economies than for advanced economies. Table 2.2 also reveals that "normal" episodes occur more frequently, while "stops" and "surges" occur at relatively the same frequency. Noticeably, this pattern appears consistent across country groups. However, cross-country difference in occurrence appears larger for advanced economies than for emerging economies. These observations highlight that "normal" episodes last longer and are more frequent than extreme episodes, and there are marked differences across countries.

Figure 2.4 illustrates the relation between "duration" and "occurrence" and transitional likelihood for total capital inflows. The top panel of Figure 2.4 shows that the longer one spends in an episode, the more likely one will stay, the more likely one will transition to that episode, and the less likely one will exit from the episode. These demonstrate the presence of negative duration dependence. The bottom panel of Figure 2.4 shows the more frequent one experiences an episode, the less likely one will remain in that episode and more likely it will transition to another episode but it is also more likely to move to that episode from another episode. Taken together, Figure 2.4 illustrates the relation between the state-dependence variables and transitional likelihoods.

2.4.4 Domestic Factors and Stylized Facts

For domestic factors included in Equations (6) and (7), output volatility refers to the standard deviation of real GDP growth, taken from the World Economic Outlook Dataset April 2015. Following Calderon and Kubota (2013), we expect countries with more stable macroeconomic conditions to have a lower likelihood of transitioning to a stop episode. Per capita income is in natural logarithm of per capita income at constant US$2010 prices taken from World Development Indicators (WDI) of World Bank. Similar to Cavallo et al. (2008), per capita income controls for the level of development of a country. Domestic credit pertains to the loans to private sector as percentage of GDP taken from WDI. We expect domestic credit to be correlated with both "surges" and "stops" as pointed out by Caballero (2014), Cavallo et al. (2008), Magud et al. (2014), and Sula (2010). Stock market capitalization of listed companies relative to GDP is sourced from WDI and national sources accessed

[29] Tables 2.A10 to 2.A12 in Appendix 2.4 present the computed duration and occurrence for each country in the sample for total, debt, and equity gross inflows, respectively.

through CEIC Database. It accounts for the level of financial development of a country. As pointed out by Cavallo et al. (2008), countries with higher trade openness tend to be less vulnerable to "stops" as perceived default probability is lower. Data on trade openness refer to merchandise exports plus imports relative to GDP taken from WDI.

Caballero (2014), Calderon and Kubota (2013), Calvo et al. (1996 and 2008), Ghosh et al. (2014), and Magud et al. (2014) pointed out the importance of financial integration in exacerbating the occurrence of "surges" and "stops". We use two measures. First is a *de facto* financial openness measure using the sum of total foreign assets and total foreign liabilities as percentage of GDP sourced from External Wealth of Nations or EWN Mark II (Lane and Milesi-Ferretti 2007). Second is a *de jure* measure of capital account openness using Chinn-Ito standardized index (2006) scaled by 100.[30] Park and Mercado (2014) highlight the divergence of both measures. We also include net foreign asset position to characterize whether a country is a net creditor or net debtor. As pointed out by Lane and Milesi-Ferretti (2002), the net foreign asset position of a country reflects the level of public debt and the demographic structure of a country. Following Calvo et al. (1993 and 1996), we also include foreign reserves as part of country characteristics. Both net foreign asset position and foreign reserves as ratios to GDP are taken from External Wealth of Nations Database.

The regressors in Equation (7) are annual averages from 1980 to 2014.[31] Table 2.3 presents summary statistics of the average values of the regressors. We note that advanced economies, on average, have higher per capita income, domestic credit, market capitalization, and de facto and de jure financial openness. Emerging economies, on the other hand, have higher macroeconomic volatility, trade openness, and foreign reserves.

2.5 Empirical Analysis

2.5.1 Baseline Results

Table 2.4 presents the results on the conditional correlations between the transitional likelihoods and state-dependence variables, following Equation (6). The results show state-dependence variables, "duration" and "occurrence", are strongly related with transitional likelihood of moving

[30] Since the latest Chinn-Ito index is available until end-2013, we use 2013 values for our 2014 sample. Data for Taiwan is proxied by data for Korea as the level of de facto financial integration between these two countries are the closets among the countries in the region.

[31] Table 2.A13 in Appendix 2.5 shows data definition and sources for the domestic factors. In cases wherein a country's data start on a later year, we follow the starting date of episodes in taking the average values of the regressors.

between episodes. The model fit is relatively good.[32] Table 2.4 reveals several important findings. First, economies that stay longer in a normal episode have significantly higher likelihood of being in a normal episode and lower likelihood of moving to another episode. Specifically, a one percent increase in the duration of being in a normal episode is highly correlated with a higher likelihood of remaining in a normal episode by 0.28 percent, while significantly associated with lower likelihood of moving to a surge episode by 0.16 percent and moving to a stop episode by 0.11 percent. Taken together, these findings offer support to the presence of negative duration dependence.

Second, countries that experience an episode more frequently tend to have significantly lower likelihood of staying in that episode but a higher likelihood of transitioning to and from another episode. For instance, higher frequency of experiencing normal episodes is significantly associated with lower likelihood of remaining in a normal episode by around 0.30 percent but significantly higher likelihood of moving from normal to surge episode by 0.16 percent, normal to stop episode by 0.23 percent, surge to normal episode by around 1 percent, and stop to normal episode by 0.50 percent. Consequently, duration appears significant for transitions from the origin episode, while occurrence is significant for both origin and destination episodes. These results hold true for debt and equity inflows. These also validate that the estimates do not capture mechanical results as we find that duration of destination episodes to be insignificant. For instance, duration of surge is insignificant for the transitional likelihood of moving from normal to surge. If the results are mechanical, then duration of surge should also be significant. Also, we find that the more frequently one experiences an episode, the less likely one remains in that episode, which is contrary to the mechanics in the labour economics literature wherein the more frequently one experiences an episode the more likely one remains in that episode (Heckman and Borjas, 1980).

To assess the importance of domestic factors on transitional likelihoods and to know which state-dependence variables domestic factors influence, we test the conditional correlation between state-dependence variables and domestic factors, following Equation (7). Tables 2.5, 2.6, and 2.7 present the results of the conditional correlations of state-dependence variables on domestic factors for total, debt, and equity inflows, respectively.

[32] We also estimate transitional likelihood on both state-dependence and domestic factors (Table 2.A1 in Appendix 2.1). The results indicate that aside from state-dependence variables, domestic factors such as output volatility, market capitalization, financial openness, and foreign reserves are also significantly correlated with transitional likelihoods. We also tested the conditional correlation between transitional likelihoods and domestic factors excluding state-dependence variables (Table 2.A2 in Appendix 2.1), the results show lower R-squared and higher residual sum of squares. We take these as evidence that transitional likelihood covary strongly with state-dependence variables than with domestic factors.

For total gross inflows in Table 2.5, the estimates show that countries with higher output volatility tend to have less frequent normal episodes by around 0.82 percent. This result is robust in our sensitivity tests. This could mean higher output volatility is linked to the occurrence of surge and stop episodes. However, since our volatility measure does not capture whether output growth is either positive or negative, we do not find its significance on the occurrence of either surge or stop episodes in Columns (5) and (6). The results also indicate that countries that are more financially open usually have significantly shorter stop episodes, while those that have less capital restrictions tend to have more frequent stop episodes. Both measures imply that economies that are more financially open usually experience shorter but more frequent stops. These results are robust in our sensitivity tests, and clearly highlight that both financial openness measures operate via two different state-dependence variables. Finally, our estimates for gross inflows indicate that economies with larger foreign reserves usually have longer normal episodes. The result is robust and indicates that foreign reserves significantly covary with the duration of normal episodes.

For debt inflows in Table 2.6, countries with higher domestic credit usually have significantly longer debt surges. This result is robust in our sensitivity tests and in line with the literature on domestic credit and surges (Caballero, 2014 and Magud et al., 2014). Economies with more developed financial system tend to experience less frequent normal debt episodes but more frequent surge debt episodes. Unlike the results for total gross inflows in Table 2.5, those with higher foreign reserves tend to have experienced less frequent debt surges but more frequent debt stops. This result is in line with the experience of emerging countries in the 1990s where sudden stops of capital inflows preceded greater reserve accumulation as the latter became the first line of defence against excessive currency depreciations. It also suggests that, unlike for gross capital inflows, foreign reserves significantly covary with the occurrence of extreme debt episodes.

For equity inflows in Table 2.7, economies with higher per capita income tend to have significantly less frequent equity surges. However, this finding is not robust in our sensitivity tests. The results also show that countries that are more open to trade experience significantly less equity stops. This finding holds in our sensitivity tests and concurs with the results of Cavallo et al. (2008) who argue that countries with higher trade openness tend to be less vulnerable to stops as the perceived default probability is lower. The results also indicate that more financially open economies usually experience longer equity surges but more frequent equity stops, while economies with less capital restrictions tend to have significantly longer episodes of normal equity flows but shorter equity

surges. Lastly, countries with higher foreign reserves tend to have more frequent equity stops consistent with the results for debt inflows and in line with emerging economies' experience in the 1990s. The findings on the significance of foreign reserves clearly indicate that it is highly relevant for the duration of total gross inflows but matters more for the occurrence of debt and equity episodes.

These results show which domestic factors significantly covary with the length and frequency of experiencing various episodes of capital inflows. Furthermore, these results demonstrate that domestic factors can covary either with duration or occurrence or with both state-dependence variables. But we see differences in the relevance of domestic factors for different types of capital flows. Given these differences, it is clear that domestic factors are related to state-dependence variables. In turn, as shown in Table 2.4, state-dependence variables are significantly correlated with transitional likelihoods of moving between episode types. In fact, one of key findings is that under cross-sectional framework, there is evidence of negative duration dependence similar to the employment transition literature.

We make several important points from the baseline findings. First, the results rest on small number of observations. Given that there are 55 economies in the sample, the significance of each domestic variable is sensitive to which countries are included. Nonetheless, the country composition used in the estimation is indicative of the overall significant covariation between transitional likelihood and state-dependence variables as well as state-dependence variables and domestic factors.

Second, very few domestic factors appear significant particularly for state-dependence variables. In fact, among the domestic factors considered, de facto and de jure financial openness measures and foreign reserves are those that consistently appear significant. Two possible explanations are provided. First, cross-country variations in state-dependence variable can be small. As indicated in Table 2.2, the standard deviation for state-dependence variables ranges from 3 to 7 percent. This could explain why very few domestic factors appear significant. The relatively small cross-country variation could be attributed to the fact that the results are capturing country idiosyncratic (domestic) factors. Given that we abstract from global factors, which are common to all countries, differences in duration, occurrence, and transitional likelihoods are explained by individual country factors. In effect, abstracting from global factors, we have accounted for the cross-border synchronization of capital inflows, and so what is left to explain cross-country variations are domestic factors that enable a country to hold up against synchronized movements in capital

inflows. Another explanation could be that there are, indeed, few domestic factors relevant for explaining state-dependence variables. Since this paper is the first paper to study capital flow transitions from a cross-country setting, the results offer initial findings for future researches.

2.5.2 Sensitivity Tests

We conduct several sensitivity tests to validate the baseline results. First, since our sample includes country outliers, we exclude those that have huge cross-border asset holdings relative to the size of the economy such as Ireland and Singapore that have very large de facto financial openness indicator. This reduces the sample size from 55 to 53 economies. Second, since the net foreign asset position is highly linked to foreign debt liabilities, we replace our measure of net foreign asset position with foreign debt liabilities to GDP ratio in Equation (7).[33] Third, given too many domestic factors are included in equation (7), we focus on per capita income as a measure of economic development, market capitalization to capture the level of financial development, de facto financial openness, and foreign reserves. Lastly, since some of the domestic factors are correlated, we test the individual significance of each domestic factor with the two state dependence variables using bivariate regressions. The results from our sensitivity tests are presented in Tables 2.8, 2.11, 2.14, and 2.17 for total capital inflow episodes; Tables 2.9, 2.12, 2.15, and 2.18 for debt episodes, and Tables 2.10, 2.13, 2.16 and 2.19 for equity episodes.

For total capital inflow episodes in Tables 2.8, 2.11, 2.14 and 2.17, we find the significance of output volatility, de facto and de jure financial openness, and foreign reserves hold. But there are differences from the baseline results. Excluding Ireland and Singapore, both de facto and de jure measures are no longer significant for total capital inflow episodes. This result is not surprising as both countries are highly open relative to the size of their economies. For all sensitivity tests on total gross inflow episodes, foreign reserves appear significant for the duration of surge episodes, which is not the case in the baseline results. Specifically, countries that have larger foreign reserves tend to experience significantly shorter surges. This implies that foreign reserves have inverse relation with extreme episodes as the sign for duration of stop episodes is also negative but insignificant. For the bivariate regression in Table 2.17, financial openness is insignificant and there are other domestic factors such as net foreign assets which are now significant. However, results from the bivariate regression must be treated with caution as they overestimate the significance of the explanatory

[33] Data on foreign debt liabilities are also taken from External Wealth of Nations (Lane and Milesi-Ferretti, 2007). Catão and Milesi-Ferretti (2014) find that foreign debt liabilities are a good predictor of external crisis.

variable.[34] Although there are differences from the baseline results, we do find evidence that output volatility, de facto and de jure financial openness, and foreign reserves significantly covary with the duration and occurrence of total capital inflow episodes.

In relation to debt inflow episodes in Tables 2.9, 2.12, 2.15, and 2.18, we find that the significance of domestic credit, market capitalization and foreign reserves hold. Again, there are differences from the main results. Removing the two outliers, trade and financial openness become significant. For example, countries that trade more usually experience significantly less debt stops, while those that are more financially open tend to experience longer normal episodes of debt flows, less frequent debt surges, but more frequent debt stops. Foreign reserves consistently appear significant with the same sign in Tables 2.9 and 2.12 for debt inflows, suggesting that foreign reserves are highly linked with the occurrence and not with the duration of debt episodes. We also note that some domestic factors have turned significant. Per capita income is now significant for the duration of debt stops in Table 2.15, suggesting that more developed economies tend to have longer debt stops. For the bivariate regressions in Table 2.18, foreign reserves are insignificant. Although there are differences from the baseline results, we do find evidence that domestic credit, level of financial development and foreign reserves significantly covary with the duration and occurrence of debt inflow episodes.

For episodes of equity inflows in Tables 2.10, 2.13, 2.16, and 2.19, we find that the significance of trade and de jure financial openness and foreign reserves hold. De facto financial openness, which is significant in the baseline results, is no longer significant in Tables 2.13 and 2.16. The significance and sign of de jure financial openness are consistent with the baseline results. The sensitivity tests indicate that economies with less capital restrictions tend to have longer normal episodes of equity inflows and shorter equity surges. This implies that de jure financial openness is highly relevant for equity episodes and is linked to duration and not occurrence. Consistent in Tables 2.10, 2.13 and 2.16 is the significance of trade openness on frequency of stops and the relevance of foreign reserves on the occurrence of equity episodes. This clearly supports the baseline results as it demonstrates that both trade openness and foreign reserves are relevant for the occurrence of equity episodes. Again some domestic factors have become significant in the sensitivity test for equity flows. For example, market capitalization is significant for the occurrence of equity surges in Table 2.10, while per capita income is significant for the duration of equity surges and occurrence of equity stops in Table 2.16. For Table 2.19, de jure financial integration measure appears most robust,

[34] This is true for both debt and equity inflow pairwise regressions between duration and occurrence and each of the domestic factors. This explains why some of the domestic factors in Tables 2.17, 2.18, and 2.19 have become marginally significant.

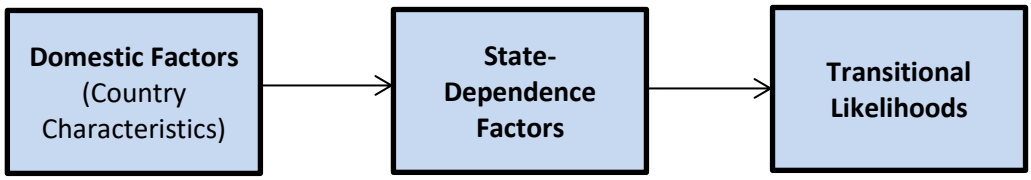
and per capita income is now strongly significant. Although there are differences from the baseline results, we do find support that trade openness, de jure financial openness and foreign reserves significantly covary with the duration and occurrence of equity inflow episodes.

2.6 Concluding Remarks

This chapter contributes to the literature on extreme episodes of gross capital flows by analysing the factors that significantly covary with cross-country transitional likelihoods of moving between episodes of gross capital inflows. Under a cross-sectional framework, we abstract from global factors in explaining cross-country variation in transitional likelihoods and state-dependence variables. Employing state-transitional framework for the episodes of gross capital inflows, we find that the likelihood of transitioning to an extreme episode is relatively small but the likelihood of remaining in an extreme episodes is relatively high.

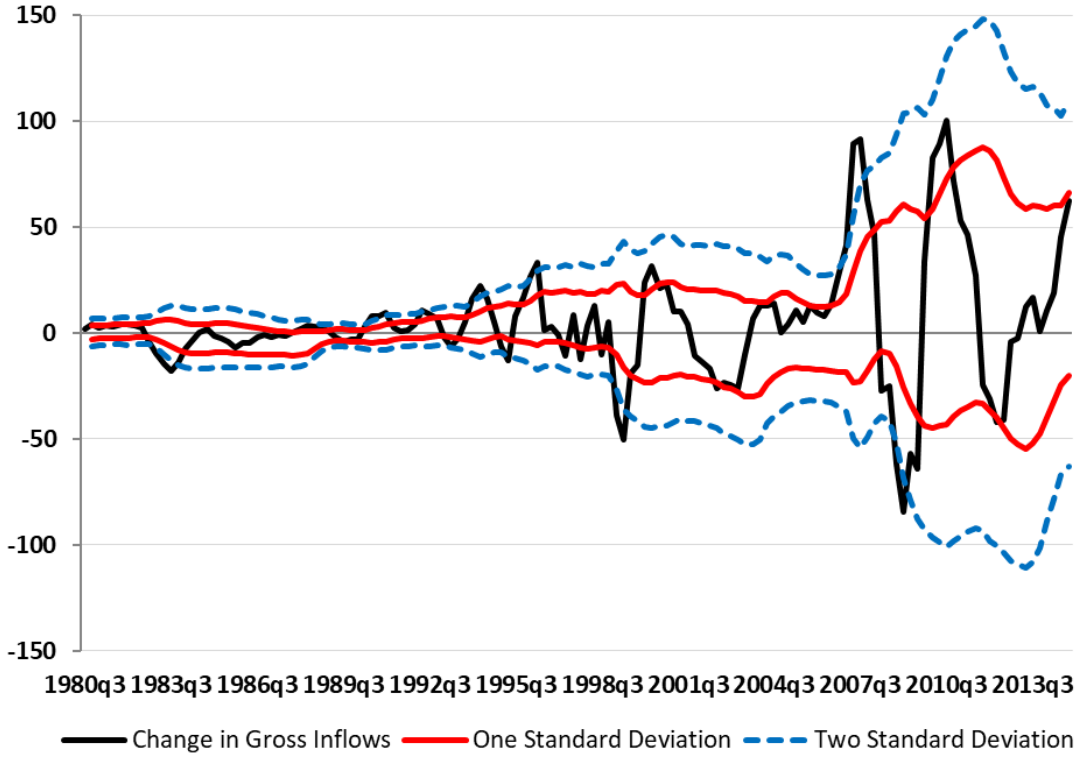
We find that transitional likelihoods strongly covary with the duration and occurrence of episode types. The correlations indicate that the longer one experiences an episode type, the less likely an economy will exit from that episode. Hence, under a cross-sectional set-up, there is evidence of negative duration dependence. This chapter also shows that state-dependence variables significantly covary with domestic factors, and that the covariance can either be in one or in both duration and occurrence. The correlation between state-dependence and domestic factors, as demonstrated in this chapter, has not been fully explored in the current literature.

Figure 2.1: Conceptual Framework



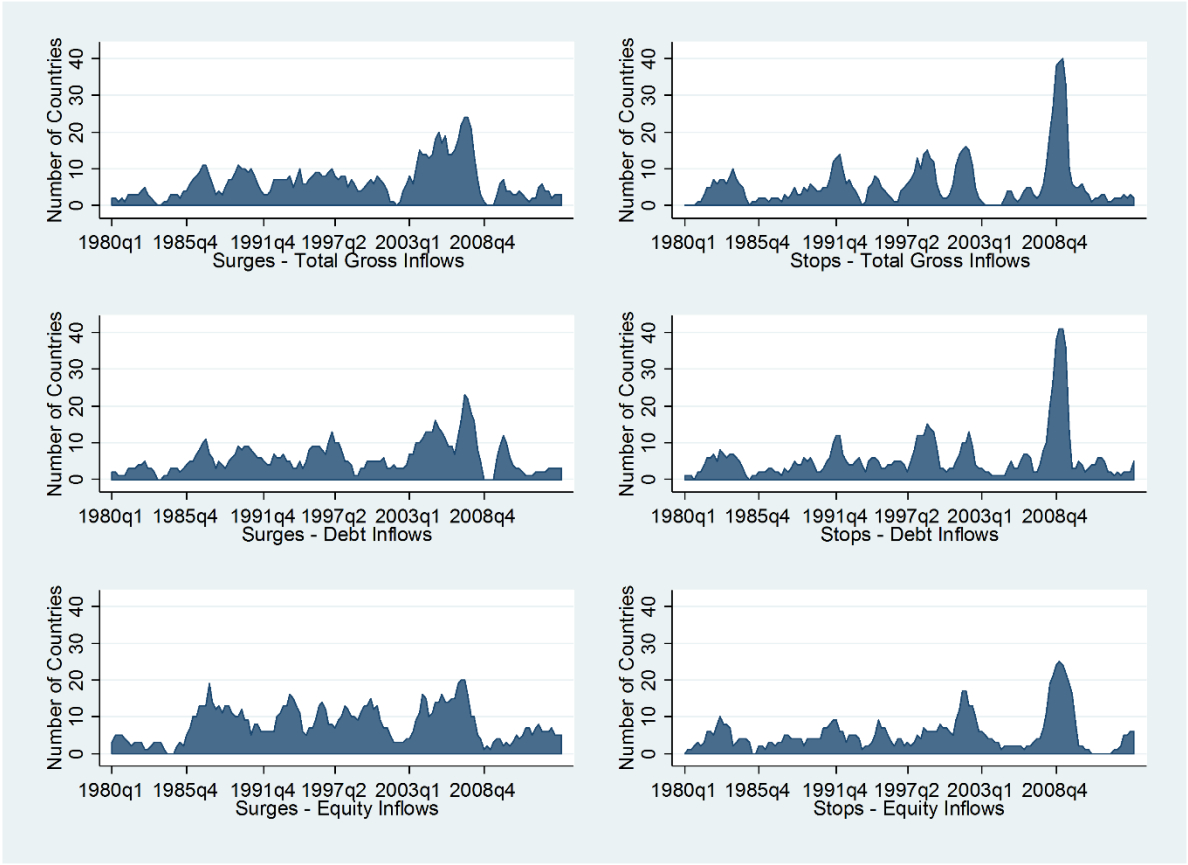
Note: State dependence factors include “duration” and “occurrence”.

Figure 2.2: Capital Inflows to Brazil



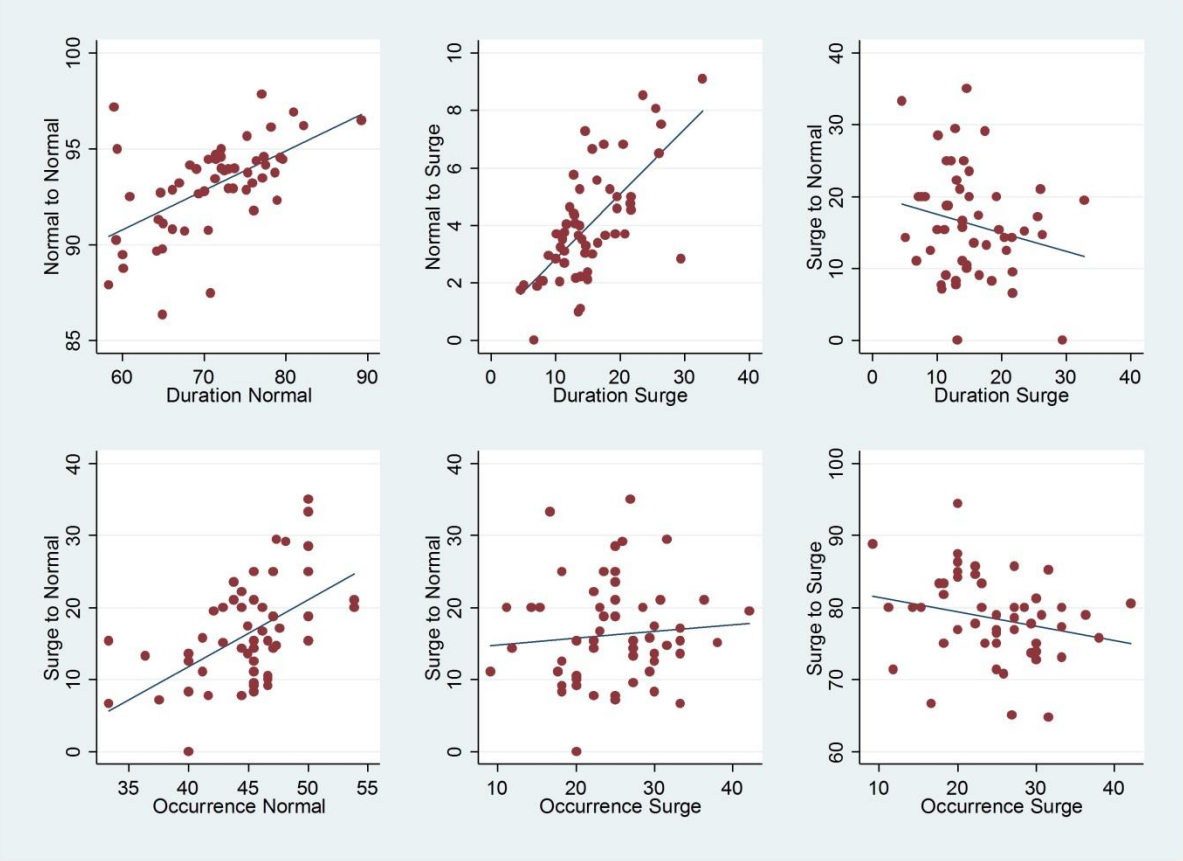
Notes: Values are in US$ billion. Change in gross capital inflows refer to the year-on-year difference of four quarter cumulative gross inflows. Data taken from Balance of Payments Statistics, International Monetary Fund.

Figure 2.3: Frequency of Extreme Episodes



Notes: Values refer to the number of countries experiencing an episode type for a given quarter. Episodes of gross capital inflows are derived following the method of Forbes and Warnock (2012a).

Figure 2.4: Transitional Likelihood and State-Dependence Variables



Notes: Values in the y-axis refer to the transitional likelihood of moving between episodes. Duration in the x-axis refers to the percentage of total number of periods or quarters in a given episode type divided by total periods for each country. Occurrence in the x-axis pertains to the percentage of total number of an episode type divided by the total number of episodes regardless of type.

Table 2.1: Summary Statistics of Transitional Likelihood

Transitions	Obs	Mean	Std. Dev.	CoV	Obs	Mean	Std. Dev.	CoV	Obs	Mean	Std. Dev.	CoV
	Full Sample				Advanced				Emerging			
Total Gross Inflows												
Normal to Normal	55	93.02	2.43	0.03	20	91.88	2.48	0.03	35	93.68	2.17	0.02
Normal to Surge	55	4.02	1.97	0.49	20	4.79	2.16	0.45	35	3.58	1.74	0.49
Normal to Stop	55	2.96	1.54	0.52	20	3.34	1.32	0.39	35	2.74	1.64	0.60
Surge to Normal	55	16.19	7.40	0.46	20	17.97	6.01	0.33	35	15.18	8.00	0.53
Surge to Surge	55	78.49	5.86	0.07	20	76.54	4.90	0.06	35	79.61	6.13	0.08
Surge to Stop	55	5.31	5.53	1.04	20	5.49	5.12	0.93	35	5.21	5.82	1.12
Stop to Normal	55	19.12	5.49	0.29	20	18.53	5.04	0.27	35	19.46	5.78	0.30
Stop to Surge	55	2.65	4.43	1.67	20	2.23	3.57	1.60	35	2.89	4.89	1.69
Stop to Stop	55	78.22	5.69	0.07	20	79.24	3.35	0.04	35	77.64	6.65	0.09
Debt Inflows												
Normal to Normal	55	93.23	2.09	0.02	20	92.50	2.21	0.02	35	93.64	1.93	0.02
Normal to Surge	55	3.62	1.65	0.46	20	3.94	1.34	0.34	35	3.44	1.80	0.52
Normal to Stop	55	3.15	1.47	0.47	20	3.56	1.47	0.41	35	2.92	1.44	0.49
Surge to Normal	55	18.39	7.73	0.42	20	19.05	6.14	0.32	35	18.01	8.56	0.48
Surge to Surge	55	76.27	5.57	0.07	20	76.32	5.28	0.07	35	76.25	5.80	0.08
Surge to Stop	55	5.34	5.86	1.10	20	4.63	4.65	1.01	35	5.74	6.48	1.13
Stop to Normal	55	19.82	6.49	0.33	20	18.91	3.77	0.20	35	20.35	7.63	0.38
Stop to Surge	55	3.02	3.70	1.22	20	2.88	3.59	1.25	35	3.10	3.81	1.23
Stop to Stop	55	77.15	6.01	0.08	20	78.21	4.55	0.06	35	76.55	6.68	0.09
Equity Inflows												
Normal to Normal	55	92.48	2.87	0.03	20	93.15	1.76	0.02	35	92.10	3.30	0.04
Normal to Surge	55	4.63	2.37	0.51	20	3.72	1.02	0.27	35	5.15	2.75	0.53
Normal to Stop	55	2.89	1.59	0.55	20	3.13	1.64	0.52	35	2.75	1.57	0.57
Surge to Normal	54	14.78	5.88	0.40	20	15.31	5.11	0.33	34	14.47	6.35	0.44
Surge to Surge	54	80.34	5.61	0.07	20	80.29	4.94	0.06	34	80.37	6.04	0.08
Surge to Stop	54	4.88	5.23	1.07	20	4.40	5.60	1.27	34	5.16	5.06	0.98
Stop to Normal	55	19.49	5.56	0.29	20	20.70	5.23	0.25	35	18.80	5.70	0.30
Stop to Surge	55	2.73	4.34	1.59	20	2.94	3.47	1.18	35	2.61	4.81	1.84
Stop to Stop	55	77.78	5.58	0.07	20	76.35	5.53	0.07	35	78.59	5.53	0.07

Notes: Values are based on Tables 2.A7 to 2.A9 in Appendix 2.4. Countries are classified into advanced and emerging countries based on average per capita real GDP at US$2005, where the cut-off is US$15,000. The list of countries for each group is shown in Table 2.A5 in Appendix 2.2. Std. Dev. = standard deviation. CoV = coefficient of variation.

Table 2.2: Summary Statistics of State-Dependence Variables

State Variables	Obs	Mean	Std. Dev.	CoV	Obs	Mean	Std. Dev.	CoV	Obs	Mean	Std. Dev.	CoV
	Full Sample				Advanced				Emerging			
Total Gross Inflows												
Duration Normal	55	70.983	6.768	0.10	20	69.289	6.013	0.09	35	71.952	7.063	0.10
Duration Surge	55	15.300	5.928	0.39	20	15.486	5.982	0.39	35	15.194	5.982	0.39
Duration Stop	55	13.717	3.842	0.28	20	15.225	3.434	0.23	35	12.854	3.841	0.30
Occurrence Normal	55	44.711	4.233	0.09	20	46.219	4.818	0.10	35	43.850	3.660	0.08
Occurrence Surge	55	24.708	6.795	0.28	20	26.657	7.225	0.27	35	23.594	6.376	0.27
Occurrence Stop	55	23.506	5.887	0.25	20	23.807	5.287	0.22	35	23.334	6.272	0.27
Debt Inflows												
Duration Normal	55	72.961	6.103	0.08	20	71.289	5.443	0.08	35	73.916	6.326	0.09
Duration Surge	55	13.471	4.947	0.37	20	14.153	4.689	0.33	35	13.081	5.115	0.39
Duration Stop	55	13.568	4.105	0.30	20	14.558	2.896	0.20	35	13.003	4.601	0.35
Occurrence Normal	55	44.682	4.961	0.11	20	46.324	4.665	0.10	35	43.743	4.943	0.11
Occurrence Surge	55	24.214	5.998	0.25	20	25.371	5.370	0.21	35	23.554	6.308	0.27
Occurrence Stop	55	24.281	7.032	0.29	20	24.785	5.250	0.21	35	23.993	7.931	0.33
Equity Inflows												
Duration Normal	55	69.835	7.142	0.10	20	71.757	4.884	0.07	35	68.738	8.017	0.12
Duration Surge	54	18.256	5.461	0.30	20	16.026	4.253	0.27	34	19.568	5.718	0.29
Duration Stop	55	12.240	4.099	0.33	20	12.217	2.702	0.22	35	12.253	4.754	0.39
Occurrence Normal	55	44.800	3.953	0.09	20	45.708	3.579	0.08	35	44.282	4.112	0.09
Occurrence Surge	54	26.982	5.493	0.20	20	26.169	5.047	0.19	34	27.460	5.758	0.21
Occurrence Stop	55	21.807	6.100	0.28	20	24.256	4.275	0.18	35	20.409	6.584	0.32

Notes: Values based on Tables 2.A10 to 2.A12 in Appendix 2.4. Countries are classified into advanced and emerging countries based on average per capita real GDP at US$2005, where the cut-off is US$15,000. The list of countries for each group is shown in Table 2.A5 in Appendix 2.2. Dev. = standard deviation. CoV = coefficient of variation.

Table 2.3: Summary Statistics of Domestic Factors

	Full Sample					Advanced	Emerging
Domestic Factors	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Mean**
Output Volatility	55	3.57	1.81	1.44	9.57	2.30	4.29
Per Capita Income	55	90.24	13.18	60.11	108.94	103.22	82.83
Domestic Credit	55	62.63	37.03	17.87	182.11	92.99	45.27
Market Capitalization	55	45.14	36.26	3.17	163.25	57.97	37.82
Trade Openness	55	61.28	41.75	17.23	288.32	48.76	68.43
Financial Openness	55	207.40	218.15	39.22	1,231.99	317.94	144.24
Capital Openness	55	60.21	29.09	10.35	100.00	83.47	46.91
Net Foreign Assets	55	-27.03	36.88	-147.39	117.81	-25.87	-27.69
Foreign Reserves	55	12.22	12.14	0.73	78.63	5.90	15.84

Notes: Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito standardized index (2006) scaled to 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. Refer to Appendix 2.5 for data sources.

Table 2.4: Transitional Likelihood: State-Dependence Variables,

Total Gross Inflows

VARIABLES	(1) Normal to Normal	(2) Normal to Surge	(3) Normal to Stop	(4) Surge to Normal	(5) Surge to Surge	(6) Surge to Stop	(7) Stop to Normal	(8) Stop to Surge	(9) Stop to Stop
Duration Normal	0.275***	-0.163***	-0.109**	-0.051			-0.048		
	(0.039)	(0.035)	(0.040)	(0.260)			(0.131)		
Duration Surge		-0.024		-0.511*	0.902***	-0.255		0.188	
		(0.048)		(0.249)	(0.102)	(0.171)		(0.107)	
Duration Stop			-0.063			0.183	-0.597	-0.631**	0.913***
			(0.086)			(0.229)	(0.301)	(0.202)	(0.234)
Occurrence Normal	-0.295***	0.162***	0.228***	0.993***			0.498**		
	(0.060)	(0.038)	(0.042)	(0.218)			(0.163)		
Occurrence Surge		0.172***		0.532***	-0.719***	0.493**		0.432***	
		(0.029)		(0.140)	(0.102)	(0.176)		(0.105)	
Occurrence Stop			0.184***			0.389	0.419*	0.755***	-0.553***
			(0.043)			(0.201)	(0.208)	(0.172)	(0.137)
Constant	86.675***	4.453	-2.971	-29.906	82.460***	-14.621*	-1.383	-19.974***	78.715***
	(3.634)	(2.731)	(3.429)	(21.058)	(2.216)	(6.201)	(11.257)	(4.936)	(2.609)
Observations	55	55	55	55	55	55	55	55	55
R-squared	0.561	0.743	0.510	0.417	0.525	0.240	0.272	0.388	0.299
RSS	139.480	53.835	63.093	1725.582	878.838	1254.890	1186.171	649.839	1226.847

Notes: Dependent variables are transitional likelihoods for total gross inflows in percent as presented in Table 2.A7 in Appendix 2.4. Duration and occurrence are presented in Table 2.A10 in Appendix 2.4. RSS pertains to the residual sum of squares. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.5: State-Dependence Variables on Domestic Factors,

Total Gross Inflows

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	-0.442	0.625	-0.183	-0.818**	-0.743	0.091
	(0.722)	(0.655)	(0.282)	(0.315)	(0.562)	(0.582)
Per Capita Income	0.048	-0.126	0.079	0.036	-0.137	0.100
	(0.120)	(0.097)	(0.060)	(0.077)	(0.096)	(0.102)
Domestic Credit	-0.047	0.050	-0.003	0.016	0.006	-0.027
	(0.040)	(0.033)	(0.022)	(0.020)	(0.036)	(0.030)
Market Capitalization	0.022	-0.017	-0.005	-0.019	0.019	0.010
	(0.036)	(0.029)	(0.023)	(0.020)	(0.031)	(0.028)
Trade Openness	-0.046	0.032	0.013	0.007	-0.007	-0.040
	(0.046)	(0.039)	(0.025)	(0.032)	(0.049)	(0.036)
Financial Openness	-0.004	0.010	-0.005*	-0.001	0.011	-0.006
	(0.006)	(0.006)	(0.003)	(0.004)	(0.007)	(0.006)
Capital Openness	0.020	-0.048	0.028	-0.004	-0.006	0.050*
	(0.044)	(0.032)	(0.025)	(0.029)	(0.030)	(0.027)
Net Foreign Assets	0.011	-0.004	-0.007	-0.000	0.015	-0.012
	(0.026)	(0.023)	(0.013)	(0.018)	(0.026)	(0.022)
Foreign Reserves	0.257*	-0.222	-0.035	-0.020	-0.107	0.145
	(0.146)	(0.136)	(0.070)	(0.101)	(0.160)	(0.113)
Constant	69.835***	23.619***	6.546	44.576***	38.602***	13.934
	(10.170)	(8.352)	(4.421)	(6.314)	(7.489)	(9.187)
Observations	55	55	55	55	55	55
R-squared	0.111	0.197	0.191	0.182	0.183	0.107

Notes: Dependent variables are the "duration" and "occurrence" of "normal", "surge", and "stop" episodes as shown in Table 2.A10 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.6: State-Dependence Variables on Domestic Factors,

Debt Inflows

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	-0.076	0.383	-0.307	-0.742	0.337	-0.587
	(0.624)	(0.558)	(0.408)	(0.651)	(0.621)	(0.762)
Per Capita Income	-0.071	-0.021	0.092	-0.045	-0.117	0.136
	(0.119)	(0.095)	(0.058)	(0.088)	(0.097)	(0.114)
Domestic Credit	-0.059	0.060*	-0.001	0.058	0.020	-0.053
	(0.049)	(0.032)	(0.031)	(0.037)	(0.035)	(0.053)
Market Capitalization	0.038	-0.027	-0.011	-0.044*	0.043*	0.001
	(0.043)	(0.030)	(0.024)	(0.022)	(0.024)	(0.034)
Trade Openness	-0.030	0.017	0.013	0.032	0.037	-0.091
	(0.043)	(0.036)	(0.037)	(0.037)	(0.040)	(0.056)
Financial Openness	-0.000	0.004	-0.004	0.002	0.004	-0.002
	(0.005)	(0.005)	(0.003)	(0.004)	(0.006)	(0.006)
Capital Openness	0.049	-0.041	-0.008	-0.011	0.008	0.025
	(0.044)	(0.033)	(0.028)	(0.032)	(0.024)	(0.032)
Net Foreign Assets	-0.008	-0.001	0.009	-0.001	0.021	-0.012
	(0.023)	(0.018)	(0.014)	(0.021)	(0.023)	(0.026)
Foreign Reserves	0.116	-0.103	-0.013	-0.073	-0.289***	0.337***
	(0.132)	(0.101)	(0.091)	(0.093)	(0.087)	(0.112)
Constant	78.922***	13.239*	7.839*	48.948***	30.951***	17.445**
	(9.226)	(7.670)	(4.157)	(6.634)	(8.433)	(8.355)
Observations	55	55	55	55	55	55
R-squared	0.098	0.106	0.093	0.169	0.169	0.125

Notes: Dependent variables are the "duration" and "occurrence" of "normal", "surge", and "stop" episodes as shown in Table 2.A11 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.7: State-Dependence Variables on Domestic Factors,

Equity Inflows

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	0.103	-0.500	0.322	-0.099	-0.275	-0.339
	(0.819)	(0.536)	(0.390)	(0.378)	(0.481)	(0.512)
Per Capita Income	-0.010	-0.056	0.072	0.017	-0.121*	0.114
	(0.124)	(0.082)	(0.079)	(0.074)	(0.071)	(0.109)
Domestic Credit	-0.022	0.034	-0.014	0.029	0.016	-0.040
	(0.045)	(0.033)	(0.022)	(0.021)	(0.035)	(0.030)
Market Capitalization	0.031	-0.026	-0.012	-0.025	0.019	0.015
	(0.028)	(0.022)	(0.017)	(0.023)	(0.028)	(0.025)
Trade Openness	0.037	0.021	-0.047	0.023	0.040	-0.084*
	(0.053)	(0.037)	(0.029)	(0.026)	(0.051)	(0.042)
Financial Openness	-0.008	0.006*	0.001	0.000	-0.005	0.006*
	(0.006)	(0.003)	(0.004)	(0.003)	(0.005)	(0.003)
Capital Openness	0.101**	-0.114***	0.024	-0.019	-0.001	0.056
	(0.048)	(0.037)	(0.030)	(0.030)	(0.031)	(0.045)
Net Foreign Assets	-0.003	-0.005	0.007	-0.006	-0.001	0.012
	(0.030)	(0.022)	(0.016)	(0.018)	(0.023)	(0.024)
Foreign Reserves	-0.064	-0.036	0.108	-0.121	-0.094	0.196*
	(0.179)	(0.120)	(0.094)	(0.098)	(0.157)	(0.112)
Constant	64.371***	28.769***	6.194	43.908***	36.779***	12.969
	(9.279)	(4.889)	(6.269)	(5.682)	(4.827)	(8.005)
Observations	55	54	55	55	54	55
R-squared	0.150	0.288	0.108	0.129	0.089	0.244

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A12 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.8: State-Dependence Variables on Domestic Factors,

Total Gross Inflows (Excluding Ireland and Singapore)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	-0.528	0.615	-0.087	-0.889***	-0.696	0.114
	(0.735)	(0.686)	(0.300)	(0.319)	(0.597)	(0.620)
Per Capita Income	0.023	-0.098	0.075	0.026	-0.106	0.073
	(0.123)	(0.098)	(0.061)	(0.078)	(0.096)	(0.102)
Domestic Credit	-0.060	0.055	0.005	0.007	0.016	-0.030
	(0.045)	(0.036)	(0.023)	(0.020)	(0.037)	(0.030)
Market Capitalization	0.024	-0.010	-0.014	-0.015	0.022	0.002
	(0.039)	(0.030)	(0.024)	(0.023)	(0.035)	(0.030)
Trade Openness	-0.047	0.041	0.005	0.009	-0.001	-0.049
	(0.049)	(0.038)	(0.029)	(0.036)	(0.052)	(0.036)
Financial Openness	0.010	-0.006	-0.004	0.005	-0.006	0.008
	(0.008)	(0.007)	(0.005)	(0.008)	(0.011)	(0.005)
Capital Openness	0.008	-0.034	0.025	-0.008	0.010	0.036
	(0.048)	(0.034)	(0.026)	(0.030)	(0.034)	(0.028)
Net Foreign Assets	0.021	-0.009	-0.012	0.006	0.007	-0.009
	(0.026)	(0.026)	(0.012)	(0.019)	(0.025)	(0.022)
Foreign Reserves	0.328*	-0.262*	-0.066	0.022	-0.172	0.177
	(0.163)	(0.137)	(0.069)	(0.088)	(0.142)	(0.105)
Constant	71.033***	21.927**	7.040	44.934***	36.930***	15.580*
	(10.481)	(8.453)	(4.612)	(6.437)	(7.267)	(9.112)
Observations	53	53	53	53	53	53
R-squared	0.117	0.147	0.180	0.195	0.161	0.099

Notes: Dependent variables are the "duration" and "occurrence" of "normal", "surge", and "stop" episodes as shown in Table 2.A10 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.9: State-Dependence Variables on Domestic Factors,

Debt Inflows (Excluding Ireland and Singapore)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	-0.134	0.376	-0.242	-0.578	0.194	-0.517
	(0.622)	(0.574)	(0.425)	(0.640)	(0.654)	(0.821)
Per Capita Income	-0.093	0.004	0.089	-0.057	-0.089	0.111
	(0.121)	(0.096)	(0.060)	(0.087)	(0.095)	(0.114)
Domestic Credit	-0.068	0.064*	0.004	0.071*	0.013	-0.052
	(0.050)	(0.033)	(0.031)	(0.038)	(0.032)	(0.053)
Market Capitalization	0.038	-0.021	-0.017	-0.060**	0.061**	-0.011
	(0.045)	(0.030)	(0.026)	(0.024)	(0.024)	(0.035)
Trade Openness	-0.032	0.025	0.007	0.017	0.055	-0.103*
	(0.042)	(0.035)	(0.040)	(0.037)	(0.042)	(0.059)
Financial Openness	0.012*	-0.009	-0.003	0.007	-0.010*	0.011*
	(0.006)	(0.006)	(0.004)	(0.005)	(0.006)	(0.006)
Capital Openness	0.039	-0.028	-0.010	-0.019	0.024	0.011
	(0.044)	(0.034)	(0.028)	(0.031)	(0.023)	(0.034)
Net Foreign Assets	-0.001	-0.005	0.006	-0.009	0.024	-0.012
	(0.024)	(0.019)	(0.014)	(0.018)	(0.020)	(0.027)
Foreign Reserves	0.171	-0.138	-0.032	-0.116	-0.278***	0.349***
	(0.126)	(0.090)	(0.089)	(0.094)	(0.085)	(0.114)
Constant	80.001***	11.779	8.220*	50.129***	28.898***	19.113**
	(9.414)	(7.723)	(4.285)	(6.347)	(8.247)	(8.268)
Observations	53	53	53	53	53	53
R-squared	0.132	0.117	0.085	0.207	0.174	0.125

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A11 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.10: State-Dependence Variables on Domestic Factors,

Equity Inflows (Excluding Ireland and Singapore)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	0.283	-0.752	0.303	-0.005	-0.653	-0.149
	(0.841)	(0.533)	(0.390)	(0.397)	(0.482)	(0.516)
Per Capita Income	-0.031	-0.047	0.088	0.011	-0.128	0.126
	(0.128)	(0.089)	(0.079)	(0.075)	(0.076)	(0.109)
Domestic Credit	-0.009	0.013	-0.012	0.037	-0.019	-0.021
	(0.048)	(0.033)	(0.023)	(0.022)	(0.027)	(0.032)
Market Capitalization	0.011	-0.005	-0.007	-0.034	0.047*	0.002
	(0.029)	(0.023)	(0.018)	(0.026)	(0.027)	(0.029)
Trade Openness	0.019	0.041	-0.041	0.014	0.065	-0.093**
	(0.053)	(0.037)	(0.030)	(0.026)	(0.054)	(0.043)
Financial Openness	0.001	0.004	-0.008*	0.003	0.003	-0.002
	(0.008)	(0.005)	(0.004)	(0.006)	(0.010)	(0.006)
Capital Openness	0.088*	-0.106***	0.033	-0.024	0.001	0.060
	(0.048)	(0.037)	(0.030)	(0.030)	(0.030)	(0.047)
Net Foreign Assets	-0.010	0.007	0.006	-0.011	0.021	-0.001
	(0.031)	(0.023)	(0.014)	(0.017)	(0.022)	(0.024)
Foreign Reserves	-0.100	0.045	0.090	-0.147	0.057	0.107
	(0.208)	(0.124)	(0.100)	(0.106)	(0.105)	(0.115)
Constant	66.090***	27.524***	5.189	44.553***	36.060***	12.851
	(9.791)	(5.528)	(6.366)	(5.833)	(5.263)	(7.972)
Observations	53	52	53	53	52	53
R-squared	0.133	0.305	0.153	0.124	0.214	0.261

Notes: Dependent variables are the "duration" and "occurrence" of "normal", "surge", and "stop" episodes as shown in Table 2.A12 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.11: State-Dependence Variables on Domestic Factors,

Total Gross Inflows (Replacing NFA with Foreign Debt Liabilities)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	-0.453	0.624	-0.171	-0.803**	-0.798	0.115
	(0.728)	(0.647)	(0.280)	(0.308)	(0.531)	(0.574)
Per Capita Income	0.057	-0.131	0.074	0.039	-0.134	0.093
	(0.122)	(0.096)	(0.062)	(0.076)	(0.096)	(0.105)
Domestic Credit	-0.046	0.050	-0.004	0.016	0.008	-0.028
	(0.041)	(0.033)	(0.022)	(0.020)	(0.035)	(0.030)
Market Capitalization	0.018	-0.015	-0.003	-0.021	0.020	0.012
	(0.037)	(0.030)	(0.023)	(0.021)	(0.031)	(0.029)
Trade Openness	-0.051	0.036	0.016	0.004	-0.008	-0.036
	(0.045)	(0.039)	(0.025)	(0.030)	(0.047)	(0.036)
Financial Openness	0.006	0.004	-0.010*	0.004	0.010	-0.012
	(0.013)	(0.015)	(0.006)	(0.012)	(0.018)	(0.015)
Capital Openness	0.019	-0.047	0.029	-0.005	-0.004	0.051*
	(0.044)	(0.032)	(0.025)	(0.030)	(0.031)	(0.027)
Foreign Debt Liabilities	-0.035	0.020	0.015	-0.018	0.006	0.022
	(0.038)	(0.038)	(0.020)	(0.041)	(0.049)	(0.042)
Foreign Reserves	0.279**	-0.231*	-0.048	-0.019	-0.082	0.122
	(0.133)	(0.127)	(0.064)	(0.086)	(0.143)	(0.102)
Constant	69.583***	23.613***	6.804	44.834***	37.537***	14.427
	(9.994)	(8.095)	(4.587)	(6.369)	(7.561)	(9.166)
Observations	55	55	55	55	55	55
R-squared	0.120	0.201	0.195	0.189	0.179	0.109

Notes: Dependent variables are the "duration" and "occurrence" of "normal", "surge", and "stop" episodes as shown in Table 2.A10 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, foreign debt liabilities, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.12: State-Dependence Variables on Domestic Factors,

Debt Inflows (Replacing NFA with Foreign Debt Liabilities)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	-0.036	0.371	-0.335	-0.756	0.280	-0.551
	(0.644)	(0.555)	(0.409)	(0.623)	(0.586)	(0.726)
Per Capita Income	-0.071	-0.025	0.095	-0.050	-0.109	0.131
	(0.122)	(0.098)	(0.060)	(0.088)	(0.101)	(0.119)
Domestic Credit	-0.059	0.059*	-0.000	0.058	0.022	-0.054
	(0.049)	(0.032)	(0.031)	(0.036)	(0.034)	(0.052)
Market Capitalization	0.036	-0.024	-0.011	-0.041*	0.041	0.001
	(0.043)	(0.030)	(0.024)	(0.021)	(0.025)	(0.033)
Trade Openness	-0.032	0.020	0.011	0.035	0.033	-0.089
	(0.043)	(0.036)	(0.038)	(0.037)	(0.044)	(0.060)
Financial Openness	0.004	-0.001	-0.003	-0.005	0.009	-0.004
	(0.009)	(0.010)	(0.006)	(0.008)	(0.012)	(0.012)
Capital Openness	0.048	-0.040	-0.008	-0.010	0.008	0.025
	(0.044)	(0.034)	(0.027)	(0.030)	(0.025)	(0.033)
Foreign Debt Liabilities	-0.015	0.020	-0.005	0.024	-0.018	0.009
	(0.025)	(0.026)	(0.017)	(0.025)	(0.031)	(0.034)
Foreign Reserves	0.104	-0.107	0.003	-0.077	-0.253**	0.316**
	(0.129)	(0.095)	(0.091)	(0.093)	(0.100)	(0.125)
Constant	79.665***	13.038*	7.297*	48.702***	29.833***	18.136**
	(9.146)	(7.606)	(4.153)	(6.591)	(8.511)	(8.648)
Observations	55	55	55	55	55	55
R-squared	0.100	0.113	0.089	0.179	0.162	0.123

Notes: Dependent variables are the "duration" and "occurrence" of "normal", "surge", and "stop" episodes as shown in Table 2.A11 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, foreign debt liabilities, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.13: State-Dependence Variables on Domestic Factors,

Equity Inflows (Replacing NFA with Foreign Debt Liabilities)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	0.089	-0.463	0.311	-0.089	-0.245	-0.384
	(0.796)	(0.512)	(0.387)	(0.387)	(0.455)	(0.509)
Per Capita Income	-0.016	-0.052	0.077	0.013	-0.114	0.116
	(0.130)	(0.089)	(0.079)	(0.074)	(0.075)	(0.112)
Domestic Credit	-0.022	0.033	-0.013	0.029	0.016	-0.039
	(0.044)	(0.033)	(0.022)	(0.021)	(0.035)	(0.028)
Market Capitalization	0.035	-0.030	-0.014	-0.023	0.014	0.017
	(0.029)	(0.021)	(0.017)	(0.024)	(0.028)	(0.025)
Trade Openness	0.042	0.017	-0.050*	0.025	0.035	-0.084*
	(0.054)	(0.038)	(0.029)	(0.026)	(0.051)	(0.043)
Financial Openness	-0.017	0.013	0.006	-0.004	0.006	0.004
	(0.011)	(0.009)	(0.006)	(0.007)	(0.014)	(0.011)
Capital Openness	0.103**	-0.116***	0.024	-0.019	-0.003	0.057
	(0.046)	(0.037)	(0.029)	(0.029)	(0.032)	(0.046)
Foreign Debt Liabilities	0.033	-0.028	-0.019	0.014	-0.041	0.006
	(0.037)	(0.031)	(0.018)	(0.024)	(0.043)	(0.036)
Foreign Reserves	-0.072	-0.042	0.123	-0.133	-0.091	0.215*
	(0.181)	(0.121)	(0.088)	(0.089)	(0.148)	(0.110)
Constant	64.127***	29.480***	5.965	44.124***	37.366***	12.121
	(9.480)	(5.453)	(6.087)	(5.459)	(5.277)	(8.117)
Observations	55	54	55	55	54	55
R-squared	0.159	0.298	0.113	0.132	0.112	0.241

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A12 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, foreign debt liabilities, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.14: State-Dependence Variables on Domestic Factors,

Total Gross Inflows (Fewer Domestic Factors)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Per Capita Income	0.022	-0.140*	0.118***	0.077	-0.108	0.117
	(0.086)	(0.075)	(0.042)	(0.051)	(0.070)	(0.078)
Market Capitalization	0.013	-0.005	-0.008	0.004	0.040*	-0.003
	(0.026)	(0.026)	(0.017)	(0.013)	(0.023)	(0.023)
Financial Openness	-0.006	0.010	-0.004*	-0.001	0.010	-0.007
	(0.005)	(0.007)	(0.002)	(0.003)	(0.007)	(0.005)
Foreign Reserves	0.137**	-0.116*	-0.021	-0.056	-0.152**	0.040
	(0.068)	(0.069)	(0.041)	(0.040)	(0.075)	(0.057)
Constant	67.972***	27.519***	4.509	38.541***	32.319***	14.076**
	(7.577)	(6.662)	(3.522)	(4.426)	(6.000)	(7.001)
Observations	55	55	55	55	55	55
R-squared	0.071	0.127	0.150	0.086	0.144	0.068

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A10 in Appendix 2.4. Per capital income is in log multiplied by 10. Market capitalization, financial openness, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.15: State-Dependence Variables on Domestic Factors,

Debt Inflows (Fewer Domestic Factors)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Per Capita Income	-0.090	-0.006	0.096**	0.045	-0.070	0.092
	(0.078)	(0.067)	(0.037)	(0.059)	(0.068)	(0.079)
Market Capitalization	0.008	-0.002	-0.007	-0.002	0.045**	-0.005
	(0.034)	(0.025)	(0.018)	(0.015)	(0.019)	(0.028)
Financial Openness	-0.000	0.003	-0.003*	0.002	0.006	-0.007*
	(0.005)	(0.005)	(0.002)	(0.003)	(0.004)	(0.004)
Foreign Reserves	0.035	-0.047	0.012	-0.049	-0.151***	0.064
	(0.059)	(0.052)	(0.035)	(0.041)	(0.052)	(0.051)
Constant	80.307***	13.956**	5.737*	40.793***	29.061***	16.848**
	(6.826)	(5.889)	(3.252)	(5.157)	(6.125)	(6.956)
Observations	55	55	55	55	55	55
R-squared	0.044	0.023	0.071	0.045	0.134	0.039

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A11 in Appendix 2.4. Per capital income is in log multiplied by 10. Market capitalization, financial openness, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.16: State-Dependence Variables on Domestic Factors,

Equity Inflows (Fewer Domestic Factors)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Per Capita Income	0.104	-0.150**	0.073	0.034	-0.087	0.139**
	(0.099)	(0.062)	(0.051)	(0.048)	(0.052)	(0.066)
Market Capitalization	0.005	-0.000	-0.016	-0.011	0.027	0.015
	(0.025)	(0.022)	(0.017)	(0.017)	(0.018)	(0.028)
Financial Openness	-0.003	0.004	-0.002	0.001	-0.002	0.002
	(0.007)	(0.004)	(0.003)	(0.002)	(0.005)	(0.003)
Foreign Reserves	0.039	-0.026	0.023	-0.083*	-0.016	-0.013
	(0.123)	(0.089)	(0.045)	(0.045)	(0.086)	(0.061)
Constant	60.352***	31.335***	6.523	43.080***	34.296***	8.359
	(8.554)	(5.318)	(4.491)	(4.160)	(4.308)	(5.771)
Observations	55	54	55	55	54	55
R-squared	0.032	0.102	0.045	0.096	0.062	0.142

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A12 in Appendix 2.4. Per capital income is in log multiplied by 10. Market capitalization, financial openness, and foreign reserves are in percent of nominal GDP. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.17: Bivariate Estimates of State-Dependence Variables on Domestic Factors, (Total Gross Inflows)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	-0.080	0.436	-0.357	-0.907***	-0.981**	-0.048
	(0.590)	(0.533)	(0.245)	(0.234)	(0.439)	(0.408)
Per Capita Income	-0.021	-0.062	0.083**	0.075	0.017	0.058
	(0.071)	(0.064)	(0.034)	(0.046)	(0.069)	(0.066)
Domestic Credit	-0.004	-0.008	0.012	0.025*	0.026	0.007
	(0.021)	(0.017)	(0.014)	(0.013)	(0.023)	(0.019)
Market Capitalization	0.015	-0.009	-0.006	0.004	0.037*	-0.002
	(0.021)	(0.020)	(0.014)	(0.014)	(0.019)	(0.019)
Trade Openness	0.009	-0.001	-0.008	-0.015	-0.006	-0.012
	(0.019)	(0.015)	(0.010)	(0.012)	(0.023)	(0.012)
Financial Openness	-0.002	0.004	-0.002	0.000	0.008	-0.004
	(0.005)	(0.006)	(0.002)	(0.003)	(0.005)	(0.005)
Capital Openness	-0.006	-0.032	0.038**	0.023	0.012	0.030
	(0.033)	(0.029)	(0.016)	(0.021)	(0.030)	(0.026)
Net Foreign Assets	0.027*	-0.020*	-0.007	0.003	0.017	-0.006
	(0.015)	(0.011)	(0.010)	(0.017)	(0.015)	(0.012)
Foreign Reserves	0.115**	-0.057	-0.058*	-0.065**	-0.051	-0.010
	(0.051)	(0.034)	(0.030)	(0.025)	(0.084)	(0.041)
Observations	55	55	55	55	55	55

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A10 in Appendix 2.4. Results pertain to the estimated coefficients and standard errors of bivariate regression between each state dependence variable and individual domestic factors. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.18: Bivariate Estimates of State-Dependence Variables on Domestic Factors, (Debt Inflows)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	0.275	0.079	-0.354	-0.814	-0.311	-0.384
	(0.453)	(0.403)	(0.316)	(0.575)	(0.422)	(0.673)
Per Capita Income	-0.086	0.021	0.065*	0.065	0.028	0.031
	(0.064)	(0.054)	(0.033)	(0.051)	(0.061)	(0.066)
Domestic Credit	-0.030	0.019	0.011	0.033*	0.026	-0.001
	(0.019)	(0.015)	(0.013)	(0.017)	(0.021)	(0.023)
Market Capitalization	0.001	0.001	-0.002	0.004	0.036*	-0.004
	(0.024)	(0.018)	(0.014)	(0.013)	(0.019)	(0.021)
Trade Openness	0.006	-0.004	-0.002	-0.002	-0.002	-0.022
	(0.011)	(0.011)	(0.010)	(0.012)	(0.014)	(0.018)
Financial Openness	-0.001	0.002	-0.001	0.003	0.005	-0.004
	(0.003)	(0.004)	(0.002)	(0.002)	(0.004)	(0.004)
Capital Openness	-0.009	-0.007	0.016	0.025	0.022	0.003
	(0.029)	(0.024)	(0.019)	(0.022)	(0.025)	(0.029)
Net Foreign Assets	-0.005	-0.004	0.009	0.006	0.011	-0.000
	(0.019)	(0.012)	(0.010)	(0.015)	(0.014)	(0.014)
Foreign Reserves	0.050	-0.030	-0.020	-0.042	-0.071	0.016
	(0.043)	(0.028)	(0.027)	(0.045)	(0.047)	(0.040)
Observations	55	55	55	55	55	55

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A11 in Appendix 2.4. Results pertain to the estimated coefficients and standard errors of bivariate regression between each state dependence variable and individual domestic factors. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.19: Bivariate Estimates of State-Dependence Variables on Domestic Factors, (Equity Inflows)

VARIABLES	(1) Duration Normal	(2) Duration Surge	(3) Duration Stop	(4) Occurrence Nornal	(5) Occurrence Surge	(6) Occurrence Stop
Output Volatility	-0.082	-0.005	0.131	-0.278	-0.102	-0.827**
	(0.522)	(0.349)	(0.330)	(0.324)	(0.372)	(0.387)
Per Capita Income	0.084	-0.119**	0.042	0.035	-0.079*	0.167***
	(0.069)	(0.046)	(0.039)	(0.039)	(0.043)	(0.054)
Domestic Credit	0.013	-0.020	0.002	0.008	-0.004	0.043**
	(0.023)	(0.020)	(0.014)	(0.014)	(0.020)	(0.019)
Market Capitalization	0.015	-0.012	-0.009	-0.013	0.008	0.035
	(0.021)	(0.021)	(0.014)	(0.016)	(0.021)	(0.025)
Trade Openness	0.023	-0.005	-0.010	-0.015*	0.001	-0.006
	(0.017)	(0.015)	(0.011)	(0.009)	(0.022)	(0.028)
Financial Openness	0.001	-0.001	-0.001	-0.000	-0.003	0.006**
	(0.006)	(0.004)	(0.002)	(0.002)	(0.004)	(0.003)
Capital Openness	0.078**	-0.085***	0.016	0.005	-0.021	0.071**
	(0.032)	(0.023)	(0.021)	(0.017)	(0.026)	(0.029)
Net Foreign Assets	0.008	-0.011	0.005	-0.016	-0.003	0.031*
	(0.029)	(0.023)	(0.011)	(0.016)	(0.023)	(0.017)
Foreign Reserves	0.019	0.008	-0.008	-0.092**	0.005	-0.000
	(0.094)	(0.076)	(0.031)	(0.036)	(0.083)	(0.078)
Observations	55	54	55	55	54	55

Notes: Dependent variables are the “duration” and “occurrence” of “normal”, “surge”, and “stop” episodes as shown in Table 2.A12 in Appendix 2.4. Results pertain to the estimated coefficients and standard errors of bivariate regression between each state dependence variable and individual domestic factors. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Appendix 2.1: Transitional Likelihood Regressions

Table 2.A1: Transitional Likelihood on Domestic and State Dependence Variables

(Total Gross Inflows)

VARIABLES	(1) Normal to Normal	(2) Normal to Surge	(3) Normal to Stop	(4) Surge to Normal	(5) Surge to Surge	(6) Surge to Stop	(7) Stop to Normal	(8) Stop to Surge	(9) Stop to Stop
Duration Normal	0.292***	-0.202***	-0.131***	0.116			-0.187		
	(0.034)	(0.050)	(0.035)	(0.360)			(0.152)		
Duration Surge		-0.070		-0.204	0.737***	-0.504**		0.168	
		(0.072)		(0.424)	(0.151)	(0.150)		(0.119)	
Duration Stop			-0.091			0.411	-0.846*	-0.684**	1.035***
			(0.079)			(0.227)	(0.349)	(0.239)	(0.274)
Occurrence Normal	-0.262***	0.208***	0.217***	0.844**			0.564**		
	(0.057)	(0.056)	(0.038)	(0.291)			(0.171)		
Occurrence Surge		0.193***		0.448*	-0.615***	0.714***		0.539***	
		(0.041)		(0.216)	(0.131)	(0.167)		(0.130)	
Occurrence Stop			0.186***			0.401*	0.504*	0.826***	-0.556***
			(0.037)			(0.173)	(0.203)	(0.175)	(0.127)
Output Volatility	0.493*	0.032	-0.257*	-1.029	1.010**	1.187**	-0.562	0.005	1.071*
	(0.184)	(0.132)	(0.124)	(0.721)	(0.354)	(0.434)	(0.499)	(0.337)	(0.479)
Per Capita Income	-0.014	-0.002	0.018	0.119	-0.058	-0.091	-0.038	0.109	-0.026
	(0.025)	(0.019)	(0.019)	(0.095)	(0.072)	(0.069)	(0.098)	(0.072)	(0.099)
Domestic Credit	0.023	-0.014	-0.007	-0.029	0.031	-0.003	-0.024	0.007	0.007
	(0.011)	(0.007)	(0.008)	(0.042)	(0.032)	(0.027)	(0.035)	(0.025)	(0.034)
Market Capitalization	0.002	0.007	-0.013	-0.072	0.015	0.059**	0.025	-0.053**	0.025
	(0.008)	(0.005)	(0.006)	(0.036)	(0.026)	(0.021)	(0.025)	(0.019)	(0.027)
Trade Openness	0.029*	-0.003	-0.016	-0.039	0.003	0.050	0.045	-0.018	-0.004
	(0.011)	(0.007)	(0.008)	(0.043)	(0.025)	(0.029)	(0.028)	(0.024)	(0.037)
Financial Openness	-0.002	0.000	0.001	-0.000	0.002	-0.002	-0.010**	-0.000	0.004
	(0.001)	(0.001)	(0.001)	(0.005)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)
Capital Openness	-0.012	0.003	0.001	0.011	-0.016	-0.021	0.044	-0.030	-0.022
	(0.010)	(0.006)	(0.008)	(0.043)	(0.021)	(0.031)	(0.030)	(0.031)	(0.039)
Net Foreign Assets	0.004	-0.003	-0.002	0.016	-0.002	-0.016	-0.027	0.009	0.019
	(0.006)	(0.004)	(0.004)	(0.016)	(0.011)	(0.017)	(0.018)	(0.014)	(0.023)
Foreign Reserves	-0.109**	0.015	0.082**	0.218	-0.075	-0.134	0.031	0.112	-0.118
	(0.036)	(0.024)	(0.024)	(0.113)	(0.067)	(0.092)	(0.122)	(0.057)	(0.121)
Constant	82.789***	5.570	-0.575	-40.105	82.644***	-18.293*	8.089	-29.336**	76.810***
	(2.894)	(3.541)	(2.981)	(27.948)	(6.334)	(7.594)	(13.588)	(8.580)	(7.038)
Observations	55	55	55	55	55	55	55	55	55
R-squared	0.714	0.778	0.662	0.547	0.602	0.503	0.432	0.536	0.402
RSS	90.874	46.485	43.523	1340.972	737.659	821.768	924.740	493.297	1045.168

Notes: Dependent variables are transitional likelihood for total gross inflows in percent as presented in Table 2.A7 in Appendix 2.4. Duration and occurrence are presented in Table 2.A10 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. RSS pertains to the residual sum of squares. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.A2: Transitional Likelihood on Domestic Factors

(Total Gross Inflows)

VARIABLES	(1) Normal to Normal	(2) Normal to Surge	(3) Normal to Stop	(4) Surge to Normal	(5) Surge to Surge	(6) Surge to Stop	(7) Stop to Normal	(8) Stop to Surge	(9) Stop to Stop
Output Volatility	0.579**	-0.236	-0.343*	-2.230***	1.927***	0.303	-0.740	-0.090	0.831
	(0.188)	(0.176)	(0.137)	(0.550)	(0.521)	(0.451)	(0.473)	(0.421)	(0.575)
Per Capita Income	-0.009	-0.022	0.031	0.119	-0.067	-0.052	-0.042	0.043	-0.000
	(0.042)	(0.037)	(0.025)	(0.117)	(0.100)	(0.094)	(0.117)	(0.085)	(0.124)
Domestic Credit	0.005	-0.003	-0.002	-0.029	0.065	-0.036	-0.017	-0.001	0.018
	(0.016)	(0.012)	(0.009)	(0.040)	(0.035)	(0.030)	(0.039)	(0.022)	(0.036)
Market Capitalization	0.014	0.003	-0.017*	-0.073*	-0.009	0.083*	0.020	-0.034*	0.015
	(0.012)	(0.009)	(0.008)	(0.035)	(0.030)	(0.033)	(0.031)	(0.017)	(0.032)
Trade Openness	0.014	0.004	-0.018	-0.049	0.031	0.018	0.027	-0.058	0.031
	(0.014)	(0.011)	(0.010)	(0.038)	(0.029)	(0.033)	(0.036)	(0.029)	(0.042)
Financial Openness	-0.003	0.002	0.000	0.001	0.002	-0.004	-0.008*	0.006	0.001
	(0.003)	(0.002)	(0.001)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Capital Openness	-0.005	0.001	0.004	0.018	-0.048	0.031	0.040	-0.019	-0.020
	(0.013)	(0.009)	(0.010)	(0.045)	(0.030)	(0.038)	(0.042)	(0.032)	(0.050)
Net Foreign Assets	0.008	-0.002	-0.005	0.025	-0.014	-0.011	-0.030	0.011	0.018
	(0.008)	(0.007)	(0.005)	(0.020)	(0.016)	(0.021)	(0.021)	(0.022)	(0.028)
Foreign Reserves	-0.029	-0.046	0.074*	0.228*	-0.174*	-0.055	0.075	0.160*	-0.235
	(0.042)	(0.037)	(0.028)	(0.108)	(0.084)	(0.115)	(0.146)	(0.078)	(0.142)
Constant	91.473***	6.561*	1.966	18.049	76.327***	5.625	21.675*	2.487	75.838***
	(3.103)	(3.140)	(1.909)	(9.872)	(9.897)	(7.143)	(9.318)	(6.208)	(9.729)
Observations	55	55	55	55	55	55	55	55	55
R-squared	0.241	0.152	0.283	0.341	0.363	0.159	0.142	0.134	0.098
RSS	241.289	177.630	92.344	1951.451	1179.072	1388.824	1396.925	919.439	1578.453

Notes: Dependent variables are transitional likelihood for total gross inflows in percent as presented in Table 2.A7 in Appendix 2.4. Output volatility refers to the standard deviation of annual output growth. Per capital income is in log multiplied by 10. Capital openness refers to the Chinn-Ito normalized index (2006) multiplied by 100. Domestic credit, market capitalization, trade openness, financial openness, net foreign assets, and foreign reserves are in percent of nominal GDP. RSS pertains to the residual sum of squares. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.A3: Transitional Likelihood on Duration Dependence

(Total Gross Inflows)

VARIABLES	(1) Normal to Normal	(2) Normal to Surge	(3) Normal to Stop	(4) Surge to Normal	(5) Surge to Surge	(6) Surge to Stop	(7) Stop to Normal	(8) Stop to Surge	(9) Stop to Stop
Duration Normal	0.207***	-0.085*	0.029	0.325			0.262*		
	(0.049)	(0.041)	(0.032)	(0.277)			(0.104)		
Duration Surge		0.147*		0.047	0.359*	-0.076		0.145	
		(0.060)		(0.283)	(0.140)	(0.104)		(0.093)	
Duration Stop			0.164**			0.404*	-0.079	-0.097	0.421*
			(0.053)			(0.180)	(0.189)	(0.157)	(0.192)
Constant	78.342***	7.773*	-1.364	-7.617	73.006***	0.927	1.618	1.769	72.446***
	(3.623)	(3.631)	(2.612)	(23.104)	(2.331)	(2.953)	(9.063)	(2.448)	(3.050)
Observations	55	55	55	55	55	55	55	55	55
R-squared	0.333	0.492	0.131	0.071	0.132	0.089	0.125	0.047	0.081
RSS	212.063	106.488	111.839	2748.632	1607.994	1504.124	1426.027	1011.704	1607.559

Notes: Dependent variables are transitional likelihood for total gross inflows in percent as presented in Table 2.A7 in Appendix 2.4. Values for duration are presented in Table 2.A10 in Appendix 2.4. RSS pertains to the residual sum of squares. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.A4: Transitional Likelihood on Occurrence Dependence

(Total Gross Inflows)

VARIABLES	(1) Normal to Normal	(2) Normal to Surge	(3) Normal to Stop	(4) Surge to Normal	(5) Surge to Surge	(6) Surge to Stop	(7) Stop to Normal	(8) Stop to Surge	(9) Stop to Stop
Occurrence Normal	-0.132	0.098*	0.164***	1.050***			0.533**		
	(0.074)	(0.043)	(0.042)	(0.220)			(0.158)		
Occurrence Surge		0.225***		0.272*	-0.200	0.412**		0.385***	
		(0.028)		(0.117)	(0.116)	(0.128)		(0.097)	
Occurrence Stop			0.135***			0.533**	0.190	0.379***	-0.208*
			(0.029)			(0.160)	(0.126)	(0.107)	(0.101)
Constant	98.919***	-5.941*	-7.545**	-37.466**	83.446***	-17.380**	-9.188	-15.777***	83.119***
	(3.265)	(2.283)	(2.188)	(11.294)	(3.129)	(6.216)	(8.181)	(4.335)	(2.487)
Observations	55	55	55	55	55	55	55	55	55
R-squared	0.053	0.558	0.386	0.341	0.054	0.197	0.181	0.208	0.046
RSS	301.018	92.607	79.082	1950.467	1751.891	1326.126	1333.404	841.225	1667.868

Notes: Dependent variables are transitional likelihood for total gross inflows in percent as presented in Table 2.A7 in Appendix 2.4. Values for occurrence are presented in Table 2.A10 in Appendix 2.4. RSS pertains to the residual sum of squares. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Appendix 2.2: Dataset on Capital Flows

Our primary source for quarterly gross capital inflows data is the Balance of Payments Statistics presented in the International Monetary Fund's (IMF) International Financial Statistics (IFS). We access the data from CEIC Database. We define gross capital inflows to include foreign direct investment liabilities, portfolio investment liabilities and other investment liabilities. Our primary period coverage is from 1970Q1 to 2014Q4 for 55 advanced and emerging economies. Table 2.A5 presents country list and classification along with the dates when quarterly data are available.

Table 2.A5: Country Sample

Advanced		Emerging and Developing	
Country	**Start**	**Country**	**Start**
Australia	1Q1970	Argentina	1Q1976
Austria	1Q1970	Bangladesh	1Q1976
Canada	1Q1970	Bolivia	1Q1988
Denmark	1Q1975	Brazil	1Q1975
Finland	1Q1975	Chile	1Q1987
France	1Q1975	Colombia	1Q1992
Germany	1Q1971	Croatia	1Q1993
Greece	1Q1976	Czech Republic	1Q1993
Iceland	1Q1976	Estonia	1Q1992
Ireland	1Q1981	Hungary	4Q1989
Italy	1Q1970	India	1Q1975
Japan	1Q1977	Indonesia	1Q1981
Netherlands	1Q1970	Israel	1Q1972
New Zealand	1Q1980	Jordan	1Q1977
Norway	1Q1975	Korea	1Q1976
Portugal	1Q1975	Latvia	1Q1993
Spain	1Q1975	Lithuania	1Q1993
Sweden	1Q1975	Mexico	1Q1979
United Kingdom	1Q1970	Moldova	1Q1994
United States	1Q1973	Pakistan	1Q1976
		Peru	1Q1977
		Philippines	1Q1977
		Poland	1Q1985
		Romania	1Q1991
		Russia	1Q1994
		Singapore	1Q1986
		Slovakia	1Q1993
		Slovenia	1Q1992
		South Africa	1Q1985
		Sri Lanka	1Q1977
		Taiwan	1Q1981
		Thailand	1Q1976
		Turkey	1Q1984
		Ukraine	1Q1994
		Venezuela	1Q1990

Several modifications are made to make the dataset usable and consistent.

- We select countries closely following the sample of Forbes and Warnock (2012a and 2012b). However, we exclude Belgium-Luxembourg, Guatemala, Hong Kong, Malaysia, Nicaragua, Panama, and Switzerland because they either have short period coverage or limited data availability for capital flows. But we add four countries to increase the sample size. These countries have longer quarterly gross capital inflows data available. They include Jordan, Moldova, Pakistan, and Ukraine.
- IFS reports some values in billions of U.S. dollars, while most are in millions of U.S. dollars. Although the reported unit will not affect the identification of episodes, all values are converted to millions of U.S. dollars for consistency.
- Quarterly data before 2012Q1 follows the IMF's Balance of Payments Manual 5; while data from 2012Q1 onwards follows Balance of Payment Manual 6. The signs of gross inflows categories were made consistent to that using Balance of Payments Manual 5. No attempt was made to reconcile both series as small categorical changes are made for financial account liabilities, mostly involving intra-category changes for foreign direct investment liabilities. The transition from BPM5 to BPM6 does not affect our computed aggregate gross capital inflows.
- Data for Taiwan is sourced from the Central Bank of the Republic of China (Taiwan) accessed through CEIC Database.
- For some countries, data points are extended to increase the available periods in computing for rolling mean and standard deviation. Quarterly data for Chile (1987Q1-1990Q4), Colombia (1992Q1-1995Q4), and Venezuela (1990Q1-1993Q4) are computed by dividing the annual values sourced from the IFS by four. This modification departs from Forbes and Warnock (2012a and 2012b) approach where they do not extend the series for some countries. A justification for extending the series by four years for some countries is that the actual dating of an episode will start after the fourth year or 17^{th} quarter from the start of available data. The extended data points will in effect be used only for computing the rolling mean and rolling standard deviation.
- Data gaps for Greece (1998Q1-1998Q4), Norway (1992Q1-1993Q4), Peru (1985Q1-1990Q4), Poland (1996Q1-1999Q4), and Slovakia (2001Q1-2001Q4) are filled in by using annual values sourced from the IFS or from national sources divided by four. Data gaps are filled in to generate continuous series needed to calculate rolling standard deviation and mean for episode identification and transitional likelihoods computation.

- Unlike Forbes and Warnock (2012a and 2012b), we do not make adjustments to fill in data gaps in the series. Forbes and Warnock (2012a and 2012b) replace interior missing data with zeros if the string of missing values is surrounded with zeros or other values; and/or used data on net error and omissions to fill in the gaps. In this paper, no adjustments are made so as to consider only those classified financial transactions from the Balance of Payments.
- Similar to Forbes and Warnock (2012a and 2012b) , our computed inflows exclude financial derivative liabilities as unlike other debt instruments, no principal amount is advanced to be repaid and no investment income accrues for derivatives.

Appendix 2.3: Episodes of Gross Capital Inflows

Table 2.A6: Episodes of Capital Inflows

Country	Total				Debt				Equity			
	SURGES		STOPS		SURGES		STOPS		SURGES		STOPS	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
Advanced Economies												
Australia	1980q4	1982q4	1983q1	1984q1	1980q4	1983q1	1980q1	1980q3	1980q2	1981q2	1981q3	1983q2
Australia	1988q4	1989q1	1989q2	1991q3	1994q1	1994q3	1983q2	1984q1	1985q4	1986q1	1984q4	1985q1
Australia	1993q4	1994q3	1997q2	1998q1	1995q2	1997q1	1990q4	1991q3	1986q4	1987q3	1996q3	1996q4
Australia	1995q3	1996q3	2004q4	2005q4	2003q4	2004q3	1997q2	1998q1	1993q1	1993q4	2004q4	2005q4
Australia	1999q3	1999q4			2009q3	2010q3	2007q3	2007q4	2006q1	2007q1		
Australia	2002q3	2002q4					2008q4	2009q2				
Australia	2003q4	2004q3										
Australia	2006q1	2007q1										
Austria	1980q3	1980q4	1981q3	1982q3	1980q3	1980q4	1981q3	1982q3	1980q2	1980q4	1982q3	1983q3
Austria	1992q2	1993q1	2001q1	2002q1	1992q2	1993q1	1996q2	1997q1	1982q1	1982q2	1990q3	1991q4
Austria	1999q2	2000q1			1999q2	2000q2	2001q1	2002q1	1987q3	1990q2	2005q4	2006q4
Austria	2003q4	2005q4					2007q2	2009q4	1996q1	1996q4		
Austria									2005q1	2005q3		
Canada	1981q2	1981q4	1982q1	1983q1	1981q2	1981q4	1982q1	1983q2	1980q1	1980q3	1980q4	1982q1
Canada	1996q4	1997q3	1991q2	1992q1	1997q1	1997q3	1995q2	1996q1	1987q2	1987q4	1988q1	1989q1
Canada	2000q1	2001q1	1995q2	1996q1	2001q3	2002q2	2013q3	2014q2	2000q1	2000q4	2001q1	2002q3
Canada	2006q2	2007q1	2008q4	2009q2	2009q4	2010q2			2013q2	2014q1	2008q3	2009q3
Denmark	1985q4	1986q2	1986q3	1987q2	1985q4	1986q2	1986q3	1987q2	1985q4	1986q3	1992q4	1993q1
Denmark	2005q1	2005q4	1989q2	1989q4	1995q2	1996q4	1989q2	1989q4	1988q2	1990q3	1995q3	1996q4
Denmark			1991q4	1993q2	2005q1	2005q4	1991q4	1992q3	1994q3	1995q2	2001q1	2002q1
Denmark			1994q3	1995q1			1994q3	1995q1	1999q3	2000q4		
Denmark			2001q2	2002q1			2000q1	2000q3				
Denmark			2008q4	2009q4			2008q4	2009q4				
Denmark							2011q2	2011q4				
Finland	1984q3	1985q1	1985q4	1986q2	1984q3	1985q1	1985q4	1986q3	1981q1	1981q4	1982q3	1983q1
Finland	1987q1	1987q4	1991q1	1992q2	1986q4	1987q4	1991q1	1992q2	1986q2	1987q3	1991q4	1992q2
Finland	1996q3	1997q3	2001q1	2001q4	1996q3	1997q3	2005q1	2005q3	1992q3	1994q3	2001q1	2001q4
Finland	1998q4	1999q1	2009q2	2009q3	2004q3	2004q4	2009q2	2009q3	1998q2	1999q1	2008q2	2009q1
Finland	2004q3	2004q4	2012q3	2013q3	2011q3	2011q4	2012q3	2013q3	2014q1	2014q4		
Finland	2010q2	2010q3										
Finland	2011q3	2011q4										
France	1986q3	1987q4	1981q3	1982q2	1986q4	1988q1	1981q3	1982q2	1985q1	1986q4	1981q3	1982q4
France	1989q1	1989q4	1991q1	1992q1	1997q4	1998q3	1991q1	1992q1	1989q3	1990q3	1993q1	1993q2
France	1997q4	1998q3	2001q3	2002q3	2001q1	2001q2	2002q1	2002q3	1999q3	2000q3	1994q3	1995q2
France	2001q1	2001q2	2008q1	2009q3			2008q1	2009q3	2005q3	2006q2	2001q3	2002q2
France											2007q1	2007q4
Germany	1980q1	1980q2	1981q4	1982q4	1980q1	1980q2	1981q4	1982q4	1986q1	1986q4	1980q2	1981q1
Germany	1986q1	1986q4	1987q4	1988q3	1986q1	1986q3	1987q4	1988q3	1988q4	1990q1	1987q4	1988q3
Germany	1989q2	1990q1	1993q4	1994q4	1989q2	1990q1	1994q1	1994q4	1997q1	1998q4	1990q4	1991q2
Germany	1992q3	1993q3	2001q1	2002q2	1992q3	1993q2	2000q1	2002q2	2000q1	2000q3	2000q4	2001q4
Germany	2005q1	2005q4	2008q2	2009q3	2003q1	2003q2	2008q4	2009q3	2007q1	2007q3	2008q2	2009q1
Germany	2007q2	2008q1			2004q3	2005q3						
Germany					2007q2	2008q1						
Greece	1989q4	1991q1	1981q4	1982q3	1989q4	1990q3	1981q3	1982q1	1987q1	1988q4	1981q4	1982q3
Greece	1995q1	1995q2	1992q1	1992q4	1995q1	1995q2	1992q1	1992q2	2000q2	2001q2	1998q1	2000q1
Greece	1996q3	1997q1	1995q3	1996q2	1996q3	1997q1	1995q3	1996q2	2006q3	2007q2	2008q1	2009q1
Greece	1998q2	1999q1	1997q2	1998q1	2005q1	2005q3	1997q2	1998q2	2013q4	2014q4		
Greece	2002q2	2003q1	2005q4	2006q4	2007q1	2008q3	2005q4	2006q4				
Greece	2005q1	2005q3	2010q2	2011q2			2010q2	2011q2				
Greece	2007q1	2007q4										
Iceland	1987q1	1987q4	1982q4	1983q4	1987q1	1987q4	1982q4	1983q3	1990q1	1991q2	1983q2	1984q1
Iceland	1995q4	1996q4	1989q2	1990q1	1995q4	1996q1	1989q2	1990q1	1996q1	1997q1	1999q4	2000q3
Iceland	1998q3	1999q4	2001q2	2002q1	1998q3	1999q4	1993q3	1993q4	2001q2	2001q3	2008q2	2009q2
Iceland	2003q3	2006q1	2008q2	2009q3	2003q3	2006q1	2001q2	2002q1	2003q4	2007q3		
Iceland							2008q2	2009q3				

Table 2.A6: Episodes of Capital Inflows (Continued)

Country	Total				Debt				Equity			
	SURGES		STOPS		SURGES		STOPS		SURGES		STOPS	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
Advanced Economies												
Ireland	1986q4	1987q3	1991q3	1992q2	1986q4	1987q2	1991q3	1992q2	1987q2	1988q2	1986q4	1987q1
Ireland	1989q3	1990q2	2008q2	2009q3	1992q3	1993q4	2008q2	2009q4	1990q1	1992q1	1993q4	1994q3
Ireland	1992q3	1993q4			1995q3	1996q4			1996q4	1999q2	2001q2	2001q4
Ireland	1995q3	1996q3			1997q4	1998q3			2006q3	2007q2	2004q2	2005q1
Ireland	1997q4	1999q1			2003q1	2004q3					2008q2	2009q2
Ireland	2003q3	2004q2			2007q1	2007q3						
Ireland	2006q3	2007q3										
Ireland	2014q2	2014q4										
Italy	1990q3	1991q1	1982q2	1983q1	1990q2	1991q1	1982q2	1983q1	1987q3	1989q2	1986q3	1986q4
Italy	2002q4	2003q4	1991q4	1993q3	1999q4	2000q1	1991q4	1993q3	1995q4	1996q3	1990q1	1990q2
Italy	2005q2	2006q1	2000q4	2002q3	2003q1	2003q3	2000q4	2002q2	2001q1	2001q3	1991q3	1991q4
Italy	2010q4	2011q3			2005q1	2005q4			2005q4	2006q3	1994q4	1995q1
Italy					2010q4	2011q3					1999q2	2000q1
Italy											2005q2	2005q3
Japan	1986q2	1987q3	1990q4	1993q1	1986q3	1987q4	1982q4	1983q1	1988q3	1989q3	1984q2	1985q1
Japan	1993q4	1995q1	1998q1	1999q1	1993q4	1995q4	1990q4	1991q4	1999q2	2000q1	1986q3	1987q4
Japan	2009q4	2011q1	2008q3	2009q3	2000q1	2001q1	1998q1	1999q4	2009q4	2010q3	2000q2	2001q1
Japan					2010q3	2011q1	2008q4	2009q3	2013q1	2013q4	2008q1	2008q4
Netherlands	1997q4	1998q4	1981q1	1982q3	1997q4	1998q3	1981q1	1982q3	1986q2	1987q2	1981q4	1982q3
Netherlands	2005q2	2006q2	1990q4	1991q4	2006q4	2007q3	1991q1	1992q1	1988q3	1989q2	1987q3	1988q2
Netherlands			2002q1	2002q4	2010q2	2010q4	2007q4	2009q3	1995q4	1996q4	2014q2	2014q4
Netherlands			2008q1	2009q3					1998q4	1999q4		
Netherlands									2005q2	2006q2		
Netherlands									2012q1	2013q1		
New Zealand	1986q3	1987q2	1987q3	1988q3	1986q3	1987q2	1987q3	1988q3	1992q3	1993q3	1991q3	1992q2
New Zealand	2000q2	2001q1	1996q4	1997q2	1996q4	1997q3	1998q2	1999q2	2000q2	2001q1	1996q3	1997q2
New Zealand	2006q3	2007q3	1998q3	1999q2	2000q4	2001q4	2008q2	2009q2	2006q4	2007q2	2001q2	2002q2
New Zealand			2008q2	2009q3							2009q2	2010q1
Norway	1982q3	1982q4	1983q3	1983q4	1982q3	1983q2	1981q1	1981q4	1986q2	1987q1	2001q4	2003q1
Norway	1984q3	1985q3	1988q3	1989q2	1984q3	1985q3	1988q3	1989q4	1998q1	1998q3	2008q1	2008q4
Norway	1992q3	1993q2	1991q3	1992q2	1995q2	1997q1	1997q4	1998q1	2009q3	2010q1		
Norway	1996q4	1997q1	1997q4	1998q1	2002q2	2003q2	2001q3	2002q1				
Norway	2000q3	2000q4	2001q3	2002q1	2006q1	2007q1	2007q4	2009q4				
Norway	2002q4	2003q2	2007q4	2009q4								
Norway	2005q4	2007q1										
Portugal	1981q2	1982q3	1983q4	1984q3	1981q2	1982q3	1983q4	1984q3	1987q3	1990q3	1992q4	1993q3
Portugal	1988q4	1990q2	1992q3	1993q2	1989q1	1989q4	1992q3	1992q4	1996q2	1997q1	1999q1	1999q4
Portugal	1994q3	1995q3	2002q4	2003q1	1994q3	1995q3	2002q4	2003q3	2003q1	2004q1	2002q2	2002q4
Portugal	2000q1	2000q4	2004q3	2005q2	2006q1	2006q2	2005q1	2005q2			2007q3	2008q2
Portugal	2003q4	2004q2	2010q3	2011q4	2009q3	2010q3	2008q3	2009q2				
Portugal	2009q4	2010q2					2010q4	2011q4				
Spain	1987q1	1988q2	1985q2	1986q2	1987q2	1988q2	1985q2	1986q2	1985q4	1987q4	1991q3	1992q2
Spain	1990q4	1991q3	1994q1	1995q1	1990q4	1991q3	1994q1	1995q1	1989q2	1990q1	1994q1	1995q1
Spain	1993q2	1993q4	2001q2	2002q2	1993q2	1993q4	2001q3	2002q2	1998q1	1998q4	2001q2	2002q3
Spain	2000q3	2001q1	2008q1	2009q4	2003q3	2004q2	2007q3	2009q3	2000q2	2001q1		
Spain	2014q2	2014q4			2005q3	2006q2			2007q4	2008q3		
Spain					2014q2	2014q4						
Sweden	1985q3	1987q3	1983q4	1984q3	1985q3	1987q3	1991q1	1992q1	1982q3	1983q4	1984q1	1984q4
Sweden	1989q2	1990q4	1991q1	1992q2	1989q2	1990q4	2002q1	2002q4	1991q1	1991q4	1987q2	1988q1
Sweden	2004q4	2005q3	1997q1	1997q3			2008q4	2009q3	1998q2	2000q1	1992q1	1993q1
Sweden			2008q4	2009q3					2014q1	2014q2	2009q3	2010q2
United Kingdom	1980q1	1980q2	1991q3	1992q1	1980q1	1980q2	1991q3	1992q1	1980q1	1980q4	1981q3	1981q4
United Kingdom	1985q3	1987q2	1994q1	1994q4	1985q4	1987q2	1998q1	1998q4	1985q2	1988q2	1990q4	1992q1
United Kingdom	1992q2	1993q4	2001q3	2002q2	1992q2	1993q2	2002q1	2002q2	1998q3	1999q3	2001q1	2002q1
United Kingdom	2000q3	2000q4	2008q1	2009q2	2000q3	2001q2	2008q1	2009q2			2008q4	2009q3
United Kingdom	2007q2	2007q4			2007q2	2007q4						
United States	1982q1	1982q3	1982q4	1983q3	1982q1	1982q3	1983q2	1983q3	1980q1	1981q1	1982q3	1983q2
United States	1986q1	1986q4	1989q4	1990q4	1993q4	1994q3	1989q2	1990q1	1986q1	1987q3	1987q4	1988q4
United States	1993q3	1994q3	1997q4	1999q1	1997q1	1997q3	1997q4	1999q3	1993q2	1994q1	1990q3	1991q1
United States	1997q1	1997q3	2001q3	2002q2	2004q2	2004q4	2007q3	2009q2	1999q2	2000q1	2001q3	2002q3
United States	1999q4	2000q3	2007q3	2009q2	2006q4	2007q2					2008q3	2009q3
United States	2006q4	2007q2										

Table 2.A6: Episodes of Capital Inflows (Continued)

Country	Total				Debt				Equity			
	SURGES		STOPS		SURGES		STOPS		SURGES		STOPS	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
Emerging Economies												
Argentina	1990q3	1992q3	1982q4	1983q1	1990q4	1992q3	1982q4	1983q1	1990q4	1991q3	1982q1	1982q4
Argentina			1989q2	1990q2			1988q4	1990q3	1992q4	1994q2	1987q2	1988q1
Argentina			2000q4	2002q2			1999q1	1999q3	1999q2	1999q4	1998q3	1999q1
Argentina			2008q2	2009q3			2001q3	2002q2	2008q1	2008q3	2008q4	2010q1
Argentina							2008q2	2009q3				
Bangladesh	1989q1	1989q4	1982q4	1983q3	1989q1	1989q4	1982q4	1983q3	1983q1	1983q3	1983q4	1984q3
Bangladesh	1998q1	1998q3	1991q3	1992q1	2009q4	2010q2	1991q3	1992q1	1986q3	1987q3	1985q4	1986q2
Bangladesh	2003q4	2004q1	2010q3	2011q2	2012q2	2013q1	1999q1	1999q2	1992q2	1994q4	1995q3	1997q2
Bangladesh	2005q1	2005q2					2002q4	2003q1	1997q3	1998q3	2008q1	2008q3
Bangladesh	2010q1	2010q2					2005q4	2006q1	2003q3	2004q3	2009q3	2010q1
Bangladesh	2012q2	2013q2							2012q2	2013q2		
Bolivia	1996q1	1996q3	1999q1	2001q2	2001q4	2002q4	1999q4	2000q1	1995q2	1996q3	2000q4	2001q3
Bolivia	1997q4	1998q4	2006q3	2007q1	2008q1	2008q3	2006q2	2007q2	1997q4	1998q3	2003q1	2003q4
Bolivia	2007q2	2008q4	2014q3	2014q4			2014q3	2014q4	2006q4	2007q3	2014q2	2014q4
Bolivia									2013q4	2014q1		
Brazil	1990q2	1991q1	1982q4	1983q4	1990q2	1991q1	1982q4	1983q4	1987q4	1989q1	1980q4	1981q2
Brazil	1992q2	1992q3	1994q4	1995q2	1995q3	1996q1	1996q2	1997q2	1993q4	1994q3	1983q3	1984q2
Brazil	1994q1	1994q3	1999q1	1999q2	2005q4	2007q3	1999q1	1999q3	2007q1	2008q1	1989q2	1990q2
Brazil	1995q3	1996q2	2008q1	2009q3			2008q2	2009q3			1994q4	1995q3
Brazil	2006q3	2007q4									2001q3	2003q2
Brazil											2008q4	2009q2
Chile	2005q4	2006q3	2000q2	2001q1	2005q3	2006q2	2008q4	2009q3	1993q4	1995q1	1998q3	1999q1
Chile	2007q4	2008q3	2008q4	2009q3	2008q1	2008q3			1996q3	1997q3	2000q2	2000q4
Chile			2013q2	2014q1					2007q4	2008q1	2013q2	2014q1
Chile									2011q4	2012q3		
Colombia	2005q4	2006q3	1998q1	1999q3	2006q3	2007q2	1997q4	1999q3	2004q2	2006q4	1998q2	1999q2
Colombia	2010q4	2011q2			2010q2	2010q3	2008q1	2008q4	2011q2	2012q2		
Colombia							2012q1	2013q1				
Croatia	2002q4	2003q4	1998q4	1999q2	2002q4	2003q4	1998q4	1999q1	1999q4	2000q2	1999q2	1999q3
Croatia			2004q4	2005q3	2013q4	2014q3	2010q3	2010q4	2006q3	2007q3	2000q3	2001q3
Croatia			2010q2	2011q1			2012q1	2012q2	2014q2	2014q4	2009q4	2011q2
Czech Republic	2002q3	2003q1	2008q4	2009q3	2004q2	2005q1	2005q4	2006q3			2003q2	2004q1
Czech Republic					2007q3	2008q3	2008q4	2009q3				
Estonia	1997q4	1998q1	1998q2	1999q3	1997q4	1998q1	1998q2	1999q3	1998q4	1999q2	1999q3	2000q3
Estonia	2003q1	2005q1	2008q1	2009q3	2004q2	2005q1	2008q2	2009q4	2003q3	2004q1	2008q1	2009q3
Estonia	2007q1	2007q4							2005q2	2005q3		
Estonia									2007q1	2007q4		
Hungary	2002q4	2003q4	1996q4	1997q1	2002q4	2003q4	1996q1	1996q4	1995q4	1996q3	2009q3	2010q2
Hungary	2005q1	2005q3	2002q2	2002q3			2002q1	2002q3	2004q1	2005q2		
Hungary	2006q3	2008q1	2009q3	2010q2			2009q1	2010q1	2006q1	2008q1		
India	1982q2	1982q3	1989q4	1990q4	1982q2	1982q3	1989q4	1990q4	1991q1	1994q4	2008q2	2009q2
India	1984q1	1985q2	1991q3	1992q1	1984q1	1985q2	1991q3	1992q1	2003q3	2004q2		
India	1987q1	1987q3	2008q2	2009q3	1987q1	1987q3	2008q2	2009q3	2006q4	2008q1		
India	1993q4	1994q4			1996q2	1997q2						
India	1996q2	1997q1			2004q4	2005q3						
India	2003q3	2005q3			2006q4	2008q1						
India	2006q4	2008q1										
Indonesia	1990q3	1991q2	1997q4	1998q3	1991q1	1991q2	1993q2	1993q4	1988q1	1988q3	1997q4	1998q3
Indonesia	1995q2	1996q2	2006q4	2007q1	1995q4	1996q1	1997q4	1998q3	1990q3	1991q2	2006q3	2007q2
Indonesia	2005q4	2006q1	2009q1	2009q3	2005q4	2006q1	2011q3	2012q2	1993q2	1994q2		
Indonesia	2009q4	2010q4	2012q1	2012q2	2009q4	2010q3			1995q2	1996q2		
Indonesia									2010q3	2011q2		
Israel	1989q3	1990q3	1983q4	1984q4	1989q3	1990q3	1983q4	1984q2	1980q4	1982q2	1984q2	1985q1
Israel	1999q1	2000q1	1988q3	1989q2	1999q2	1999q4	1988q3	1989q2	1983q2	1984q1	1988q4	1989q2
Israel	2006q1	2006q4	1998q3	1998q4	2009q4	2010q4	2008q2	2009q1	1989q3	1990q3	1998q1	1998q4
Israel	2012q4	2013q4	2001q2	2002q2			2011q3	2012q3	1995q2	1996q1	2001q1	2002q2
Israel			2011q4	2012q3					1999q3	2000q4	2007q3	2007q4
Israel									2006q1	2006q4		

Table 2.A6: Episodes of Capital Inflows (Continued)

Country	Total				Debt				Equity			
	SURGES		STOPS		SURGES		STOPS		SURGES		STOPS	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
Emerging Economies												
Jordan	1991q2	1992q1	1992q2	1993q3	1991q2	1992q1	1992q2	1993q3	1997q1	1998q1	1982q4	1983q3
Jordan	2004q4	2005q4	2007q3	2008q2	2004q3	2005q3	2003q1	2004q2	2000q1	2000q3	2000q4	2001q4
Jordan	2013q1	2013q4			2007q1	2007q2	2008q1	2008q4	2005q3	2006q4	2007q1	2007q4
Korea	1988q1	1989q1	1986q3	1987q4	1988q1	1989q1	1986q3	1987q4	1981q4	1982q2	1990q3	1991q2
Korea	1994q3	1995q4	1997q2	1998q3	1994q3	1995q3	1997q3	1998q3	1985q1	1985q2	1994q4	1995q2
Korea	2006q2	2007q2	2008q1	2009q2	2006q2	2007q2	2008q3	2009q3	1986q2	1987q3	2000q4	2002q4
Korea	2009q3	2010q2							1988q3	1989q2	2007q4	2008q2
Korea									1992q1	1994q1		
Korea									1996q1	1996q2		
Korea									1999q2	2000q3		
Korea									2003q3	2004q2		
Korea									2009q1	2010q1		
Latvia	2003q3	2005q1	1998q3	1999q2	1999q4	2000q2	1998q4	1999q1	2004q2	2005q3	2008q2	2009q4
Latvia	2006q2	2007q4	2008q3	2009q3	2003q3	2004q4	2008q3	2009q3	2006q2	2007q3		
Latvia					2006q2	2007q4						
Lithuania	2004q2	2004q3	1999q2	2000q1	2003q3	2004q2	1998q4	1999q3	1998q4	1999q1	1999q2	2000q2
Lithuania	2005q4	2008q1	2000q4	2001q2	2007q2	2008q1	2008q2	2009q4	2006q4	2007q3	2009q1	2010q2
Lithuania			2008q2	2009q4					2011q1	2011q3		
Mexico	1989q2	1991q2	1994q4	1995q4	1989q2	1990q4	1994q2	1995q4	1988q3	1992q1	1992q4	1993q2
Mexico	2007q3	2008q2	2008q3	2009q3	1993q2	1993q3			1993q4	1994q3	1994q4	1995q3
Mexico					2005q1	2005q2			2001q3	2002q2	2008q4	2009q2
Mexico					2007q3	2008q2			2012q4	2014q1		
Moldova	2006q4	2008q3	2008q4	2010q1	2004q1	2004q3	2009q1	2009q4	2005q1	2005q4	2009q2	2010q2
Moldova					2007q3	2008q2			2007q1	2008q3		
Pakistan	1985q3	1986q2	1994q4	1995q3	1985q3	1986q4	1991q4	1992q2	1991q4	1992q4	1982q3	1983q3
Pakistan	1988q2	1989q1	1997q2	1999q2	1988q2	1989q1	1998q3	1999q2	1994q3	1995q1	1995q2	1996q1
Pakistan	1992q4	1993q3	2008q2	2009q2	1992q3	1993q3	2008q2	2009q2	2002q1	2003q2	2007q4	2008q4
Pakistan	2001q1	2001q4			2001q1	2001q4	2010q3	2010q4	2004q4	2007q3		
Pakistan	2005q1	2007q3			2014q1	2014q4			2012q4	2014q4		
Pakistan	2013q1	2014q4										
Peru	1990q4	1992q3	1983q3	1984q3	1990q4	1992q3	1983q3	1984q3	1992q4	1995q1	1982q4	1983q3
Peru	1994q2	1995q1	1998q4	1999q3	1997q3	1997q4	1992q4	1993q4	2005q3	2006q2	1990q3	1992q3
Peru	2006q4	2008q2	2008q3	2009q3	2006q3	2008q1	1998q4	1999q3	2007q3	2008q2	2009q1	2009q4
Peru			2013q4	2014q3			2005q2	2006q2	2013q4	2014q3		
Peru							2008q4	2009q3				
Philippines	1994q2	1994q3	1983q2	1984q2	1996q1	1997q1	1983q2	1984q2	1986q4	1989q1	1989q2	1990q2
Philippines	1996q1	1997q1	1992q1	1992q2	2007q1	2007q4	1997q2	1998q4	1993q4	1994q3	1997q2	1998q1
Philippines	2005q2	2005q4	1997q2	1998q3			2006q2	2006q4	1996q1	1997q1	2007q4	2009q1
Philippines	2006q4	2007q3	2006q1	2006q3			2008q1	2009q1	2005q1	2005q4		
Philippines			2007q4	2009q1					2006q4	2007q3		
Poland	2003q4	2004q4	1996q4	1997q1	1997q2	1998q2	1996q2	1997q1	1991q1	1994q2	2001q4	2002q3
Poland	2007q1	2008q2	2001q4	2002q3	2003q4	2004q3	2001q4	2002q3	1995q3	1996q3	2008q3	2009q3
Poland			2008q3	2009q3	2007q2	2008q2	2008q3	2009q3	2004q1	2005q1		
Poland									2006q4	2007q3		
Poland									2014q3	2014q4		
Romania	1996q4	1997q3	2008q3	2010q1	1996q4	1997q3	2008q3	2009q4	1997q2	1998q2	1999q4	2000q3
Romania	2000q4	2001q2			2004q4	2005q4			2004q1	2005q1	2007q3	2008q3
Romania	2004q1	2005q3			2007q1	2008q2			2006q4	2007q2	2009q2	2010q2
Romania	2006q4	2007q4										
Russia	2007q1	2008q1	2008q4	2009q3	2007q2	2008q1	2006q3	2006q4	2002q4	2003q3	2008q4	2009q4
Russia			2014q1	2014q4			2008q2	2009q3	2004q4	2005q3	2013q1	2013q3
Russia							2014q1	2014q4	2006q4	2007q2		
Russia									2007q4	2008q1		
Russia									2013q4	2014q4		
Singapore	1995q2	1996q1	1997q4	1998q4	1997q1	1997q3	1997q4	1998q4	1995q1	1996q2	2002q3	2003q2
Singapore	1997q1	1997q3	2008q1	2009q2	2006q4	2008q1	2008q4	2009q4	2003q3	2004q4	2008q2	2009q1
Singapore	2006q4	2007q4			2013q3	2013q4	2012q1	2012q3			2014q3	2014q4
Slovakia	2004q3	2005q2	1998q4	1999q4	2005q1	2005q3	1998q4	1999q4	2000q3	2001q2	2003q2	2004q2
Slovakia	2013q2	2014q1	2006q1	2006q4	2013q2	2014q1	2005q4	2006q4	2002q3	2003q1	2009q2	2010q1
Slovakia			2010q1	2010q4			2010q2	2010q4	2011q4	2012q2		

Table 2.A6: Episodes of Capital Inflows (Continued)

Country	Total				Debt				Equity			
	SURGES		STOPS		SURGES		STOPS		SURGES		STOPS	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
Emerging Economies												
Slovenia	2002q3	2003q3	1997q4	1998q4	2003q1	2003q3	2008q3	2009q3	2001q1	2003q1	2003q2	2004q2
Slovenia	2007q1	2007q4	2008q3	2009q3	2004q4	2006q2					2009q1	2010q1
Slovenia					2007q1	2007q4						
South Africa	1994q3	1995q4	1998q2	1999q2	1991q3	1992q3	1993q2	1993q4	1992q3	1993q3	1991q3	1992q2
South Africa	1997q2	1998q1	2008q3	2009q2	1997q1	1997q4	1998q1	1999q2	1995q2	1995q4	2007q1	2007q2
South Africa	2003q4	2006q2			2003q3	2004q1	2008q2	2009q3	1997q2	1998q2		
South Africa					2006q3	2007q1			2004q1	2006q2		
South Africa					2009q4	2010q3						
Sri Lanka	1982q3	1983q2	1983q3	1984q4	1982q4	1983q2	1983q3	1984q4	1987q3	1988q2	1989q1	1989q4
Sri Lanka	1989q3	1990q3	1994q2	1994q3	1989q3	1990q3	1994q1	1994q3	1992q2	1994q1	1994q4	1995q4
Sri Lanka	2011q1	2013q2	1998q3	1999q1	1994q4	1995q2	2001q1	2002q1	1997q3	1998q2	2009q4	2010q4
Sri Lanka			2001q2	2002q1	2000q1	2000q4	2007q4	2008q2	2006q3	2007q2		
Sri Lanka			2008q1	2008q2	2010q1	2010q2			2011q3	2012q4		
Sri Lanka			2010q3	2010q4	2011q2	2013q2						
Taiwan	1986q4	1987q2	1988q2	1989q1	1986q4	1987q2	1988q2	1989q1	1987q3	1988q1	1988q2	1989q1
Taiwan	1999q2	2000q2	2001q1	2001q2	1996q3	1997q3	1995q4	1996q2	1989q2	1990q1	1994q4	1995q3
Taiwan	2003q3	2004q2	2005q1	2005q2	2002q1	2002q4	2005q1	2005q3	1993q2	1994q3	1997q2	1998q1
Taiwan	2009q3	2010q3	2008q4	2009q2	2004q1	2004q2	2009q1	2009q3	1995q4	1996q3	2007q4	2009q1
Taiwan									1999q1	2000q2		
Taiwan									2003q3	2004q2		
Taiwan									2009q2	2010q2		
Thailand	1987q4	1990q2	1992q1	1992q4	1988q2	1991q4	1982q1	1982q2	1986q4	1990q2	1985q4	1986q1
Thailand	1995q2	1996q1	1996q2	1998q2	1995q2	1996q1	1986q3	1986q4	1997q3	1998q2	1990q3	1991q4
Thailand	2004q3	2006q1	2007q1	2007q4	2004q3	2005q2	1992q1	1993q1	2003q3	2004q2	2008q2	2009q2
Thailand			2008q3	2009q3	2009q4	2011q1	1996q2	1998q2	2005q1	2006q1		
Thailand							2007q1	2007q4	2012q4	2013q1		
Thailand							2008q4	2009q3				
Turkey	1990q1	1990q4	1994q1	1995q1	1990q1	1990q4	1994q1	1995q1	1999q3	2000q3	1991q2	1991q3
Turkey	1992q3	1993q4	2000q4	2001q4	1992q3	1993q4	2000q4	2001q4	2001q2	2001q4	1993q2	1993q3
Turkey	2000q1	2000q3	2007q4	2009q4	2000q1	2000q3	2007q3	2008q1	2003q3	2006q3	1995q1	1995q4
Turkey					2010q1	2011q2	2008q4	2009q4			2002q1	2003q2
Turkey											2008q1	2010q1
Ukraine	2004q1	2008q2	2008q3	2010q1	2004q1	2005q2	2008q4	2010q1	2003q2	2004q2	2014q1	2014q4
Ukraine					2006q4	2008q1			2005q4	2006q3		
Venezuela	1996q3	1998q1	2006q1	2006q4	2005q1	2005q4	2006q1	2006q4	1996q2	1998q1	1998q2	1999q2
Venezuela	2005q1	2005q4	2012q2	2012q3	2007q1	2008q1	2012q1	2012q3			2009q2	2010q1
Venezuela	2007q1	2008q1										

Notes: “Surges” and “stops” are identified following Forbes and Warnock (2012a and 2012b). Normal episode refers to the absence of either extreme episode. Dating of extreme episdes following the identification method discussed in Section 2.4.

Appendix 2.4: Transitional Likelihoods and State-Dependence Variables

Table 2.A7: Transitional Likelihoods, Total Gross Inflows

Country	Normal to Normal	Normal to Surge	Normal to Stop	Surge to Normal	Surge to Surge	Surge to Stop	Stop to Normal	Stop to Surge	Stop to Stop
Advanced Economies									
Australia	90.24	8.54	1.22	15.15	75.76	9.09	12.50	4.17	83.33
Austria	94.55	3.64	1.82	21.05	78.95	0.00	20.00	0.00	80.00
Canada	93.46	3.74	2.80	18.75	75.00	6.25	25.00	0.00	75.00
Denmark	93.20	1.94	4.85	14.29	71.43	14.29	23.08	0.00	76.92
Finland	87.50	7.29	5.21	35.00	65.00	0.00	25.00	0.00	75.00
France	92.93	4.04	3.03	18.75	75.00	6.25	19.05	0.00	80.95
Germany	91.11	5.56	3.33	17.39	73.91	8.70	19.23	0.00	80.77
Greece	92.50	5.00	2.50	15.38	73.08	11.54	11.54	11.54	76.92
Iceland	90.80	4.60	4.60	15.38	84.62	0.00	21.05	0.00	78.95
Ireland	87.88	9.09	3.03	19.44	80.56	0.00	10.00	10.00	80.00
Italy	92.78	3.09	4.12	25.00	75.00	0.00	11.54	3.85	84.62
Japan	94.44	2.22	3.33	16.67	83.33	0.00	10.00	5.00	85.00
Netherlands	94.34	1.89	3.77	20.00	80.00	0.00	17.39	0.00	82.61
New Zealand	92.94	3.53	3.53	15.38	76.92	7.69	22.22	0.00	77.78
Norway	86.36	6.82	6.82	29.17	70.83	0.00	20.83	4.17	75.00
Portugal	89.77	6.82	3.41	14.29	78.57	7.14	25.00	0.00	75.00
Spain	92.63	5.26	2.11	11.11	77.78	11.11	17.39	0.00	82.61
Sweden	93.94	3.03	3.03	10.00	85.00	5.00	23.53	0.00	76.47
United Kingom	95.00	3.00	2.00	13.64	77.27	9.09	17.65	5.88	76.47
United States	91.11	6.67	2.22	13.64	72.73	13.64	18.52	0.00	81.48
Emerging Economies									
Argentina	96.12	0.00	3.88	11.11	88.89	0.00	15.00	5.00	80.00
Bangladesh	92.31	5.77	1.92	29.41	64.71	5.88	27.27	0.00	72.73
Bolivia	92.73	3.64	3.64	13.33	80.00	6.67	7.14	7.14	85.71
Brazil	94.00	4.00	2.00	15.79	73.68	10.53	17.65	5.88	76.47
Chile	94.12	2.94	2.94	12.50	75.00	12.50	25.00	0.00	75.00
Colombia	94.44	3.70	1.85	28.57	71.43	0.00	14.29	0.00	85.71
Croatia	93.75	2.08	4.17	20.00	80.00	0.00	27.27	0.00	72.73
Czech Republic	96.49	1.75	1.75	33.33	66.67	0.00	25.00	0.00	75.00
Estonia	95.00	5.00	0.00	6.67	80.00	13.33	15.38	0.00	84.62
Hungary	90.74	3.70	5.56	20.00	80.00	0.00	25.00	12.50	62.50
India	89.66	8.05	2.30	17.14	80.00	2.86	21.43	0.00	78.57
Indonesia	91.76	3.53	4.71	25.00	75.00	0.00	27.27	9.09	63.64
Israel	94.00	1.00	5.00	21.05	78.95	0.00	10.00	15.00	75.00
Jordan	96.19	2.86	0.95	15.38	76.92	7.69	20.00	0.00	80.00
Korea	94.68	2.13	3.19	20.00	80.00	0.00	5.56	11.11	83.33
Latvia	92.86	4.76	2.38	14.29	85.71	0.00	25.00	0.00	75.00
Lithuania	89.47	5.26	5.26	8.33	83.33	8.33	21.43	0.00	78.57
Mexico	96.91	2.06	1.03	7.69	84.62	7.69	20.00	0.00	80.00
Moldova	97.83	2.17	0.00	0.00	87.50	12.50	16.67	0.00	83.33
Pakistan	88.75	7.50	3.75	14.71	85.29	0.00	16.67	0.00	83.33
Peru	93.41	3.30	3.30	10.53	84.21	5.26	22.22	0.00	77.78
Philippines	94.57	3.26	2.17	7.14	71.43	21.43	18.18	4.55	77.27
Poland	94.59	2.70	2.70	9.09	81.82	9.09	27.27	0.00	72.73
Romania	91.30	6.52	2.17	21.05	78.95	0.00	14.29	0.00	85.71
Russia	93.75	2.08	4.17	20.00	80.00	0.00	14.29	0.00	85.71
Singapore	95.65	4.35	0.00	8.33	75.00	16.67	18.18	0.00	81.82
Slovakia	90.70	4.65	4.65	25.00	75.00	0.00	23.08	0.00	76.92
Slovenia	93.88	4.08	2.04	22.22	77.78	0.00	20.00	0.00	80.00
SouthAfrica	93.94	4.55	1.52	9.52	85.71	4.76	22.22	0.00	77.78
Sri Lanka	93.41	1.10	5.49	11.11	83.33	5.56	26.32	5.26	68.42
Taiwan	92.86	2.38	4.76	23.53	76.47	0.00	27.27	9.09	63.64
Thailand	93.18	3.41	3.41	9.09	86.36	4.55	18.18	0.00	81.82
Turkey	94.12	4.41	1.47	7.69	76.92	15.38	15.79	0.00	84.21
Ukraine	97.14	2.86	0.00	0.00	94.44	5.56	14.29	0.00	85.71
Venezuela	94.44	3.70	1.85	12.50	81.25	6.25	16.67	16.67	66.67

Note: Calculations follow the identification method discussed in Section 2.4.

Table 2.A8: Transitional Likelihoods, Debt Inflows

Country	Normal to Normal	Normal to Surge	Normal to Stop	Surge to Normal	Surge to Surge	Surge to Stop	Stop to Normal	Stop to Surge	Stop to Stop
Advanced Economies									
Australia	93.26	3.37	3.37	10.00	83.33	6.67	20.00	10.00	70.00
Austria	93.20	2.91	3.88	27.27	72.73	0.00	16.00	0.00	84.00
Canada	94.64	3.57	1.79	23.08	69.23	7.69	21.43	0.00	78.57
Denmark	91.75	2.06	6.19	14.29	78.57	7.14	24.00	4.00	72.00
Finland	91.92	4.04	4.04	23.53	70.59	5.88	20.00	5.00	75.00
France	93.33	2.86	3.81	25.00	75.00	0.00	21.05	0.00	78.95
Germany	87.50	6.82	5.68	29.17	70.83	0.00	18.52	0.00	81.48
Greece	94.44	3.33	2.22	10.53	73.68	15.79	17.39	8.70	73.91
Iceland	89.89	4.49	5.62	17.39	82.61	0.00	25.00	0.00	75.00
Ireland	91.78	5.48	2.74	21.43	78.57	0.00	9.09	9.09	81.82
Italy	92.23	4.85	2.91	29.41	70.59	0.00	15.79	0.00	84.21
Japan	93.02	3.49	3.49	17.39	82.61	0.00	15.79	5.26	78.95
Netherlands	95.37	2.78	1.85	18.18	72.73	9.09	15.00	0.00	85.00
New Zealand	94.32	3.41	2.27	15.38	76.92	7.69	20.00	0.00	80.00
Norway	89.41	4.71	5.88	18.52	81.48	0.00	16.67	4.17	79.17
Portugal	90.32	4.30	5.38	18.18	77.27	4.55	23.81	4.76	71.43
Spain	90.11	6.59	3.30	18.18	77.27	4.55	17.39	0.00	82.61
Sweden	96.26	1.87	1.87	6.25	87.50	6.25	23.08	0.00	76.92
United Kingom	94.17	2.91	2.91	19.05	76.19	4.76	20.00	6.67	73.33
United States	93.07	4.95	1.98	18.75	68.75	12.50	18.18	0.00	81.82
Emerging Economies									
Argentina	95.05	0.00	4.95	12.50	87.50	0.00	17.39	4.35	78.26
Bangladesh	92.73	2.73	4.55	33.33	66.67	0.00	38.46	0.00	61.54
Bolivia	92.65	2.94	4.41	25.00	75.00	0.00	25.00	0.00	75.00
Brazil	94.12	2.94	2.94	13.33	80.00	6.67	21.05	0.00	78.95
Chile	97.40	2.60	0.00	14.29	71.43	14.29	25.00	0.00	75.00
Colombia	91.11	4.44	4.44	33.33	66.67	0.00	17.65	0.00	82.35
Croatia	91.84	4.08	4.08	22.22	77.78	0.00	50.00	0.00	50.00
Czech Republic	93.62	4.26	2.13	11.11	77.78	11.11	25.00	0.00	75.00
Estonia	95.92	2.04	2.04	16.67	66.67	16.67	15.38	0.00	84.62
Hungary	95.00	0.00	5.00	20.00	80.00	0.00	16.67	8.33	75.00
India	91.67	6.25	2.08	19.23	76.92	3.85	21.43	0.00	78.57
Indonesia	92.31	4.40	3.30	40.00	60.00	0.00	27.27	0.00	72.73
Israel	94.55	1.82	3.64	23.08	76.92	0.00	18.75	6.25	75.00
Jordan	96.04	1.98	1.98	18.18	72.73	9.09	12.50	6.25	81.25
Korea	95.05	1.98	2.97	20.00	80.00	0.00	12.50	6.25	81.25
Latvia	90.24	7.32	2.44	18.75	81.25	0.00	28.57	0.00	71.43
Lithuania	95.56	4.44	0.00	12.50	75.00	12.50	18.18	0.00	81.82
Mexico	94.90	4.08	1.02	26.67	73.33	0.00	14.29	0.00	85.71
Moldova	93.88	4.08	2.04	28.57	71.43	0.00	25.00	0.00	75.00
Pakistan	91.67	4.17	4.17	18.18	81.82	0.00	21.43	7.14	71.43
Peru	93.18	2.27	4.55	11.76	82.35	5.88	17.39	4.35	78.26
Philippines	96.97	1.01	2.02	0.00	77.78	22.22	15.00	5.00	80.00
Poland	94.20	2.90	2.90	14.29	78.57	7.14	15.38	7.69	76.92
Romania	96.08	3.92	0.00	13.33	80.00	6.67	16.67	0.00	83.33
Russia	95.45	0.00	4.55	0.00	80.00	20.00	9.09	9.09	81.82
Singapore	92.65	4.41	2.94	18.18	72.73	9.09	23.08	0.00	76.92
Slovakia	93.18	4.55	2.27	14.29	71.43	14.29	23.08	0.00	76.92
Slovenia	91.84	6.12	2.04	21.43	78.57	0.00	20.00	0.00	80.00
SouthAfrica	90.32	6.45	3.23	21.05	73.68	5.26	13.33	6.67	80.00
Sri Lanka	92.94	4.71	2.35	15.38	76.92	7.69	17.65	5.88	76.47
Taiwan	92.94	2.35	4.71	28.57	71.43	0.00	23.08	7.69	69.23
Thailand	90.91	3.90	5.19	6.90	86.21	6.90	19.23	3.85	76.92
Turkey	92.06	4.76	3.17	10.53	78.95	10.53	16.67	5.56	77.78
Ukraine	92.86	4.76	2.38	16.67	83.33	0.00	16.67	0.00	83.33
Venezuela	96.67	1.67	1.67	11.11	77.78	11.11	14.29	14.29	71.43

Note: Calculations follow the identification method discussed in Section 2.4.

Table 2.A9: Transitional Likelihoods, Equity Inflows

Country	Normal to Normal	Normal to Surge	Normal to Stop	Surge to Normal	Surge to Surge	Surge to Stop	Stop to Normal	Stop to Surge	Stop to Stop
Advanced Economies									
Australia	93.14	3.92	2.94	20.00	75.00	5.00	17.65	5.88	76.47
Austria	94.95	5.05	0.00	8.33	79.17	12.50	18.75	0.00	81.25
Canada	96.08	2.94	0.98	7.14	71.43	21.43	17.39	0.00	82.61
Denmark	94.95	4.04	1.01	8.33	83.33	8.33	23.08	0.00	76.92
Finland	91.67	4.17	4.17	15.38	84.62	0.00	21.43	7.14	71.43
France	90.43	4.26	5.32	18.18	81.82	0.00	25.00	0.00	75.00
Germany	91.58	4.21	4.21	16.67	79.17	4.17	20.00	5.00	75.00
Greece	94.62	3.23	2.15	14.29	85.71	0.00	11.11	5.56	83.33
Iceland	92.22	4.44	3.33	13.79	86.21	0.00	23.08	0.00	76.92
Ireland	89.23	4.62	6.15	13.79	86.21	0.00	22.22	5.56	72.22
Italy	91.51	2.83	5.66	21.05	78.95	0.00	35.71	7.14	57.14
Japan	92.47	4.30	3.23	17.65	76.47	5.88	22.22	0.00	77.78
Netherlands	93.00	5.00	2.00	17.24	79.31	3.45	10.00	10.00	80.00
New Zealand	94.25	2.30	3.45	16.67	75.00	8.33	17.65	5.88	76.47
Norway	95.69	2.59	1.72	30.00	70.00	0.00	20.00	0.00	80.00
Portugal	93.94	2.02	4.04	13.64	86.36	0.00	20.00	6.67	73.33
Spain	92.63	5.26	2.11	15.38	80.77	3.85	20.00	0.00	80.00
Sweden	93.94	4.04	2.02	10.00	80.00	10.00	23.53	0.00	76.47
United Kingom	94.00	2.00	4.00	13.64	86.36	0.00	23.53	0.00	76.47
United States	92.71	3.13	4.17	15.00	80.00	5.00	21.74	0.00	78.26
Emerging Economies									
Argentina	93.88	3.06	3.06	17.65	76.47	5.88	17.65	5.88	76.47
Bangladesh	89.33	5.33	5.33	13.89	83.33	2.78	14.29	9.52	76.19
Bolivia	89.66	6.90	3.45	18.75	75.00	6.25	20.00	0.00	80.00
Brazil	93.62	3.19	3.19	6.67	80.00	13.33	22.22	0.00	77.78
Chile	88.52	6.56	4.92	23.53	76.47	0.00	30.00	0.00	70.00
Colombia	93.62	4.26	2.13	12.50	87.50	0.00	20.00	0.00	80.00
Croatia	90.00	5.00	5.00	10.00	80.00	10.00	14.29	7.14	78.57
Czech Republic	98.33	0.00	1.67	…	…	…	25.00	0.00	75.00
Estonia	90.91	9.09	0.00	16.67	66.67	16.67	16.67	0.00	83.33
Hungary	92.59	5.56	1.85	15.79	84.21	0.00	25.00	0.00	75.00
India	97.14	2.86	0.00	7.69	88.46	3.85	20.00	0.00	80.00
Indonesia	91.57	6.02	2.41	23.81	76.19	0.00	25.00	0.00	75.00
Israel	91.11	5.56	3.33	13.33	80.00	6.67	21.05	5.26	73.68
Jordan	97.03	2.97	0.00	7.14	78.57	14.29	23.08	0.00	76.92
Korea	84.72	11.11	4.17	19.51	78.05	2.44	21.05	0.00	78.95
Latvia	93.33	4.44	2.22	16.67	83.33	0.00	14.29	0.00	85.71
Lithuania	93.18	4.55	2.27	22.22	66.67	11.11	18.18	0.00	81.82
Mexico	93.75	3.75	2.50	10.00	86.67	3.33	20.00	10.00	70.00
Moldova	93.18	4.55	2.27	18.18	81.82	0.00	20.00	0.00	80.00
Pakistan	92.77	6.02	1.20	5.71	88.57	5.71	21.43	0.00	78.57
Peru	94.38	2.25	3.37	16.67	83.33	0.00	14.29	4.76	80.95
Philippines	94.19	5.81	0.00	7.41	81.48	11.11	20.00	0.00	80.00
Poland	87.93	8.62	3.45	13.79	86.21	0.00	22.22	0.00	77.78
Romania	88.89	6.67	4.44	15.38	76.92	7.69	21.43	0.00	78.57
Russia	82.86	14.29	2.86	25.00	68.75	6.25	11.11	0.00	88.89
Singapore	94.37	1.41	4.23	16.67	83.33	0.00	11.11	11.11	77.78
Slovakia	91.11	6.67	2.22	20.00	70.00	10.00	22.22	0.00	77.78
Slovenia	95.92	2.04	2.04	0.00	88.89	11.11	20.00	0.00	80.00
SouthAfrica	92.54	4.48	2.99	17.39	82.61	0.00	16.67	16.67	66.67
Sri Lanka	90.91	5.68	3.41	19.23	80.77	0.00	21.43	0.00	78.57
Taiwan	90.32	6.45	3.23	15.63	78.13	6.25	5.56	16.67	77.78
Thailand	92.13	5.62	2.25	13.33	83.33	3.33	23.08	0.00	76.92
Turkey	89.29	3.57	7.14	9.52	85.71	4.76	17.39	4.35	78.26
Ukraine	93.75	4.17	2.08	22.22	77.78	0.00	0.00	0.00	100.00
Venezuela	96.61	1.69	1.69	0.00	87.50	12.50	22.22	0.00	77.78

Notes: … = data is unavailable. Calculations follow the identification method discussed in Section 2.4.

Table 2.A10: State-Dependence Variables, Total Gross Inflows

Country	Duration Normal	Duration Surge	Duration Stop	Occurrence Nornal	Occurrence Surge	Occurrence Stop
Advanced Economies						
Australia	59.29	23.57	17.14	42.86	38.10	19.05
Austria	79.29	13.57	7.14	53.85	30.77	15.38
Canada	77.14	11.43	11.43	50.00	25.00	25.00
Denmark	75.91	5.11	18.98	47.06	11.76	35.29
Finland	70.80	14.60	14.60	50.00	26.92	19.23
France	72.99	11.68	15.33	47.06	23.53	23.53
Germany	65.00	16.43	18.57	45.00	30.00	25.00
Greece	60.90	19.55	19.55	33.33	33.33	28.57
Iceland	66.17	19.55	14.29	50.00	22.22	22.22
Ireland	58.41	32.74	8.85	42.11	42.11	10.53
Italy	70.00	11.43	18.57	50.00	25.00	25.00
Japan	70.54	13.95	15.50	46.15	23.08	23.08
Netherlands	76.43	7.14	16.43	53.85	15.38	30.77
New Zealand	73.50	11.11	15.38	46.67	20.00	26.67
Norway	64.96	17.52	17.52	48.15	25.93	22.22
Portugal	64.96	20.44	14.60	45.45	27.27	22.73
Spain	69.34	13.87	16.79	41.18	29.41	23.53
Sweden	72.99	14.60	12.41	46.67	20.00	26.67
United Kingom	72.14	15.71	12.14	40.00	33.33	26.67
United States	65.00	15.71	19.29	45.00	30.00	25.00
Emerging Economies						
Argentina	78.20	6.77	15.04	45.45	9.09	36.36
Bangladesh	78.95	12.78	8.27	47.37	31.58	15.79
Bolivia	64.71	17.65	17.65	36.36	27.27	27.27
Brazil	73.72	13.87	12.41	41.18	29.41	23.53
Chile	77.53	8.99	13.48	45.45	18.18	27.27
Colombia	79.71	10.14	10.14	50.00	25.00	12.50
Croatia	75.38	7.69	16.92	44.44	11.11	33.33
Czech Republic	89.23	4.62	6.15	50.00	16.67	16.67
Estonia	59.42	21.74	18.84	33.33	33.33	22.22
Hungary	70.51	19.23	10.26	46.15	23.08	23.08
India	64.23	25.55	10.22	47.62	33.33	14.29
Indonesia	76.11	14.16	9.73	47.06	23.53	23.53
Israel	72.14	13.57	14.29	43.75	25.00	31.25
Jordan	82.17	10.08	7.75	45.45	27.27	18.18
Korea	71.43	15.04	13.53	42.86	28.57	21.43
Latvia	66.15	21.54	12.31	44.44	22.22	22.22
Lithuania	60.00	18.46	21.54	45.45	18.18	27.27
Mexico	80.99	10.74	8.26	44.44	22.22	22.22
Moldova	77.05	13.11	9.84	40.00	20.00	20.00
Pakistan	60.15	26.32	13.53	47.37	31.58	15.79
Peru	71.32	14.73	13.95	46.67	20.00	26.67
Philippines	72.09	10.85	17.05	37.50	25.00	31.25
Poland	77.32	11.34	11.34	45.45	18.18	27.27
Romania	64.38	26.03	9.59	45.45	36.36	9.09
Russia	78.69	8.20	13.11	42.86	14.29	28.57
Singapore	75.27	12.90	11.83	40.00	30.00	20.00
Slovakia	67.69	12.31	20.00	45.45	18.18	27.27
Slovenia	72.46	13.04	14.49	44.44	22.22	22.22
SouthAfrica	69.07	21.65	9.28	45.45	27.27	18.18
Sri Lanka	71.32	13.95	14.73	41.18	17.65	35.29
Taiwan	75.22	15.04	9.73	43.75	25.00	25.00
Thailand	66.92	16.54	16.54	46.67	20.00	26.67
Turkey	68.32	12.87	18.81	41.67	25.00	25.00
Ukraine	59.02	29.51	11.48	40.00	20.00	20.00
Venezuela	71.43	20.78	7.79	40.00	30.00	20.00

Note: Calculations follow the definition of “duration” and “occurrence” discussed in Section 2.4.

Table 2.A11: State-Dependence Variables, Debt Inflows

Country	Duration Normal	Duration Surge	Duration Stop	Occurrence Nornal	Occurrence Surge	Occurrence Stop
Advanced Economies						
Australia	64.29	21.43	14.29	38.89	27.78	33.33
Austria	74.29	7.86	17.86	53.33	20.00	26.67
Canada	80.71	9.29	10.00	50.00	28.57	21.43
Denmark	71.53	10.22	18.25	45.00	15.00	35.00
Finland	72.99	12.41	14.60	45.00	25.00	25.00
France	77.37	8.76	13.87	50.00	18.75	25.00
Germany	63.57	17.14	19.29	50.00	29.17	20.83
Greece	68.42	14.29	17.29	33.33	27.78	33.33
Iceland	67.67	17.29	15.04	50.00	20.00	25.00
Ireland	65.49	24.78	9.73	43.75	37.50	12.50
Italy	74.29	12.14	13.57	52.94	29.41	17.65
Japan	67.44	17.83	14.73	43.75	25.00	25.00
Netherlands	77.86	7.86	14.29	50.00	25.00	25.00
New Zealand	76.07	11.11	12.82	46.15	23.08	23.08
Norway	62.77	19.71	17.52	47.62	23.81	23.81
Portugal	68.61	16.06	15.33	45.45	22.73	27.27
Spain	66.42	16.79	16.79	45.00	30.00	20.00
Sweden	78.83	11.68	9.49	45.45	18.18	27.27
United Kingom	74.29	15.00	10.71	43.75	31.25	25.00
United States	72.86	11.43	15.71	47.06	29.41	23.53
Emerging Economies						
Argentina	76.69	6.02	17.29	46.15	7.69	38.46
Bangladesh	83.46	6.77	9.77	50.00	16.67	27.78
Bolivia	80.00	9.41	10.59	45.45	18.18	27.27
Brazil	75.18	10.95	13.87	46.67	20.00	26.67
Chile	87.64	7.87	4.49	42.86	28.57	14.29
Colombia	66.67	8.70	24.64	45.45	18.18	27.27
Croatia	76.92	13.85	9.23	45.45	18.18	27.27
Czech Republic	73.85	13.85	12.31	44.44	22.22	22.22
Estonia	72.46	8.70	18.84	37.50	25.00	25.00
Hungary	78.21	6.41	15.38	44.44	11.11	33.33
India	70.80	18.98	10.22	47.37	31.58	15.79
Indonesia	81.42	8.85	9.73	50.00	25.00	18.75
Israel	79.29	9.29	11.43	50.00	21.43	28.57
Jordan	79.07	8.53	12.40	41.67	25.00	25.00
Korea	76.69	11.28	12.03	46.15	23.08	23.08
Latvia	64.62	24.62	10.77	45.45	27.27	18.18
Lithuania	70.77	12.31	16.92	37.50	25.00	25.00
Mexico	81.82	12.40	5.79	50.00	33.33	8.33
Moldova	81.97	11.48	6.56	50.00	25.00	12.50
Pakistan	72.18	17.29	10.53	44.44	27.78	22.22
Peru	68.99	13.18	17.83	43.75	18.75	31.25
Philippines	77.52	6.98	15.50	36.36	18.18	36.36
Poland	72.16	14.43	13.40	41.67	25.00	25.00
Romania	71.23	20.55	8.22	37.50	37.50	12.50
Russia	72.13	8.20	19.67	28.57	14.29	42.86
Singapore	74.19	11.83	13.98	46.15	23.08	23.08
Slovakia	69.23	10.77	20.00	40.00	20.00	30.00
Slovenia	72.46	20.29	7.25	50.00	30.00	10.00
SouthAfrica	64.95	19.59	15.46	43.75	31.25	18.75
Sri Lanka	66.67	20.16	13.18	38.89	33.33	22.22
Taiwan	76.11	12.39	11.50	43.75	25.00	25.00
Thailand	58.65	21.80	19.55	42.11	21.05	31.58
Turkey	63.37	18.81	17.82	40.00	26.67	26.67
Ukraine	70.49	19.67	9.84	50.00	25.00	12.50
Venezuela	79.22	11.69	9.09	37.50	25.00	25.00

Note: Calculations follow definition of “duration” and “occurrence” discussed in Section 2.4.

Table 2.A12: State-Dependence Variables, Equity Inflows

Country	Duration Normal	Duration Surge	Duration Stop	Occurrence Nornal	Occurrence Surge	Occurrence Stop
Advanced Economies						
Australia	73.57	14.29	12.14	47.06	29.41	23.53
Austria	71.43	17.14	11.43	42.86	35.71	21.43
Canada	73.57	10.00	16.43	38.46	30.77	30.77
Denmark	72.99	17.52	9.49	42.86	28.57	21.43
Finland	70.07	19.71	10.22	44.44	27.78	22.22
France	69.34	16.06	14.60	50.00	20.00	25.00
Germany	68.57	17.14	14.29	47.37	26.32	26.32
Greece	69.92	16.54	13.53	38.46	30.77	23.08
Iceland	68.42	21.80	9.77	50.00	25.00	18.75
Ireland	58.41	25.66	15.93	44.44	22.22	27.78
Italy	76.43	13.57	10.00	50.00	20.00	30.00
Japan	72.87	13.18	13.95	47.06	23.53	23.53
Netherlands	71.43	20.71	7.86	43.75	37.50	18.75
New Zealand	75.21	10.26	14.53	42.86	21.43	28.57
Norway	85.40	7.30	7.30	50.00	25.00	16.67
Portugal	72.99	16.06	10.95	46.67	20.00	26.67
Spain	70.07	18.98	10.95	47.06	29.41	17.65
Sweden	72.99	14.60	12.41	43.75	25.00	25.00
United Kingom	72.14	15.71	12.14	50.00	21.43	28.57
United States	69.29	14.29	16.43	47.06	23.53	29.41
Emerging Economies						
Argentina	74.44	12.78	12.78	43.75	25.00	25.00
Bangladesh	57.14	27.07	15.79	42.86	28.57	23.81
Bolivia	68.24	18.82	12.94	42.86	28.57	21.43
Brazil	69.34	10.95	19.71	41.18	17.65	35.29
Chile	69.66	19.10	11.24	50.00	25.00	18.75
Colombia	69.57	23.19	7.25	50.00	25.00	12.50
Croatia	61.54	16.92	21.54	36.36	27.27	27.27
Czech Republic	93.85	…	6.15	50.00	…	25.00
Estonia	65.22	17.39	17.39	41.67	33.33	16.67
Hungary	70.51	24.36	5.13	50.00	30.00	10.00
India	77.37	18.98	3.65	44.44	33.33	11.11
Indonesia	74.34	18.58	7.08	50.00	31.25	12.50
Israel	65.00	21.43	13.57	45.00	30.00	25.00
Jordan	79.07	10.85	10.08	36.36	27.27	27.27
Korea	54.89	30.83	14.29	46.15	34.62	15.38
Latvia	70.77	18.46	10.77	50.00	25.00	12.50
Lithuania	69.23	13.85	16.92	40.00	30.00	20.00
Mexico	66.94	24.79	8.26	42.86	28.57	21.43
Moldova	73.77	18.03	8.20	50.00	25.00	12.50
Pakistan	62.41	27.07	10.53	40.00	33.33	20.00
Peru	69.77	13.95	16.28	42.86	21.43	28.57
Philippines	67.44	20.93	11.63	40.00	33.33	20.00
Poland	59.79	30.93	9.28	46.67	33.33	13.33
Romania	63.01	17.81	19.18	46.15	23.08	23.08
Russia	57.38	26.23	16.39	42.86	35.71	14.29
Singapore	76.34	12.90	10.75	40.00	20.00	30.00
Slovakia	70.77	15.38	13.85	45.45	27.27	18.18
Slovenia	72.46	13.04	14.49	42.86	14.29	28.57
SouthAfrica	70.10	23.71	6.19	46.15	30.77	15.38
Sri Lanka	68.99	20.16	10.85	50.00	27.78	16.67
Taiwan	55.75	28.32	15.93	36.84	36.84	21.05
Thailand	67.67	22.56	9.77	47.06	29.41	17.65
Turkey	56.44	20.79	22.77	43.75	18.75	31.25
Ukraine	78.69	14.75	6.56	42.86	28.57	14.29
Venezuela	77.92	10.39	11.69	42.86	14.29	28.57

Note: … = data is unavailable. Calculations follow definition of “duration” and “occurrence” discussed in Section 2.4.

Appendix 2.5: Dataset on Domestic Factors

Table 2.A13: Domestic Factors Variables, Explanations and Sources

Variable	Data	Source
Output Volatility	Standard deviation of annual GDP growth rate	World Economic Outlook Database April 2016, International Monetary Fund
Per Capita Income	Natural log value (multiplied by 10) of average annual real per capita income in constant US$2010 prices	World Development Indicators, World Bank
Domestic Credit	Average annual domestic credit to private sector by banks as percent of nominal GDP	World Development Indicators, World Bank
Market Capitalization	Average annual market capitalization of listed companies as percent of nominal GDP	World Development Indicators, World Bank; World Federation of Exchanges, and national sources accessed through CEIC.
Trade Openness	Merchandise trade as ratio of nominal GDP is the annual average of the sum of merchandise exports and imports divided by nominal GDP in percent	World Development Indicators, World Bank. Data for Taiwan is sourced from the National Statistics Office.
Financial Openness	De facto financial openness measure using annual average values of the sum of total foreign assets and liabilities as percent of nominal GDP.	External Wealth of Nations (Lane and Milesi-Ferretti, 2007)
Capital Openness	De jure capital openness measure is an average annual normalized index where a higher value pertains to less capital account restrictions with the rest of the world. Values are multiplies by 100	Chinn and Ito (2006)
Net Foreign Assets	Average annual values of total foreign assets minus total foreign liabilities as percent of nominal GDP	External Wealth of Nations (Lane and Milesi-Ferretti, 2007)
Foreign Reserves	Average annual values of foreign currency reserves as percent of nominal GDP	External Wealth of Nations (Lane and Milesi-Ferretti, 2007)
Foreign Debt Liabilities	Average annual values of foreign debt liabilities as percent of nominal GDP	External Wealth of Nations (Lane and Milesi-Ferretti, 2007)

Notes: Average annual values covers from 1980 to 2014. However, in cases where data are unavailable, the average values are computed using the earliest year with available data.

Chapter 3

Not All Surges of Gross Capital Inflows Are Alike

3.1 Introduction

The literature on surges of capital flows highlights that changes in global and domestic factors can cause surges to end painfully either through output contraction and crises.[35] Previous studies have identified two channels by which surges lead to hard landings. First, low global interest rates, strong growth in advanced countries, greater financial openness and policy reforms in host countries can trigger huge foreign capital inflows, particularly to emerging economies. This leads to higher consumption of non-tradable goods which raises relative prices causing exchange rate appreciation, lower net exports and output decline. Another channel is through the financial sector. Low global interest rates and perception of low financial risks trigger surges in capital inflows and facilitate domestic credit booms. As bank lending increases, the likelihood of banking and currency crises rises since lower borrowing costs exacerbates the moral hazard problem, riskier investments, and currency mismatches.

In addition, existing studies also indicate that surges lead to subsequent reversals of foreign capital inflows. Following a surge episode, capital inflows could reverse as global and domestic factors deteriorate alongside domestic output contraction and crises. Benigno et al. (2015), Calvo et al. (1993 and 1996), Kim et al. (2014), and Sula (2010) stress that the large reversal of capital inflows or "stops" are mostly preceded by large capital inflows or "surges".[36] In fact, Calvo et al. (2006) define

[35] See Benigno et al. (2015), Calvo (1998), Ghosh et al. (2014), Ghosh et al. (2016), and Reinhart and Reinhart, (2009).

[36] This chapter follows the terminology of Forbes and Warnock (2012a, 2012b). "Surges" refer to more than usual increase in gross capital inflows, while "stops" pertain to more than usual decrease in gross capital inflows. Both stops and surges are defined as extreme episodes of gross capital inflows and are foreign-driven.

"systemic sudden stops" when stops are accompanied by output contraction. Benigno et al. (2015) and Sula (2010) find surges significantly increase the probability of experiencing stops. These studies describe the pattern of surges leading to stops in capital inflows.

It should, however, be pointed out that not all surges end in stops. It is possible that countries experiencing surges could allow for greater domestic adjustments, or global factors may not necessarily deteriorate substantially which would not entail large reversal of capital inflows. For instance, countries may respond with tighter macro-prudential framework or even with capital controls in dealing with surges and so it may not necessary lead to crises which could coincide with a stop episodes. Also, since surges are mostly driven by global factors, global economic conditions may not necessary deteriorate substantially following a surge episode. The case in point is the difference between surges that ended in stops in emerging economies in the 1990s and the global financial crisis of 2008-09. In the former, surges ended in stops for some emerging economies of East Asia, Russia, and some in Latin America. However, there were some recipients of capital bonanzas, such as Argentina, Indian, and Peru, in the 1990s that did not experience stop episode following the surge. In these economies, surges ended in normal episode because economic conditions in advanced economies did not deteriorate significantly in the mid-1990s, despite inherent vulnerabilities in these countries at that time. In contrast, most of the countries that experienced surges before the global financial crisis in 2008-09 experienced stop episodes because global conditions did not improve and in fact triggered crisis in some advanced economies. This clearly demonstrates that it is important to distinguish between surges that end in stops from those that end in normal episodes.

This chapter highlights that surges transition either to stops or to normal episodes of gross capital inflows. Given that surges can either end in stops or normal episodes, it then follows that there are two types of surges. Understanding surge transitions and differentiating between two types of surges is important for both policy and economics literature. On policy, knowing where surges could end and differentiating between two types of surges will help design appropriate policy responses in managing surges in gross capital inflows. For instance, several emerging economies have imposed capital controls in 2010 to 2011 to temper currency appreciation and asset price inflation. But imposing capital controls conditional on a surge episode may or may not be warranted depending on whether the conditions that give rise for surge to transition to a stop episode are present. If global and domestic factors relevant for surges to end in stops are absent, then imposing capital controls is

uncalled for as the huge foreign capital inflows would not necessary lead to sharp reversal of capital inflows.

On literature, previous studies on capital flows emphasize that surges lead to stops. However, they are quiet on that fact that most surges do not lead to stops.[37] Differentiating between transitions of surges to stops from surges to normal episodes and identifying two types of surges allow for a greater understanding of the patterns, volatilities and dynamics of capital flows. This study contributes to the literature on surges of capital inflows by stressing the point that not all surges are alike as the global and domestic factors correlated with their transition to another episode as well as the amount of gross inflows during surge types are different.

This chapter sets out several tasks and addresses several questions. First, we focus on what factors correlate with the transition of surges to stop episodes. Specifically, we ask what factors are correlated with the occurrence of surges ending in stops. Policy makers are more concerned with surges that end in huge foreign capital outflow as they usually coincide with output contractions and crises. Knowing which factors are relevant in such occurrence of transition would have important policy implications.

Second, we look at factors associated with the magnitude of gross capital inflows for surges ending in stops and for surges ending in normal episodes. In essence, we are identifying and differentiating two types of surges in relation to their transition to either stop or normal episodes. In this regard, we ask three questions. First, are surges different from other episodes of gross capital inflows such as stops and normal episodes? Ghosh et al. (2014) have pointed out that surges are indeed different. We do the same exercise in the context of various episodes of gross capital inflows. Second, if surges are different from other episodes, are surges ending in normal episodes different from those leading to stops? Addressing this question allows us to differentiate these two types of surges. Third, do the two types of surges behave differently for advanced and emerging economies? Most studies on surges focus on emerging countries. The rationale for this is that emerging economies are more

[37] Ghosh et al. (2016) have also highlight that not all surges end painfully, but their focus is on financial crises and output contraction, whereas this chapter looks at huge foreign capital outflows following surges. In essence, this study is related more to the transition between surges to stops and surges to normal episodes. Benigno et al. (2015) look into capital flow reversals following a surge episode of net capital inflows but they focus more on the sectoral allocation effects. Sula (2010) finds significant evidence that surges increase the probability of stops but the author does not differentiate between surges that end in stop episodes from those that do not. Kim et al. (2014) argue that 60 percent of surges end in stops, which is considerably large.

vulnerable to surges that end in stops. But the global financial crisis of 2008-09 has shown that advanced economies are vulnerable to such transitions as well.

In order to address these questions, we proceed as follows. First, using quarterly data on gross capital inflows from 1982Q4 to 2014Q4 for 55 advanced and emerging economies, we identify for each quarter whether an economy is in a stop, normal, or surge episode following the approach of Forbes and Warnock (2012a). Second, we differentiate between surges that end in stops from those that end in normal episodes. Third, after identifying where surges end, we test the significance of global and domestic factors on the likelihood of experiencing surges that end in stops. Fourth, to establish that surges ending in stops are different from surges ending in normal episode, we test the significance of global and domestic factors conditional on being in a surge type to show which factors are significantly correlated with the magnitude of gross capital inflows for that surge type.

The results show that the higher likelihood of surges ending in stops is significantly correlated with lower global risk aversion and with higher domestic output gap. This holds true for both advanced and emerging economies. However, the results indicate that the higher likelihood of surges ending in stops is significantly related with higher global growth for emerging economies, but with lower global growth for advanced economies. For emerging economies, higher domestic credit is correlated with higher occurrence of having surges ending in stops. In terms of differentiating between two types of surges, the estimates indicate that surges ending in stops are different from surges ending in normal episodes as both global and domestic factors correlated with the magnitude of capital inflows in these two types of surges vary. For instance, although global interest rate, global risk aversion and domestic credit are significant for both types of surges, larger gross capital inflows are significantly correlated with higher global commodity prices for surges ending in stops, but with lower global commodity prices for surges ending in normal episodes. Similarly, larger gross capital inflows are significantly associated with higher domestic output gap and capital account openness for surges ending in stops but not for surges ending in normal episodes. These results suggest that the transition from surges to stops or to normal episodes and the size of foreign-driven capital inflows of surge types are correlated with both global and domestic factors.

This chapter proceeds as follows. Section 3.2 provides the conceptual framework and literature review. Section 3.3 discusses the empirical specification. Section 3.4 identifies episodes of gross capital inflows and differentiates between two types of surges. Stylized facts are also presented. Section 3.5 presents the baseline and sensitivity results, while Section 3.6 concludes.

3.2 Conceptual Framework

3.2.1 Capital Flows "Push" and "Pull" Framework

The economics literature on capital flows is vast. A key area of research in this field pertains to the drivers of capital flows across countries. In this area, the overarching theme is which factors matter most for capital flows. These factors are broadly categorized as "push" factors which are external to an economy, and domestic "pull" factors pertaining to domestic macroeconomic fundamentals. The prevailing consensus in the literature points to the relevance of both factors. For instance, Calvo et al. (1993, 1996) and Fernandez-Arias (1996) find global factors, such as interest rates related to business cycles in advanced economies, matter more than domestic factors. In contrast, Chuhan et al. (1998) argue more for domestic factors, such as prospective returns on domestic investment. But most studies find the relevance of both factors not only for the size but also for the volatilities of total and components of capital flows.[38]

A narrower branch of literature on capital flows looks at the "push" and "pull" factors in the context of unusually large foreign capital inflows or outflows, known as either "surges" or "stops" which are broadly grouped as extreme episodes. Understanding the determinants and consequences of these extreme episodes of capital flows in the context of global and domestic factors has become important in the literature as it has significant policy implications. For example, if global factors are more relevant during episodes of large foreign capital outflows than domestic factors, then it implies that policy makers have little influence over such huge foreign outflows. The same goes for large foreign capital inflows. But if domestic factors are more pertinent, then domestic policy makers have more control over the adverse consequences of stops and surges.

In this regard, several studies look into the relevance of global and domestic factors during extreme episodes of capital flows. The findings indicate that the high occurrence of "stops" relates to lower domestic growth, more financially open economies, large dollarization of domestic liabilities, dependence on commodity exports, low global growth, high global risk, foreign-driven, huge banking inflows, large exchange rate depreciation, and contagion effects. In contrast, economies more open to trade are less vulnerable to "stops" as foreign investors associate trade openness with lower probability of debt default, while those with more stable economies also experience less "stops".[39]

[38] See Koepke (2015) for a comprehensive review on the literature of capital flows under the push and pull framework.

[39] Refer to the studies of Calderon and Kubota (2013), Calvo et al. (2008), Cavallo and Frankel (2008), Forbes and Warnock (2012a), Levchenko and Mauro (2007), Milesi-Ferretti and Tille (2011), and Rothenberg and Warnock (2011).

For “surges”, low global interest rates that make debt payment and access to international funding easier, global risk aversion, and business cycles in advanced economies are the relevant global factors. Policy reforms, trade and financial openness, sound macroeconomic policy, growth shocks, external financing needs, and exchange rate regime are the significant domestic factors. In addition, contagion factor is also significant.[40]

3.2.2 “Push” and “Pull” Framework under Capital Flow Episode Transitions

Existing studies on surges also highlight that changes in global and domestic factors can cause surges to end in economic downturns and crises. There are two main channels in which surges can end painfully in output collapse and crises. First, low global interest rate, strong growth in advanced countries, greater financial openness and policy reforms in host countries can trigger huge foreign capital inflows. This leads to higher consumption of non-tradable goods which raises relative prices causing real exchange rate appreciation. This causes sectoral reallocation, output decline, crises and even reversal of capital inflows (Benigno et al. 2015; Calvo et al. 1993, and 1996; Ghosh et al., 2016; and Reinhart and Reinhart, 2009). The second channel is through banking sector. Low global interest rates and higher investor risk appetite can trigger surges in capital flows and facilitate domestic credit booms. As domestic bank lending increases, it raises the likelihood of banking and currency crises since lower borrowing costs exacerbate moral hazard problem, riskier investments leading to productivity decline, and currency mismatches. These lead to crises as argued by Caballero (2014), Gorton and Ordoñez (2016), Ghosh et al. (2016), and Magud et al. (2014).

There are several papers that look into the transition from surges to stops such as those from Accominotti and Eichengreen (2013), Benigno et al. (2015), Kim et al. (2014), Reinhart and Reinhart (2009), and Sula (2010). From a historical narrative, Accominotti and Eichengreen (2013) find that similar to surges that preceded stops during the global financial crisis of 2007-08, advanced countries also underwent a similar progression in the inter-war period of 1919 to 1932. Benigno et al. (2015) and Sula (2010) argue that surges increase the probability of stops. However, Benigno et al. (2015) do not find significant evidence between surges and the probability of experiencing net capital flow reversal.[41] In contrast, Sula (2010) finds that surges increase the probability of experiencing stops especially when foreign capital inflows are driven by private loans. The

[40] See the papers of Caballero (2014), Calvo et al. (1993 and 1996), Forbes and Warnock (2012a and 2012b), Ghosh et al. (2014), Magud et al. (2014), and Reinhart and Reinhart (2009).

[41] Benigno et al. (2015) define reversal in capital flows as negative net capital inflows using current account and foreign reserve data.

probability of experiencing stops also increases when a country is running a current account deficit and has an appreciating real exchange rate. Kim et al. (2014) show that, on average, 60 percent of surges end in stops.[42] Reinhart and Reinhart (2009) indicate that capital bonanza episodes "end, more often than not, with an abrupt reversal or 'sudden stop' a la Calvo (1998)".

These studies highlight the transition from surge to stop episodes. But little is known or mentioned about surges that end in normal episodes. It should be pointed out that not all surges actually lead to stops as it is possible that countries experiencing surges could allow for greater domestic adjustments, or global factors might not necessarily deteriorate substantially which might not necessary entail foreign capital outflows. Furthermore, no study has differentiated between two types of surges. One that ends in stops and the other that ends in normal episodes. It is this gap in the literature which this chapter addresses.

This study is related to the literature on surges in capital inflows in line with Forbes and Warnock (2012a) and Ghosh et al. (2014). However, unlike both studies, this paper specifically identifies two types of surges in the context of "push" and "pull" framework. Unlike Ghosh et al. (2016) who focus on the impact of surges on output and crises, this chapter deals with the transitions between episode types of capital inflows. In contrast to Benigno et al. (2015) and Sula (2010), who look into the significance of surges and other factors on the likelihood of stops, this chapter focuses on global and domestic factors correlated with the likelihood of having surges ending in stops conditional on being in a surge episode. Unlike the paper of Kim et al. (2014), this paper uses consistent identification of capital inflow episodes, following Forbes and Warnock (2012a), and looks at factors correlated with the occurrence of surges ending in stops.

3.3 Empirical Specification

The main objectives of this chapter are to identify different types of surges and understand surge transitions. To this end, we highlight the role of global and domestic factors in the literature on capital inflows that are correlated with the occurrence of surges ending in stop episodes and with the magnitude of gross capital inflows for the two types of surges. We also look into whether the

[42] Kim et al. (2014) use different methods in identifying surges which is mainly deviation from some benchmark measure but define "stops" as reduction in gross inflows by 3 percent of GDP. In short, they use inconsistent definitions of surges and stops. The authors also use annual data for emerging countries. Using annual data to capture episodes of capital flows could lead to missed episodes such as those that last for less than a year like those which lasted for only two quarters. Furthermore, the authors do not specify their underlying data source whether Financial Accounts or the Current Account of the Balance of Payment Statistics.

significance of global and domestic factors hold when we split the sample between advanced and emerging economies. We proceed as follows.

First, using our identified types of surges, we test the significance of global and domestic factors for the occurrence of surges ending in stops conditional on being in a surge episode. This pertains to the relevance of factors on surge transitions. Our first empirical specification is given by

$$P(s_{i,t}=1) = g_t^{'}\beta_1 + d_{i,t}^{'}\gamma_1 + \varepsilon_{i,t} \quad (1)$$

where $s_{i,t}$ is a dummy variable that takes a value of 1 if the a surge episode ends in a stop episode, and 0 if a surge episode ends in a normal episode, for country *i* in quarter *t* conditional on being in a surge episode. $g_t^{'}$ and $d_{i,t}^{'}$ are global and domestic factors, respectively, for country *i* in quarter *t* conditional on being in surge. $\varepsilon_{i,t}$ refers to the error term.

Equation (1) is estimated using a probit model with robust standard errors for 55 economies from 1982Q4 to 2014Q4. We do not use lagged values of the regressors to address potential endogeneity.[43] Our reason for this is that we are estimating the outcome variable (surges leading to stops) on the contemporaneous values of the regressors in that surge episode. In effect, we are estimating the dependent variable on its lagged values. This reduces potential endogeneity. Nonetheless, we interpret the results as correlations instead of causation. We report conditional marginal effects for all variables at their mean values.

Second, using our identified episodes of gross capital inflows (stops, normal, and surges), we test the significance of global and domestic factors on the magnitude of gross capital inflows conditional on being in one of these episodes. We highlight that capital flows behave differently across different types of episodes. Ghosh et al. (2014) use the same approach to establish that net capital inflows during surges are different from other episodes. Next, we focus on surges and then split these between surges that end in normal episodes and those that end in stops. This will show that gross capital inflows during surges that end in normal episodes are different from those that end in stops. In effect, we are distinguishing between the size of gross capital flows during the two types of surges given global and domestic factors. Finally, we test whether these two surges exist in both advanced and emerging economies. Recent papers on surges, including those from Ghosh et al. (2014) and

[43] We conducted a sensitivity analysis using lagged values as regressors. The baseline results hold.

Sula (2010), focus on emerging economies. But to clearly point out that these two surges exist both in advanced and emerging economies, we split our sample. Our second empirical specification is as follows

$$K_{i,t} = g_t^{'}\beta_1 + d_{i,t}^{'}\gamma_1 + \varepsilon_{i,t} \quad (2)$$

where $K_{i,t}$ stands for gross capital inflows as percent of annual GDP for country *i* in quarter *t* conditional on being in a particular episode or surge type. $g_t^{'}$ are global factors in quarter *t* conditional on being in a particular episode or surge type; and $d_{i,t}^{'}$ are domestic factors for country *i* in quarter *t* conditional on being in a particular episode or surge. $\varepsilon_{i,t}$ refers to the error term.

Equation (2) is estimated using pooled OLS with robust standard errors for 55 economies from 1982Q4 to 2014Q4. We do not include country fixed-effects as we want to test the significance of domestic factors without controlling for other unobserved country characteristics. Including country-fixed effects might cause downward bias on the significance of domestic factors as pointed out by Forbes and Warnock (2012a, 2012b) and Ghosh et al (2014). Given our specifications, we do not use lagged values of the regressors to address potential endogeneity. Our reasoning for this is that we are interested in the significance of domestic and global factors conditional on being in particular type of episode. If we use lagged values, the values for the first quarter in an episode will correspond to the last values in the preceding episode. Thereby, we would not be exclusively accounting for all the values corresponding to a particular episode.[44] Consequently, we are not claiming causality but rather conditional correlations. Although we are using the same dependent and independent variables, we do not run seemingly unrelated regression as we are imposing the condition of being in a particular episode type. Hence, the data points included in each specification are different. Unlike Ghosh et al. (2016), we do not look into the changes in the global and domestic factors as we are interested in which factors are correlated with the occurrence of surges ending stops, and with the magnitude of gross capital inflows for the two types of surges. Using changes could lead to inconsistent results. Consider a case in which a country is in a recession in the pre-surge period and grows significantly during the surge period. The change in growth will be overestimated in this case. Therefore, we look into correlations of current factors with capital inflows during surge episodes.

[44] We conduct a sensitivity test using lagged values. The results are consistent with our baseline results.

Given both empirical specifications, we note several points. First, Equation (1) looks into which domestic and global factors are significant for the likelihood of having surges leading to stops. This pertains to the probability of occurrence. Our specification differs from Benigno et al. (2015) and Sula (2010) as both papers use probit model with a dummy variable taking the value of 1 if there is the occurrence of a stop episode or net capital inflow reversal and 0 otherwise. In their specification, a variable for a surge episode is included as a regressor. In Equation (1), the transition from a surge to a stop episode is embodied in the binary variable by itself.

Second, Equation (2) aims to show that surges are different from other types of capital inflows, and that there are two types of surges that exists both in advanced and emerging economies. We highlight the difference between these two surges based on the significance of push and pull factors correlated with the magnitude of gross capital inflows. For instance, if a global factor is significant for surges leading to stops and not for surges leading to normal episodes, we say that the global factor significantly increases the size of gross capital inflows for surges leading to stops, and not for surges leading to normal episodes. This way, we differentiate between the two surges. This approach is similar to Ghosh et al. (2014), but the crucial difference is that this paper differentiates two types of surges.

3.4 Data and Stylized Facts

3.4.1 Gross Capital Inflows

Considerable discussion has been made in the literature of capital inflows on how to best capture the determinants and consequences of extreme episodes. Central to any analysis in this research is the choice between using net or gross capital inflows in identifying extreme episodes. Using either net or gross capital inflows sheds light on our understanding of stops and surges. However, the choice between the two has profound implications on how the findings are interpreted. For instance, the use of net capital inflows are preferred when looking at the macroeconomic impacts of surges including those on domestic growth, sectoral reallocation, exchange rate, terms of trade, and current account. But the use of net capital inflows in understanding extreme episodes compounds cross-border investment decisions of both domestic and foreign investors. For example, a country faced with huge foreign investment outflow can mitigate its macroeconomic impact by running down its foreign reserves or retrenching its foreign assets, thereby, having smaller or even positive net capital inflows.

In order to disentangle the decisions of domestic and foreign investors, the use of gross capital inflows is warranted. Differentiating between domestic and foreign capital flows assumes that both types of investors behave differently during periods of high or low financial risks.[45] During the global financial crisis of 2008-09, domestic investors in advanced economies faced credit constrains and witnessed huge foreign capital outflows, and so they repatriated their foreign assets (Milesi-Ferretti and Tille, 2011). In this case, domestic and foreign investors behave symmetrically. But there are also instances when huge foreign capital outflows are matched by capital flight, thereby domestic investors reinforce the negative impact of foreign capital outflows. In this case, the actions of both foreign and domestic investors are asymmetric. This clearly illustrates the importance of disentangling capital flows driven by domestic and foreign investors.

To understand which factors are relevant for foreign-driven inflows and their relation to transitions between episodes of capital flows, using gross capital inflows is more appropriate. Specifically, to know how foreign capital inflows respond to changes in global and domestic factors or financial risks during an episode and its subsequent ending to another episode, using gross capital inflows is warranted.[46] For these reasons, this chapter focuses on gross capital inflows.

3.4.2 Episode Types

Aside from the choice between gross and net inflows, another issue in the literature of extreme episodes is how to measure surges. Surges are usually defined to imply more than the usual increase in capital inflows. However, there are various approaches in measuring "more than the usual". Crystallin et al. (2015) provide a survey on the various measures of surges and show that these measures affect the number of surges identified. Common to the six methods they identify and test is their finding that surges have been increasing over time especially using gross capital inflows. The six surge identification method enumerated by Crystallin et al. (2015) can be broadly classified into two. First, surges are periods when capital inflows increase more than the usual based on some deviation from benchmark of what "usual" is. Deviation could refer to one or two standard deviation from benchmark which can either be the historic mean, filtered trend, or magnitude (size relative to

[45] Total gross capital outflows must technically include foreign reserves. But considering net capital inflows entails including policy actions in response to capital flow reversals. In this case, net capital inflows are more stable as it considers policy actions to counteract extreme episodes of capital flows.

[46] Applying Forbes and Warnock (2012a) method to identify "surges" and "stops" on net capital inflows would lead to different results. For instance, global risk aversion is insignificant for the transition from surges to stops using net inflows. But similar to the findings in this chapter, the significance of global and domestic factors varies for the two types of surges.

GDP) such as those from Balakrishnan et al. (2013), Benigno et al. (2015), Caballero (2014), Forbes and Warnock (2012a and 2012b), IMF (2011), Magud et al. (2014), and Sula (2010). Second, surges are also identified based on some threshold percentile for the entire sample. This is the approach taken by Benigno et al. (2015), Ghosh et al. (2014 and 2016) and Reinhart and Reinhart (2009).

One drawback of the second approach is that in setting the top percentile, episodes of negative capital inflows are included regardless of whether one uses net or gross inflows. Removing those negative inflows would set the cut-off of top percentile for each country even higher especially for those that experience frequent stops. Therefore, there could be some missed episodes. For this reason, this paper applies the first approach. Among the variations in the first approach (deviation from some benchmark), this paper employs Forbes and Warnock (2012a and 2012b) approach in identifying extreme episodes.[47] Distinct from Forbes and Warnock (2012a and 2012b) method is that they impose a two standard deviation from historic rolling mean rule on top of the one standard deviation criteria. This ensures that the identified extreme episodes have substantial disruptive impact on the economy and that the identified increase or decrease is truly large relative to a country's historic mean.

To restate, Forbes and Warnock (2012a and 2012b) define a surge as an episode where gross capital inflows increase more than one standard deviation above its historic mean provided that: (i) it reaches at least two standard deviation above at some point within that episode; (ii) the entire episode lasts more than one quarter; and (iii) there are at least four years of data to calculate the historic mean. Specifically, we let C_t be the four-quarter moving sum of gross capital inflows (*GINFLOW*) and derive annual year-on-year changes in C_t:

$$C_t = GINFLOW_t + GINFLOW_{t-1} + GINFLOW_{t-2} + GINFLOW_{t-3}, \quad (3)$$

$$\Delta C_t = C_t - C_{t-4}, \quad (4)$$

[47] Ghosh et al. (2014) considered the presence of global surges in identifying individual country surge episodes. However, this reinforces the importance of global factors and does not account for individual country surge experiences. For instance, consider a country which opened up to foreign investments and offers high returns at a time of global slowdown. Since there is no global surge, such episodes will not be included in Ghosh et al. (2014) but will be included in Forbes and Warnock (2012a). Given such cases, we use Forbes and Warnock's (2012a) approach in identifying extreme episodes.

Rolling average and standard deviations of ΔC_t are computed over the last 20 quarters or 5 years.[48] A surge episode is defined starting the first month t that ΔC_t increases more than one standard deviation above the historic rolling mean.[49] But in order for the entire episode to qualify as surge there must be at least one quarter t when ΔC_t increases at least two standard deviation above its historic mean. A stop is defined using a similar approach but pertains to the opposite direction. We define normal episode as quarters without extreme episodes.

Our primary data source for quarterly gross capital inflows is the Balance of Payments Statistics from the International Monetary Fund's (IMF) International Financial Statistics (IFS). Data are accessed from CEIC Database. We define gross capital inflows to include foreign direct investment liabilities, portfolio investment liabilities and other investment liabilities. The primary period coverage is from 1970Q1 to 2014Q4 for 55 advanced and emerging economies. However, we decided to use identified episodes starting 1982Q4 as most of our regressors have available data around 1982.[50]

To illustrate the method of identifying episodes of gross capital inflows, Figure 3.1 applies the method for Brazil. The illustrated pattern shows striking resemblance to Forbes and Warnock's (2012a) Figure 2 for Brazil.[51] Given our identified episodes for gross capital inflows, several distinctions are noted. First, there are marked differences in the identified surges accounting for the fact that Forbes and Warnock (2012a) used net errors and omissions to fill in missing data. In this chapter, no attempt to clean the data has been made so as to rely primarily on the classified financial transactions in the Balance of Payments Financial Accounts. Second, the starting and ending quarters of identified surges can be different from Forbes and Warnock (2012a) as we reclassified extreme episodes separated by one quarter of normal episode to the succeeding extreme episode. For example, some countries in 2008Q3 have normal episode between a surge episode in 2008Q2 and stop episode in 2008Q4. We then reclassify the normal episode identified in 2008Q3 as stop episode to account for the fact that the global and domestic conditions prevailing during that quarter actually corresponds to conditions in the stop episode. Although there are slight differences between this chapter and Forbes and Warnock (2012a), the identified extreme episodes in this chapter are in line with their observed patterns.

[48] To maximize available data, a four-year rolling mean and standard deviation is used at the start of the series, following the approach of Forbes and Warnock (2012a and 2012b).

[49] The value for current quarter (t) is excluded in computing for the historic mean and standard deviation.

[50] See Appendix 3.1 for a discussion on capital flows data.

[51] Refer to Figure 2 page 239 of Forbes and Warnock (2012a). We note that the underlying data is stationary.

3.4.3 Surge Types

One of the key points argued in this chapter is that not all surges end in stops. In fact, most surges end in normal episodes. Although most studies on surges do not highlight the importance of these two surges, there are existing studies that stress this importance in the context of hard and soft landings. Both Benigno et al. (2015) and Ghosh et al. (2015) also point out that not all surges end painfully as some surges end safely. Benigno et al. (2015) distinguish between surges that end in reversals of net capital inflows from those that end in sudden stops following Calvo et al. (2008). However, they use data on net capital inflows, which accounts for the positions taken by domestic and foreign investors, and the surge definition of Caballero (2014). Ghosh et al. (2016) differentiate two surges in which one ends in financial crises or output contractions and the other ends safely but they used net capital inflows and the approach of Reinhart and Reinhart (2009) in identifying surges.

This chapter differs from Benigno et al. (2015) and Ghosh et al. (2015) in identifying types of surges. Applying the episode identification approach of Forbes and Warnock (2012a) for gross capital inflows, two types of surges are identified. One leads to normal episodes and the other leads to stop episodes. Crucial to this distinction is the cut-off period when one could say that a surge ended safely or badly. Given the use of quarterly data, the obvious cut-off period would be four quarters or one year to account for policy time lags and the fact that four quarters might be sufficient for global and domestic factors to change substantially.[52]

To identify the two types of surge, we use the following criteria. We identify a surge episode ending in normal episode if the four subsequent quarters following the last surge quarter are quarters of normal episode. On the other hand, we identify a surge episode ending in a stop episode if a stop episode begins in less than four quarters following the last surge quarter.

Tables 3.1 and 3.2 show the summary statistics of identified surges classified into either surges ending in normal episodes or surges ending in stops for advanced and emerging economies.[53] Several observations are noted. First, the magnitude of gross capital inflows for surges ending in stops is larger compared to the size of gross capital inflows for surges ending in normal episodes (Table 3.1). This pattern holds true for all economies and for the split between advanced and

[52] In our sensitivity test, we find that extending the cut-off to eight quarters or two years does not alter our baseline results. But we note some changes in the significance of global factors.

[53] Tables 3.A2 and 3.A3 in Appendix 3.2 present the identified surges classified into either surges ending in normal episodes or surges ending in stops for advanced and emerging economies, respectively.

emerging economies. This implies that, on average, gross inflows for surges leading to stops are larger than those leading to normal episodes. Hence, its disruptive potential to economies is greater. Second, most surges end in normal episodes for both advanced and emerging economies (Table 3.2). Specifically, around 60 percent of surges end in normal episodes while 40 percent end in stops.[54] This is true for both advanced and emerging economies. Third, extending the cut-off to eight quarters, around half of all surges still end in normal episodes (Table 3.2). Therefore, there is no clear indication that most surges end in stops even after using two years as the cut-off point.

Figures 3.2 to 3.4 trace the evolution of types of surges through time for all economies (Figure 3.2), advanced economies (Figure 3.3) and emerging economies (Figure 3.4). Several findings are noted. First, there is unprecedented number of surges ending in stops in the run up to the global financial crisis of 2008-09. In fact, most surges that occurred around the end of 2005 ended in stops. The same pattern holds when we split the sample between advanced and emerging economies (Figures 3.3 and 3.4). Second, there are periods when surges happen frequently or rarely. For instance, in the 1980s most surges happened in advanced economies, while in the 1990s most surges occurred in emerging economies. Third, few surges occurred around 2001 and 2009 due to the global cyclical downturn related to the slowdown in the US economy in 2001 and during the Great Recession of 2008-09, respectively. Fourth, most surges in emerging economies in the post-global financial crisis period ended in normal episodes, although some countries like Brazil, Korea, Taiwan and Thailand imposed capital controls. These stylized facts show that there are two types of surges: one ending in normal episodes, and the other ending in stops. Importantly, most surges end in normal episodes.

3.4.4 Global and Domestic Factors

For Equation (2), we use gross capital inflows as percent of annual GDP as the dependent variable. Quarterly gross inflows are scaled relative to the annual GDP to indicate the size of inflows relative to the size of the economy. Data for gross inflows refer to the sum of foreign direct investment, portfolio investment, and other investment liabilities from the Balance of Payments statistics. The primary data source is the Balance of Payments statistics of the International Monetary Fund. For some countries, we use national sources.

[54] This is in stark contrast to Kim et al. (2014) who find that around 60 percent of surges end in stops. The difference could be primarily due to capital flows data, period and country coverage, data frequency, and approach in identifying surge and stop episodes.

For global factors, we select five indicators common in the literature. We expect that higher global growth, global liquidity, and global commodity prices will trigger surges in capital inflows across countries. In contrast, lower global interest rates will initiate search for higher yields and so capital inflows increase across countries, particularly to emerging countries. The relation between global factors and capital inflows during surges is well documented in the literature (Calvo et al., 1993 and 1996; and Reinhart and Reinhart, 2009). More recent literature points to the importance of global risk aversion. Higher global risk aversion is related to stops while lower global risk aversion is related to the occurrence of surges (Forbes and Warnock, 2012a and Ghosh et al. 2014).

Our measure of global growth is quarterly year-on-year change of aggregate real GDP of selected advanced and emerging economies using 2010 constant prices and exchange rate. Global interest rate refers to the quarterly weighted average of long-term interest rates across countries using GDP in constant prices as weights. Both global growth and interest rate are taken from Oxford Economics. Global liquidity growth is the quarterly year-on-year change in aggregate money supply (M2) of selected advanced and emerging economies. Since individual country money supply is expressed in local currency, we convert all values to US dollar using end-of-period exchange rate before aggregating. Money supply and foreign exchange rate are taken from the International Financial Statistics of the IMF. Commodity price index refers to the log value of quarterly unweighted average of global price indexes of agricultural raw materials, metals, energy, and non-fuel commodities taken from the IMF's Primary Commodity Prices Database. We multiply the log value by 10 to make the scale consistent with other indicators. For quarterly global risk aversion variable, we use the Chicago Board Options Exchange volatility index VXO. However, since the data for VXO starts only in 1986Q2, we extend the volatility index to 1982Q4 using estimated standard deviation from a GARCH(1,1) model of the S&P futures index.

For domestic factors, we include six measures. Higher output gap, more developed financial system as proxied by market capitalization, per capita income, and greater financial openness are associated with more surges or higher capital inflows (Calvo et al. 1996, Ghosh et al. 2014 and Forbes and Warnock, 2012a). We also include domestic credit to test whether it is associated with higher capital inflows or with the occurrence of surges which increases financial risks through lending boom as pointed out by both Caballero (2014) and Sula (2010). Lastly, we also include real exchange rate appreciation as capital inflows are commonly associated with increasing real exchange rate (Ghosh et al. 2014 and Reinhart and Reinhart, 2009).

Our measure of output gap refers to the deviation of quarterly real GDP from its potential output. We use real GDP in local currency and employ Hodrick-Prescott filter to derive potential output. We source our quarterly real GDP data from Oxford Economics.[55] Market capitalization refers to the total capitalization of listed companies as percent of nominal GDP. Our primary data sources are World Bank's World Development Indicators and national sources. We convert annual series to quarterly series using linear interpolation. Domestic credit refers to financial resources provided to the private sector as percentage of nominal GDP. Annual data sourced from World Bank's Global Financial Development Dataset are converted to quarterly series through linear interpolation. Capital account openness refers to Chinn-Ito standardized index (Chinn and Ito, 2006). We scale the standardized index to 100 and convert the annual series to quarterly series by repeating the annual values.[56] Per capita income is the log value of real GDP per capita in constant US$ prices. We scale the log value by 10 to make the values consistent with other indicators. Data are sourced from Oxford Economics and IMF's World Economic Outlook Database. Finally, our real exchange rate appreciation refers to quarterly year-on-year growth of real effective exchange rate index taken from Bank for International Settlements, International Monetary Fund, and national central banks.

Table 3.3 presents the average values of all variables during surges. Several observations are noted. First, on average, gross capital inflows are larger for advanced than emerging countries. Second, global interest rate is lower for emerging economies during surges, compared to advanced economies. Third, domestic credit during surges in advanced countries tends to be twice as large as that for emerging economies. Lastly, real appreciation is higher in emerging economies during surges compared to advanced economies. This suggests greater exchange rate adjustment in emerging economies during surges.

3.5 Empirical Analysis

3.5.1 Baseline Results

To test the significance of global and domestic factors related to the transition of surges to stops, we run Equation (1) using probit estimation. Table 3.4 presents the marginal effects on the likelihood of

[55] For some countries with unavailable quarterly data, we use the annual values and then convert to quarterly series using quadratic match sum approach. For most countries, quarterly real GDP in local currency are seasonally adjusted. For those that are not, the series are adjusted using Census X-12 method.

[56] Since the latest Chinn-Ito index is available until end-2013, we use 2013 values for our 2014 sample. Data for Taiwan is proxied by data for Korea as the level of de facto financial integration between these two countries are the closets among the countries in the region.

experiencing surges leading to a stop episode conditional on being in a surge episode. The coefficients are the marginal effects at the given mean of each regressor. We note several findings.

For all economies, we find that lower global risk aversion and higher domestic output gap are significantly correlated with higher likelihood of surges leading to stops. Given its negative sign, a one unit decrease in global risk aversion is significantly correlated with a higher likelihood of surges ending in stops by around 1 percent, when all factors are held constant at their mean values. This indicates that among global factors, it is global risk aversion that matters most for the transitions of economies from surge to stop episodes. In contrast, a one unit increase in domestic output gap is significantly associated with higher likelihood of surges leading to stops by around 9 percent, when all factors are at their mean values. This indicates that, conditional on being in a surge episode, an overheating economy has significantly higher likelihood of experiencing a surge ending in a stop.

Although global risk aversion and domestic output gap are significant for both advanced and emerging economies, we find that there are differences between the two country groups as the global and domestic factors significant in explaining the variation among them vary. For instance, higher global growth is significantly correlated with lower likelihood of a surge ending in a stop for advanced economies, but with higher likelihood of a surge ending in a stop for emerging economies. A possible explanation for this is when global growth is strong, cross-border investments increase for both advanced and emerging economies. However, unlike advanced economies, emerging economies may have lower ability to absorb foreign capital given their level of financial development. Hence, large foreign capital inflows can have more destabilizing impact on the economy, which increases the possibility of experiencing foreign capital outflows.

For emerging economies, the estimates show that higher domestic credit is significantly associated with higher likelihood of having a surge end in a stop. Specifically, a one unit increase in domestic credit is significantly correlated with a higher likelihood of experiencing a surge leading to a stop episode by around 0.3 percent, when all factors are held constant at their mean values. This result is consistent with the credit channel of surge to stop narrative of capital inflows, particularly for emerging economies as pointed by Caballero (2014), Calvo (1998), Reinhart and Reinhart (2009), and Sula (2010). However, domestic credit is insignificant for advanced economies, which runs contrary to the experience of advanced economies during the global financial crisis of 2008-09, perhaps because there are more emerging economies in the sample or the recent financial crisis is an exception to overall trend of surges in advanced economies. The estimates also indicate that higher

per capita income is significantly related to lower likelihood of having a surge ending in a stop for emerging economies, but not for advanced economies. In contrast, appreciation of the real exchange rate is significantly correlated with higher likelihood of having a surge ending in a stop for advanced economies but not for emerging economies.

Table 3.5 presents the results for the magnitude of gross capital inflows conditional on being in various episodes of gross inflows. Column 1 of Table 3.5 shows the results for the size of gross inflows during stops, Column 2 for normal episodes, and Column 3 for surges. The estimates show that one episode type is different from another as the significance of global and domestic factors differ. For instance, global interest rate and domestic output gap are significant across episode types. But global risk aversion is significant for both stops and surges, but not for normal episodes. There are also factors distinct to surge episodes. Global liquidity and market capitalization are significantly correlated with higher gross capital inflows during stop and normal episodes, but not during surge episodes. In contrast, domestic credit is significantly correlated with higher capital inflows during surges but not during stop and normal episodes. Specifically, a one percent of GDP increase in domestic credit is significantly associated with higher gross capital inflows during surges by around 0.06 percent of GDP. Taken together, these findings indicate that surges are different from stops and normal episodes, consistent with Ghosh et al. (2014), as both global and domestic factors significant in explaining the variation in the size of gross capital inflows during surges are different from those for stop and normal episodes.

Knowing that the factors related to the size of gross inflows are different for surges, we look at whether the global and domestic factors related to the magnitude of gross inflows during surges differ when surges end in normal episodes or when surges end in stops. Table 3.6 presents the estimates on the magnitude of gross capital inflows conditional on being in two types of surges. Column 1 in Table 3.6 is the same as Column 3 of Table 3.5. Column 2 shows the estimates for surges leading to normal episodes, and Column 3 shows the estimates for surges leading to stops.[57]

The results show that common to both surge types, lower global interest rate and lower global risk aversion are significantly correlated with higher gross capital inflows, while higher domestic credit is significantly associated with higher gross capital inflows for both surges. These results are consistent with earlier papers on surges, including Ghosh et al. (2014). But there are striking differences

[57] We disregard interpreting significant negative constant terms in all regression tables as it is unlikely for capital flows to have a mean value when both global and domestic factors are set to zero.

between the two surges. Domestic output gap and capital account openness are significant for surges ending in stops, but not for surges ending in normal episodes. In contrast, per capita income is significant for surges ending in normal episodes, but not for surges ending in stops. The estimates also indicate that higher commodity prices are significantly associated with smaller gross inflows for surges leading to normal episodes, but significantly larger gross inflows for surges leading to stops. This finding is consistent with Ghosh et al. (2014) and Reinhart and Reinhart (2009) where they emphasize the strong relation between commodity price booms and surges. Given that global commodity price is significant for both but has opposite sign highlights the importance of commodity prices in explaining why surges end in stop episodes and, perhaps, even suggest its importance as a predictor for surge transitions.[58] In summary, Table 3.6 shows that global and domestic factors related to the magnitude of gross inflows for surges ending in stops are different from those for surges ending in normal episodes. These results provide support for the difference between the two types of surges.

We extend the analysis by looking whether there are differences between advanced and emerging economies. Table 3.7 is similar to Table 3.6 but splits the sample into advanced and emerging economies. Columns (1) to (3) are for advanced economies, while Columns (4) to (6) are for emerging economies.

For advanced economies, although domestic credit is significant for both surges, there are clear differences between the two types of surges. Lower global interest rate is significantly associated with higher gross capital inflows for surges ending in normal episodes but not for surges ending in stops. In contrast, lower global risk aversion is significantly correlated with higher gross capital inflows for surges ending in stops but not for surges ending in normal episodes. This suggests global interest rate, which triggers search for yield, is not important in explaining the variation in the size of inflows for surges ending in stops, but what is more relevant in explaining the size of inflows for surges ending in stops is global risk appetite. Taken together, these results suggest global interest rate limits surges while global risk appetite fuels surges in advanced economies but not in emerging economies. Domestic output gap is significant for surges ending in stops but not for surges ending in

[58] The relation between capital flow surges and high global commodity prices has been studied in the literature (Reinhart and Reinhart, 2009). The key link between the two is low interest rates. Given a low interest rate setting, investor search for higher returns or yields and one of the asset types they invest in are commodities. This drives global commodity prices higher which then triggers capital inflows to emerging and developing economies that are commodity exporters. Hence, any changes in the global environment that could adversely impact global interest rates or global returns could foster capital inflow reversals to commodity exporting countries. In this case, higher global commodity prices can provide a signal that surges can lead to stops.

normal episodes, while per capita income is significant for surges ending in normal episodes but not for surges ending in stops. Market capitalization has opposing impacts. Higher market capitalization is significantly associated with lower gross inflows during surges ending in stops, but with higher capital inflows during surges ending in normal episodes.

For emerging economies, it is striking to note that capital account openness is significant only for emerging countries and its significance holds across surge types. This may relate to the fact that most emerging countries continue to implement liberalization measures or impose restrictions, thereby adding to the variability in the sample. Higher global growth, global liquidity growth, and the real exchange rate appreciation are significantly associated with larger gross capital inflows for surges ending in normal episodes but not for surges ending in stops. On the other hand, larger domestic output gap and higher per capita income are significantly correlated with larger capital inflows for surges ending in stops but not for surges ending in normal episodes. Unlike in the advanced economy sample, lower global risk aversion is significantly related to higher capital inflows for surges ending in normal episodes but not for surges ending in stops. These findings for the advanced and emerging country groups clearly demonstrates the difference between surges that lead to normal episodes and surges that lead to stops hold since the global and domestic factors explaining the magnitude of gross capital inflows in these two types of surges differ.

These baseline results clearly illustrate the varying significance of global and domestic factors in explaining surge transitions as well as the existence of two types of surges. These show that not all surges are alike.

3.5.2 Sensitivity Tests

In order to test whether the results hold under various specifications, we conduct several sensitivity tests. For all sensitivity tests, Columns (1) to (3) pertain to results presented in Columns (1) to (3) of Table 3.4. Columns (4) to (6) refer to the results presented in Columns (1) to (3) of Table 3.6. Columns (7) and (8) pertains to the results presented in Columns (1) and (4) of Table 3.7.

First, to address potential endogeneity, we test our findings using the lagged value of our regressors. But using lagged regressors in our estimation will include values that do not correspond to a given surge episode. Nonetheless, the findings could support our baseline estimates. The results presented in Table 3.8 are mostly in line with baseline results. However, global growth is no longer

significant in Column (2) but is now significant in Columns (4) and (5). Global risk aversion is also no longer significant in Columns (4) to (7). In summary, using lagged values of the regressors support our baseline findings, although we find that global risk aversion losses its significance in differentiating between types of surges. The results must be interpreted knowing that lagged values of the regressors, which correspond to the previous episode, are included in the estimation.

Second, to address potential correlation between observations and the error term, we ran regressions using clustered standard errors. When we clustered standard errors by period, we find that the results are broadly similar to the baseline results. But when we cluster by country, the results change. Clustering at the country level allows correlation within each country, but not across countries. This assumption might be too strong as both domestic and global factors would show some degree of correlation due to economic linkages. For this reason, we use robust standard errors and note that the results hold when we use cluster standard errors by period.

Third, given that capital flows and real exchange rates can influence each other, we remove real exchange rate appreciation from our specifications. Calvo et al. (1993) and Reinhart and Reinhart (2009) highlight that a consequence of surges is that it causes real exchange rate appreciation since capital inflows increases domestic spending, which in turn puts upward pressure on the price of non-tradable goods. We can then extend our sample to include more surge episodes as data availability for real exchange rate is limited for some countries. The results are presented in Table 3.9. The estimates are similar to our baseline results. Greater capital account openness, however, is now significantly correlated with lower likelihood of surges ending in stops for emerging economies. Likewise, global growth is no longer significant in Column (8), while global risk aversion is now significant in Column (8). In summary, our baseline results hold when we remove the real exchange rate appreciation, although we do find that for emerging economies some factors have gained or lost significance.

Fourth, we have ignored the impact of regional contagion in our baseline results. It is possible that if most countries in a region are experiencing huge capital inflows, then a country in that region would also experience huge inflows. Such positive regional contagion factors can be a result of greater cross-border financial linkages, investor herding behaviour, and perceived country similarities (Forbes and Warnock, 2012a and Ghosh et al. 2014). We then include a regional contagion dummy variable with a value of 1 when more than half of countries in a region are experiencing surges in that particular period (quarter), and 0 otherwise. The results are presented in Table 3.10.

The baseline results hold when we include the regional contagion dummy. However, the striking result is that the regional contagion dummy variable comes with a negative sign. Specifically, if at least half of the countries in a region have surges, gross capital inflow tends to be lower by around 3.2 percent of GDP for surges ending in stops in Column (6). This result is consistent with Ghosh et al. (2014). A plausible explanation for this is when other countries in the region experience huge foreign capital inflows, there is a possibility that a country receives relatively less inflows than other countries even if it is in a surge episode, as foreign investors allocate more capital to a country which offers the highest and safest returns. However, regional contagion is insignificant for the occurrence of surges leading to stops in Columns (1) to (3).

Fifth, since we define surges ending in either normal or stop episodes based on at least four quarters of normal episode following the last surge quarter, we extend the criteria to eight quarters to determine whether our findings are sensitive to the definitions as well. The results are presented in Table 3.11. The key finding is that global growth is no longer significant in Columns (2) and (3). Global liquidity growth is now significant in Columns (2) and (3). In addition, global risk aversion is no longer significant in Column (2). This indicates that changing the window where surges end influences the results only for the global factors and not for domestic factors. This might happen because global factors change faster than domestic factors. In summary, moving from four to eight quarters of normal episodes after the last surge quarter yields results showing most global factors either gain or lose significance.

Sixth, since both global liquidity and global interest rate are correlated, it is important to drop either one of them. The rationale for the inclusion of both variables in the baseline regression is in line with previous studies and the divergence between zero-lower bound global interest rate and unconventional monetary policy such as quantitative easing. Between these two variables, we look at the significance of global liquidity instead of global interest rate as it is the provision of liquidity which fosters cross-border investment. Table 3.12 presents the results removing global interest rate. The results are broadly consistent with the baseline estimates. However, global risk aversion is now insignificant for the advanced and emerging country split in Columns (2) and (3). In addition, global growth is now significant in Columns (4) and (6). Overall, the results hold although some global factors lose significance for the advanced and emerging country split.

Lastly, instead of looking into the level of domestic credit, we consider credit growth. Previous studies including those from Magud et al. (2014) highlight the importance of surges in gross capital inflows on domestic credit growth.[59] Table 3.13 presents the results when we replace domestic credit with domestic credit growth. Several points are noted. First, global risk aversion is insignificant in explaining the occurrence of having surges ending in stops for the advanced and emerging economies split. Second, global commodity price is not significantly correlated with the magnitude of surges ending in both normal and stop episodes. A possible implication of these results is that looking into changes does not explain so much of the occurrence and magnitude of gross inflows of the two types of surges. Hence, it would be the levels of global and domestic factors which are more correlated with both occurrence and magnitude of the two surge types.

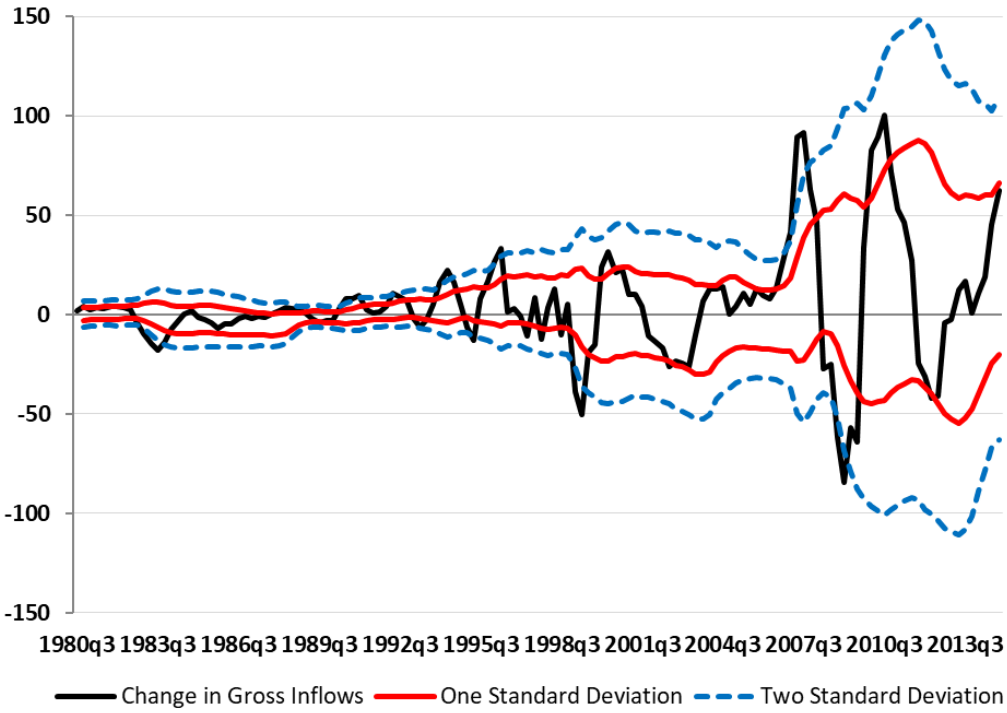
3.6 Concluding Remarks

This chapter sets out to highlight that not all surges are alike. Some surges end in reversal of gross capital inflows. This means that positive gross capital inflows can lead to negative gross capital inflows the following year. This transition from one episode type to another is widely known in the literature. However, there is another type of surge. Some surges end rather gently such that positive gross capital inflows can lead to smaller but still positive capital inflows the following year. This transition from surge to normal episode is not widely known in the literature. It is this gap in the literature that this chapter has addressed.

Based on the descriptive statistics and estimation results, this chapter finds that the magnitude or size of gross capital inflows during surges is generally large. However, for surges ending in stops, the magnitude of gross capital inflows tends to be even larger than the magnitude of gross inflows for surges ending in normal episodes, suggesting the disruptive potential of large inflows. This distinction is further supported by assessing various factors correlated with the occurrence of surges ending in stops and the magnitude of gross inflows conditional on being in these two types of surges. Our empirical findings clearly illustrate the varying significance of global and domestic factors related to surge transitions and size. Therefore, not all surges are alike.

[59] We define domestic credit growth as the year-on-year percentage change on quarterly domestic credit.

Figure 3.1: Capital Inflows to Brazil



Notes: Values in US$ billions. Change in gross capital inflows refer to the year-on-year difference of four quarter cumulative gross inflows. Data taken from the Balance of Payment Statistics of the International Monetary Fund.

Figure 3.2: Evolution of Surge Types
(All Economies)

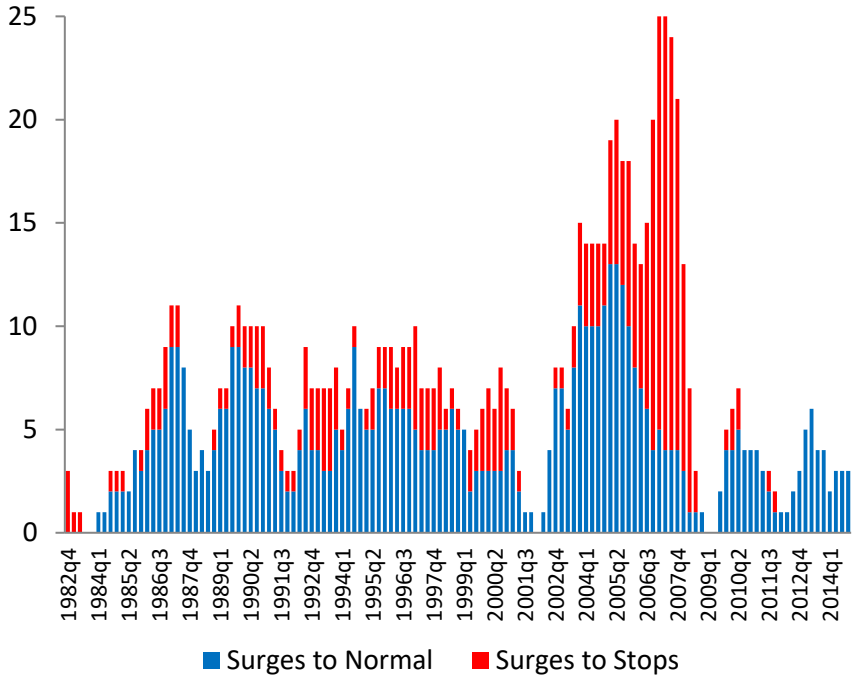


Figure 3.3: Evolution of Surge Types
(Advanced Economies)

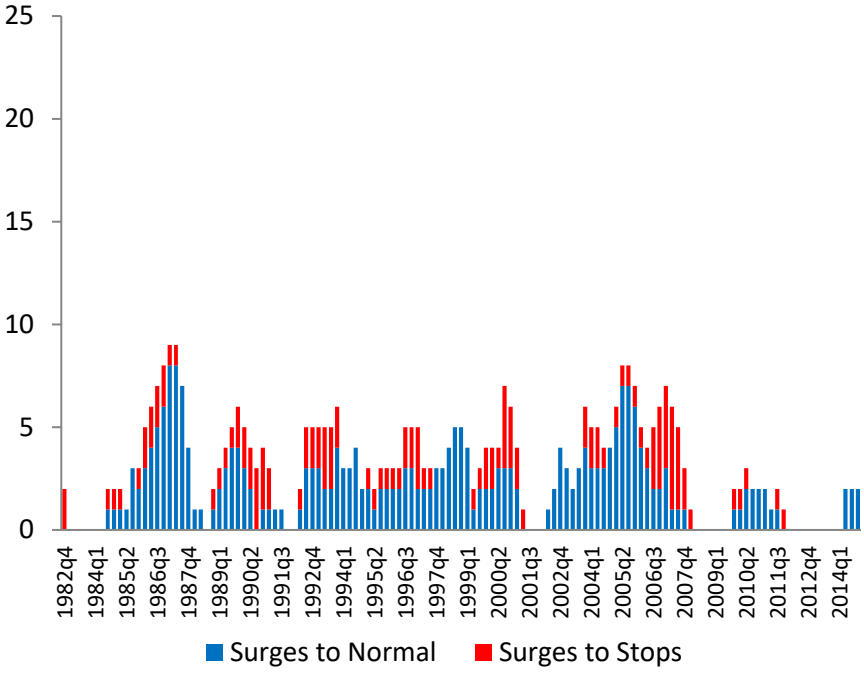
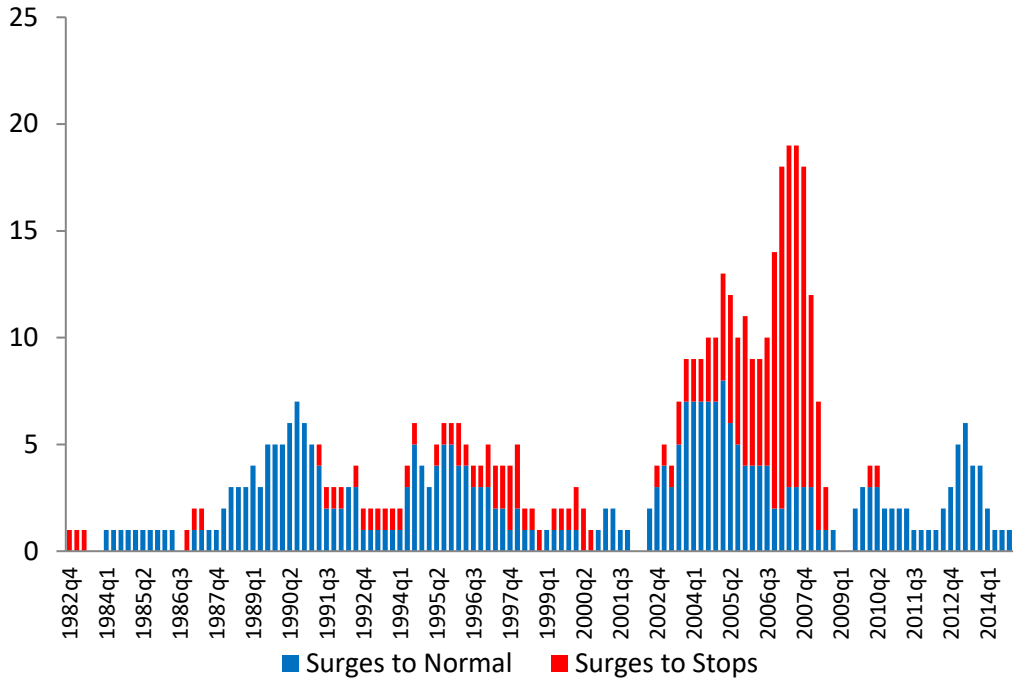


Figure 3.4: Evolution of Surge Types
(Emerging Economies)



Notes: Values pertain to the number of countries experiencing a particular surge type in a given quarter. Surges are defined following Forbes and Warnock (2012a and 2012b). Advanced and emerging economies sample are shown in Table 3.A1.

Table 3.1: Average Gross Capital Inflows for Surge Types

	All Economies	Advanced Economies	Emerging Economies
Surges Leading to Normal Episodes	3.61	5.42	2.10
Surges Leading to Stops	5.08	6.43	4.25

Note: Values pertain to the mean of gross capital inflows in percent of nominal GDP for all quarters conditional of being in a particular surge type.

Table 3.2: Summary Statistics of Surge Types

	All Surges	Surges Leading to Normal	Surges Leading to Stops	Leading to Normal (%)	Leading to Stops (%)
At least four normal quarters following the last surge quarter					
All Economies	194	121	73	62.37	37.63
Advanced Economies	92	57	35	61.96	38.04
Emerging Economies	102	64	38	62.75	37.25
At least eight normal quarters following the last surge quarter					
All Economies	194	99	95	51.03	48.97
Advanced Economies	92	46	46	50.00	50.00
Emerging Economies	102	53	49	51.96	48.04

Notes: Surges are defined following Forbes and Warnock (2012a and 2012b). Advanced and emerging economies sample are shown in Table 3.A1.

Table 3.3: Average Values of Key Variables during Surge Types

	All Economies	Advanced Economies	Emerging Economies
Gross Inflows	4.13	5.74	2.92
Global Growth	3.32	3.26	3.37
Global Interest Rate	9.06	10.84	7.73
Global Liquidity Growth	8.30	8.57	8.09
Commodity Price Index	45.38	44.30	46.18
Global Risk Aversion	18.31	19.01	17.78
Domestic Output Gap	0.53	0.08	0.86
Market Capitalisation	51.89	58.25	47.22
Domestic Credit	69.25	94.62	50.25
Capital Openness	64.33	83.77	49.78
Per Capita Income	84.17	91.32	78.81
Real Appreciation	2.21	1.30	2.94

Notes: Gross inflows, market capitalization, and domestic credit are in percent of nominal GDP. Global growth, global liquidity growth, and real appreciation are year-on-year quarterly changes in percent. Global interest rate is in percent per annum. Commodity price index and per capita income are in natural log values multiplied by 10 and 100, respectively. Domestic output gap pertains to the difference of actual and potential output in percent. Capital account openness refers to the standardized Chinn-Ito (2006) index and scaled to 100. Advanced and emerging economies sample are shown in Table 3.A1.

Table 3.4: Marginal Effects on the Likelihood of Experiencing Surges Leading to Stops vs. Surges Leading to Normal Episodes

VARIABLES	(1) All Economies	(2) Advanced Economies	(3) Emerging Economies
Global Growth$_t$	0.026	-0.057*	0.115***
	(0.022)	(0.032)	(0.035)
Global Interest Rate$_t$	-0.000	-0.001	-0.001
	(0.002)	(0.002)	(0.003)
Global Liquidity Growth$_t$	0.001	-0.003	0.006
	(0.002)	(0.003)	(0.004)
Global Commodity Price$_t$	0.000	0.014	0.002
	(0.006)	(0.012)	(0.008)
Global Risk Aversion$_t$	-0.008**	-0.006*	-0.009*
	(0.003)	(0.004)	(0.005)
Domestic Output Gap$_{i,t}$	0.085***	0.058***	0.110***
	(0.011)	(0.020)	(0.015)
Market Capitalisation$_{i,t}$	0.001	0.001	-0.001
	(0.000)	(0.001)	(0.001)
Domestic Credit$_{i,t}$	0.000	-0.001	0.003***
	(0.001)	(0.001)	(0.001)
Capital Openness$_{i,t}$	-0.000	0.002	-0.001
	(0.001)	(0.001)	(0.001)
Per Capita Income$_{i,t}$	-0.003	-0.002	-0.006*
	(0.002)	(0.005)	(0.003)
Real Appreciation$_{i,t}$	0.002	0.007*	0.002
	(0.002)	(0.004)	(0.003)
Observations	862	381	481
Pseudo R-squared	0.129	0.060	0.236

Notes: Dependent variable is a dummy variable that takes the value of 1 if surges end in stops and 0 for surges ending in normal episodes. Global growth, global liquidity growth, and real appreciation are year-on-year quarterly changes in percent. Global interest rate is in percent per annum. Commodity price index and per capita income are in natural log values multiplied by 10 and 100, respectively. Domestic output gap pertains to the difference of actual and potential output in percent. Market capitalization and domestic credit are in percent of nominal GDP. Capital account openness refers to the standardized Chinn-Ito (2006) index and scaled to 100. Marginal effects are computed at the means of each variable. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.5: Magnitude of Gross Capital Inflows Conditional on Various Episode Types

VARIABLES	(1) All Stops	(2) All Normal	(3) All Surges
Global Growth$_t$	-0.084	0.129**	0.243
	(0.070)	(0.059)	(0.206)
Global Interest Rate$_t$	-0.024***	-0.024***	-0.057***
	(0.008)	(0.004)	(0.015)
Global Liquidity Growth$_t$	0.057**	0.020*	-0.024
	(0.023)	(0.011)	(0.028)
Global Commodity Price$_t$	-0.065	-0.081***	-0.017
	(0.040)	(0.020)	(0.068)
Global Risk Aversion$_t$	-0.038**	-0.011	-0.088***
	(0.015)	(0.010)	(0.032)
Domestic Output Gap$_{i,t}$	0.121***	0.262***	0.380***
	(0.039)	(0.050)	(0.112)
Market Capitalisation$_{i,t}$	0.023***	0.017***	-0.010
	(0.006)	(0.002)	(0.007)
Domestic Credit$_{i,t}$	-0.010*	0.004	0.045***
	(0.006)	(0.003)	(0.013)
Capital Openness$_{i,t}$	-0.001	0.013***	0.018*
	(0.008)	(0.003)	(0.010)
Per Capita Income$_{i,t}$	0.035	0.035***	0.087***
	(0.025)	(0.010)	(0.031)
Real Appreciation$_{i,t}$	0.001	0.009	0.023
	(0.012)	(0.007)	(0.025)
Constant	1.596	0.713	-4.867
	(2.983)	(1.134)	(3.909)
Observations	783	3,885	862
R-squared	0.074	0.107	0.205

Notes: Dependent variable is gross capital inflows in percent of nominal GDP, conditional on being in a given episode type. Global growth, global liquidity growth, and real appreciation are year-on-year quarterly changes in percent. Global interest rate is in percent per annum. Commodity price index and per capita income are in natural log values multiplied by 10 and 100, respectively. Domestic output gap pertains to the difference of actual and potential output in percent. Market capitalization and domestic credit are in percent of nominal GDP. Capital account openness refers to the standardized Chinn-Ito (2006) index and scaled to 100. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.6: Magnitude of Gross Capital Inflows Conditional on being in Surge Types

VARIABLES	(1) All Surges	(2) Surges Leading to Normal	(3) Surges Leading to Stop
Global Growth$_t$	0.243	0.310	-0.145
	(0.206)	(0.275)	(0.329)
Global Interest Rate$_t$	-0.057***	-0.068***	-0.040*
	(0.015)	(0.018)	(0.021)
Global Liquidity Growth$_t$	-0.024	-0.065*	-0.040
	(0.028)	(0.039)	(0.040)
Global Commodity Price$_t$	-0.017	-0.178*	0.263**
	(0.068)	(0.091)	(0.123)
Global Risk Aversion$_t$	-0.088***	-0.075**	-0.120*
	(0.032)	(0.035)	(0.069)
Domestic Output Gap$_{i,t}$	0.380***	0.067	0.475***
	(0.112)	(0.170)	(0.141)
Market Capitalisation$_{i,t}$	-0.010	-0.007	-0.015
	(0.007)	(0.008)	(0.012)
Domestic Credit$_{i,t}$	0.045***	0.040**	0.056**
	(0.013)	(0.016)	(0.022)
Capital Openness$_{i,t}$	0.018*	0.008	0.030***
	(0.010)	(0.015)	(0.008)
Per Capita Income$_{i,t}$	0.087***	0.110***	0.037
	(0.031)	(0.037)	(0.038)
Real Appreciation$_{i,t}$	0.023	0.031	0.058
	(0.025)	(0.029)	(0.053)
Constant	-4.867	0.978	-13.100**
	(3.909)	(4.801)	(6.373)
Observations	862	547	315
R-squared	0.205	0.188	0.264

Notes: Dependent variable is gross capital inflows in percent of nominal GDP conditional on being in surge types. Global growth, global liquidity growth, and real appreciation are year-on-year quarterly changes in percent. Global interest rate is in percent per annum. Commodity price index and per capita income are in natural log values multiplied by 10 and 100, respectively. Domestic output gap pertains to the difference of actual and potential output in percent. Market capitalization and domestic credit are in percent of nominal GDP. Capital account openness refers to the standardized Chinn-Ito (2006) index and scaled to 100. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.7: Magnitude of Gross Capital Inflows Conditional on being in Surge Types, Advanced and Emerging Economies Split

VARIABLES	(1) All Surges (Advanced)	(2) Surges Leading to Normal (Advanced)	(3) Surges Leading to Stop (Advanced)	(4) All Surges (Emerging)	(5) Surges Leading to Normal (Emerging)	(6) Surges Leading to Stop (Emerging)
Global Growth$_t$	-0.531	-0.523	-0.430	0.330***	0.280**	0.047
	(0.484)	(0.728)	(0.750)	(0.123)	(0.138)	(0.349)
Global Interest Rate$_t$	-0.092***	-0.099***	-0.101	-0.005	-0.003	-0.032
	(0.027)	(0.029)	(0.064)	(0.009)	(0.010)	(0.027)
Global Liquidity Growth$_t$	-0.033	-0.100	-0.078	0.026	0.041*	-0.051
	(0.045)	(0.062)	(0.092)	(0.021)	(0.022)	(0.050)
Global Commodity Price$_t$	-0.079	-0.247	0.174	-0.054	-0.029	-0.055
	(0.192)	(0.236)	(0.362)	(0.040)	(0.050)	(0.087)
Global Risk Aversion$_t$	-0.154**	-0.106	-0.387**	-0.028	-0.053***	-0.003
	(0.066)	(0.065)	(0.193)	(0.021)	(0.019)	(0.051)
Domestic Output Gap$_{i,t}$	0.751*	0.185	1.694*	0.332***	-0.002	0.438***
	(0.429)	(0.418)	(0.869)	(0.059)	(0.076)	(0.086)
Market Capitalisation$_{i,t}$	0.002	0.035**	-0.047*	0.000	-0.007	0.010
	(0.014)	(0.018)	(0.026)	(0.006)	(0.007)	(0.009)
Domestic Credit$_{i,t}$	0.063***	0.047**	0.085**	0.010*	0.011	0.001
	(0.019)	(0.021)	(0.043)	(0.006)	(0.010)	(0.007)
Capital Openness$_{i,t}$	-0.012	-0.032	0.014	0.035***	0.038***	0.023***
	(0.025)	(0.032)	(0.038)	(0.005)	(0.007)	(0.009)
Per Capita Income$_{i,t}$	0.349***	0.356***	-0.098	0.028*	0.012	0.098**
	(0.096)	(0.101)	(0.231)	(0.015)	(0.015)	(0.038)
Real Appreciation$_{i,t}$	0.042	0.025	0.025	0.009	0.019**	0.049
	(0.071)	(0.102)	(0.109)	(0.012)	(0.009)	(0.044)
Constant	-21.808*	-14.219	10.377	-0.198	0.160	-3.625
	(11.437)	(13.944)	(25.813)	(2.195)	(2.506)	(4.789)
Observations	381	262	119	481	285	196
R-squared	0.219	0.229	0.334	0.354	0.312	0.401

Notes: Dependent variable is gross capital inflows in percent of nominal GDP conditional on being in surge types. Global growth, global liquidity growth, and real appreciation are year-on-year quarterly changes in percent. Global interest rate is in percent per annum. Commodity price index and per capita income are in natural log values multiplied by 10 and 100, respectively. Domestic output gap pertains to the difference of actual and potential output in percent. Market capitalization and domestic credit are in percent of nominal GDP. Capital account openness refers to the standardized Chinn-Ito (2006) index and scaled to 100. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.8: Sensitivity Test Using Lagged Value of the Regressors

VARIABLES	(1) All Economies	(2) Advanced Economies	(3) Emerging Economies	(4) All Surges	(5) Surges Leading to Normal	(6) Surges Leading to Stop	(7) All Surges Advanced	(8) All Surges Emerging
Global Growth$_{t-1}$	0.027	-0.034	0.099***	0.438**	0.505**	0.083	-0.100	0.339***
	(0.022)	(0.030)	(0.034)	(0.180)	(0.219)	(0.354)	(0.430)	(0.109)
Global Interest Rate$_{t-1}$	-0.002	-0.001	-0.003	-0.047***	-0.052***	-0.040**	-0.081***	-0.005
	(0.002)	(0.002)	(0.003)	(0.013)	(0.015)	(0.019)	(0.025)	(0.007)
Global Liquidity Growth$_{t-1}$	0.004*	0.002	0.006	-0.028	-0.064*	-0.045	-0.037	0.017
	(0.002)	(0.003)	(0.004)	(0.028)	(0.038)	(0.038)	(0.049)	(0.019)
Global Commodity Price$_{t-1}$	0.000	0.015	-0.001	0.046	-0.109	0.307**	0.104	-0.053
	(0.006)	(0.011)	(0.009)	(0.067)	(0.086)	(0.131)	(0.202)	(0.041)
Global Risk Aversion$_{t-1}$	-0.012***	-0.010**	-0.012**	-0.055	-0.034	-0.110	-0.069	-0.028
	(0.003)	(0.004)	(0.005)	(0.039)	(0.044)	(0.074)	(0.093)	(0.020)
Domestic Output Gap$_{i,t-1}$	0.081***	0.069***	0.089***	0.300**	-0.019	0.443***	0.519	0.303***
	(0.011)	(0.020)	(0.014)	(0.117)	(0.166)	(0.163)	(0.465)	(0.061)
Market Capitalisation$_{i,t-1}$	0.001	0.001	-0.001	-0.009	-0.002	-0.017	0.002	0.002
	(0.000)	(0.001)	(0.001)	(0.007)	(0.008)	(0.013)	(0.015)	(0.006)
Domestic Credit$_{i,t-1}$	0.001	-0.001*	0.003***	0.041***	0.033**	0.056**	0.057***	0.009
	(0.001)	(0.001)	(0.001)	(0.012)	(0.015)	(0.023)	(0.019)	(0.006)
Capital Openness$_{i,t-1}$	-0.000	0.002*	-0.001	0.017*	0.011	0.027***	-0.016	0.036***
	(0.001)	(0.001)	(0.001)	(0.010)	(0.015)	(0.008)	(0.024)	(0.005)
Per Capita Income$_{i,t-1}$	-0.002	-0.003	-0.003	0.097***	0.115***	0.056	0.363***	0.038**
	(0.002)	(0.004)	(0.003)	(0.033)	(0.039)	(0.040)	(0.102)	(0.015)
Real Appreciation$_{i,t-1}$	0.000	0.003	-0.001	0.011	0.020	0.049	0.042	-0.001
	(0.002)	(0.004)	(0.003)	(0.022)	(0.025)	(0.048)	(0.070)	(0.010)
Constant				-9.570***	-3.936	-17.058**	-33.131***	-0.874
				(3.597)	(4.357)	(7.003)	(11.680)	(2.125)
Estimation	Probit	Probit	Probit	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS
Observations	858	379	479	858	546	312	379	479
R-squared	0.134	0.070	0.212	0.193	0.174	0.262	0.198	0.353

Notes: Columns (1) to (3) show the marginal effects (at means) of probit estimates for the occurrence of surges ending in stops for the all, advanced and emerging economies. Dependent variables for Columns (1) to (3) are dummy variable which takes the value of 1 if surges lead to stops and 0 for surges ending in normal episode. R-squared refers to Pseudo R-squared. Columns (4) to (6) test the significance of global and domestic factors on the magnitude of gross inflows for surges and its two types. Columns (7) and (8) present the results for all surges split by economy types. Dependent variables for Columns (4) to (8) are gross capital inflows in percent of nominal GDP conditional on being in surge types. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.9: Sensitivity Test Excluding Real Exchange Rate Appreciation

VARIABLES	(1) All Economies	(2) Advanced Economies	(3) Emerging Economies	(4) All Surges	(5) Surges Leading to Normal	(6) Surges Leading to Stop	(7) All Surges Advanced	(8) All Surges Emerging
Global Growth$_t$	0.013	-0.054*	0.066**	0.182	0.336	-0.489	-0.527	0.205
	(0.021)	(0.032)	(0.030)	(0.198)	(0.254)	(0.376)	(0.484)	(0.128)
Global Interest Rate$_t$	-0.001	-0.001	-0.003	-0.053***	-0.060***	-0.047**	-0.091***	-0.003
	(0.002)	(0.002)	(0.003)	(0.014)	(0.016)	(0.022)	(0.027)	(0.008)
Global Liquidity Growth$_t$	0.001	-0.002	0.005	-0.027	-0.067*	-0.046	-0.027	0.015
	(0.002)	(0.003)	(0.004)	(0.027)	(0.037)	(0.039)	(0.046)	(0.020)
Global Commodity Price$_t$	0.001	0.013	0.002	0.009	-0.150*	0.346***	-0.079	-0.032
	(0.006)	(0.012)	(0.008)	(0.066)	(0.086)	(0.129)	(0.193)	(0.040)
Global Risk Aversion$_t$	-0.008***	-0.006	-0.010**	-0.085***	-0.067**	-0.119*	-0.153**	-0.035*
	(0.003)	(0.004)	(0.005)	(0.030)	(0.033)	(0.063)	(0.065)	(0.019)
Domestic Output Gap$_{i,t}$	0.078***	0.059***	0.089***	0.325***	0.077	0.364**	0.759*	0.265***
	(0.010)	(0.020)	(0.015)	(0.106)	(0.150)	(0.143)	(0.429)	(0.064)
Market Capitalisation$_{i,t}$	0.000	0.001	-0.000	-0.009	-0.005	-0.014	0.003	0.002
	(0.000)	(0.001)	(0.001)	(0.006)	(0.006)	(0.012)	(0.014)	(0.005)
Domestic Credit$_{i,t}$	0.000	-0.001	0.003***	0.044***	0.039***	0.055**	0.063***	0.009*
	(0.001)	(0.001)	(0.001)	(0.012)	(0.015)	(0.021)	(0.019)	(0.005)
Capital Openness$_{i,t}$	-0.001	0.002	-0.002**	0.016*	0.010	0.025***	-0.014	0.032***
	(0.001)	(0.001)	(0.001)	(0.009)	(0.014)	(0.009)	(0.025)	(0.005)
Per Capita Income$_{i,t}$	-0.000	-0.002	-0.001	0.082***	0.099***	0.038	0.350***	0.035**
	(0.002)	(0.005)	(0.003)	(0.028)	(0.032)	(0.039)	(0.096)	(0.015)
Constant				-5.325	0.299	-14.941**	-21.882*	-0.907
				(3.782)	(4.616)	(6.271)	(11.408)	(2.161)
Estimation	Probit	Probit	Probit	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS
Observations	899	381	518	899	580	319	381	518
R-squared	0.116	0.053	0.199	0.199	0.189	0.242	0.218	0.304

Notes: Columns (1) to (3) show the marginal effects (at means) of probit estimates for the occurrence of surges ending in stops for the all, advanced and emerging economies. Dependent variables for Columns (1) to (3) are dummy variable which takes the value of 1 if surges lead to stops and 0 for surges ending in normal episode. R-squared refers to Pseudo R-squared. Columns (4) to (6) test the significance of global and domestic factors on the magnitude of gross inflows for surges and its two types. Columns (7) and (8) present the results for all surges split by economy types. Dependent variables for Columns (4) to (8) are gross capital inflows in percent of nominal GDP conditional on being in surge types. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.10: Sensitivity Test Including Regional Contagion Dummy

VARIABLES	(1) All Economies	(2) Advanced Economies	(3) Emerging Economies	(4) All Surges	(5) Surges Leading to Normal	(6) Surges Leading to Stop	(7) All Surges Advanced	(8) All Surges Emerging
Global Growth$_t$	0.026	-0.060*	0.113***	0.226	0.303	-0.083	-0.406	0.335***
	(0.022)	(0.032)	(0.035)	(0.206)	(0.281)	(0.333)	(0.487)	(0.127)
Global Interest Rate$_t$	-0.000	-0.001	-0.001	-0.060***	-0.068***	-0.047**	-0.098***	-0.004
	(0.002)	(0.002)	(0.003)	(0.015)	(0.018)	(0.023)	(0.028)	(0.009)
Global Liquidity Growth$_t$	0.001	-0.003	0.007	-0.021	-0.065*	-0.037	-0.035	0.025
	(0.002)	(0.003)	(0.004)	(0.028)	(0.039)	(0.040)	(0.044)	(0.021)
Global Commodity Price$_t$	0.000	0.013	0.002	0.002	-0.174*	0.293**	-0.035	-0.056
	(0.006)	(0.012)	(0.009)	(0.070)	(0.091)	(0.127)	(0.194)	(0.040)
Global Risk Aversion$_t$	-0.008**	-0.006	-0.010*	-0.100***	-0.077**	-0.157**	-0.173**	-0.026
	(0.003)	(0.004)	(0.006)	(0.034)	(0.036)	(0.076)	(0.067)	(0.021)
Domestic Output Gap$_{i,t}$	0.085***	0.059***	0.112***	0.428***	0.072	0.632***	0.675	0.326***
	(0.011)	(0.020)	(0.015)	(0.122)	(0.173)	(0.163)	(0.422)	(0.068)
Market Capitalisation$_{i,t}$	0.001	0.000	-0.001	-0.010	-0.007	-0.016	0.009	0.001
	(0.000)	(0.001)	(0.001)	(0.007)	(0.008)	(0.011)	(0.013)	(0.006)
Domestic Credit$_{i,t}$	0.000	-0.001	0.004***	0.044***	0.040**	0.055***	0.064***	0.010*
	(0.001)	(0.001)	(0.001)	(0.012)	(0.016)	(0.021)	(0.019)	(0.006)
Capital Openness$_{i,t}$	-0.000	0.002	-0.001	0.018*	0.008	0.033***	-0.015	0.035***
	(0.001)	(0.001)	(0.001)	(0.010)	(0.015)	(0.009)	(0.024)	(0.005)
Per Capita Income$_{i,t}$	-0.003	-0.003	-0.006*	0.086***	0.110***	0.035	0.358***	0.028*
	(0.002)	(0.005)	(0.003)	(0.031)	(0.037)	(0.040)	(0.096)	(0.015)
Real Appreciation$_{i,t}$	0.002	0.008*	0.002	0.022	0.031	0.042	0.025	0.009
	(0.002)	(0.004)	(0.003)	(0.025)	(0.029)	(0.050)	(0.070)	(0.012)
Regional Contagion$_{i,t}$	-0.003	0.090	-0.046	-1.395**	-0.288	-3.184***	-5.458***	0.129
	(0.053)	(0.100)	(0.068)	(0.690)	(0.990)	(1.057)	(1.757)	(0.461)
Constant				-5.316	0.901	-13.585**	-24.379**	-0.181
				(3.901)	(4.757)	(6.463)	(11.459)	(2.199)
Estimation	Probit	Probit	Probit	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS
Observations	862	381	481	862	547	315	381	481
R-squared	0.129	0.061	0.237	0.209	0.189	0.288	0.236	0.355

Notes: Regional contagion is a dummy variable which takes the value of 1 if more than half of the economies in the region are experiencing surges and 0 if no or less than half of the economies in the region are experiencing a surge. Columns (1) to (3) show the marginal effects (at means) of probit estimates for the occurrence of surges ending in stops for the all, advanced and emerging economies. Dependent variables for Columns (1) to (3) are dummy variable which takes the value of 1 if surges lead to stops and 0 for surges ending in normal episode. R-squared refers to Pseudo R-squared. Columns (4) to (6) test the significance of global and domestic factors on the magnitude of gross inflows for surges and its two types. Columns (7) and (8) present the results for all surges split by economy types. Dependent variables for Columns (4) to (8) are gross capital inflows in percent of nominal GDP conditional on being in surge types. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.11: Sensitivity Test Using Eight Quarters of Normal Episode as Cut-Off

VARIABLES	(1) All Economies	(2) Advanced Economies	(3) Emerging Economies	(4) All Surges	(5) Surges Leading to Normal	(6) Surges Leading to Stop	(7) All Surges Advanced	(8) All Surges Emerging
Global Growth$_t$	0.021	-0.019	0.047	0.243	0.369	-0.120	-0.531	0.330***
	(0.023)	(0.035)	(0.033)	(0.206)	(0.317)	(0.280)	(0.484)	(0.123)
Global Interest Rate$_t$	-0.000	0.001	-0.001	-0.057***	-0.077***	-0.025	-0.092***	-0.005
	(0.002)	(0.002)	(0.003)	(0.015)	(0.021)	(0.017)	(0.027)	(0.009)
Global Liquidity Growth$_t$	-0.001	-0.006*	0.007*	-0.024	-0.095**	-0.008	-0.033	0.026
	(0.003)	(0.003)	(0.004)	(0.028)	(0.041)	(0.040)	(0.045)	(0.021)
Global Commodity Price$_t$	-0.001	0.019	-0.009	-0.017	-0.265***	0.249**	-0.079	-0.054
	(0.007)	(0.013)	(0.009)	(0.068)	(0.096)	(0.118)	(0.192)	(0.040)
Global Risk Aversion$_t$	-0.008**	-0.001	-0.015***	-0.088***	-0.066*	-0.098*	-0.154**	-0.028
	(0.003)	(0.004)	(0.005)	(0.032)	(0.038)	(0.057)	(0.066)	(0.021)
Domestic Output Gap$_{i,t}$	0.105***	0.080***	0.123***	0.380***	0.075	0.466***	0.751*	0.332***
	(0.013)	(0.022)	(0.016)	(0.112)	(0.209)	(0.134)	(0.429)	(0.059)
Market Capitalisation$_{i,t}$	0.001	0.001	-0.001	-0.010	-0.008	-0.014	0.002	0.000
	(0.001)	(0.001)	(0.001)	(0.007)	(0.009)	(0.010)	(0.014)	(0.006)
Domestic Credit$_{i,t}$	0.000	-0.001	0.004***	0.045***	0.047***	0.048***	0.063***	0.010*
	(0.001)	(0.001)	(0.001)	(0.013)	(0.018)	(0.018)	(0.019)	(0.006)
Capital Openness$_{i,t}$	0.001	0.001	0.002**	0.018*	0.001	0.031***	-0.012	0.035***
	(0.001)	(0.001)	(0.001)	(0.010)	(0.017)	(0.007)	(0.025)	(0.005)
Per Capita Income$_{i,t}$	-0.001	0.003	-0.008**	0.087***	0.126***	0.044	0.349***	0.028*
	(0.003)	(0.005)	(0.004)	(0.031)	(0.043)	(0.029)	(0.096)	(0.015)
Real Appreciation$_{i,t}$	0.001	0.004	0.003	0.023	0.020	0.070	0.042	0.009
	(0.003)	(0.004)	(0.003)	(0.025)	(0.029)	(0.054)	(0.071)	(0.012)
Constant				-4.867	3.651	-13.549**	-21.808*	-0.198
				(3.909)	(5.086)	(6.304)	(11.437)	(2.195)
Estimation	Probit	Probit	Probit	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS
Observations	862	381	481	862	474	388	381	481
R-squared	0.139	0.076	0.227	0.205	0.209	0.239	0.219	0.354

Notes: Columns (1) to (3) show the marginal effects (at means) of probit estimates for the occurrence of surges ending in stops for the all, advanced and emerging economies. Dependent variables for Columns (1) to (3) are dummy variable which takes the value of 1 if surges lead to stops and 0 for surges ending in normal episode. R-squared refers to Pseudo R-squared. Columns (4) to (6) test the significance of global and domestic factors on the magnitude of gross inflows for surges and its two types. Columns (7) and (8) present the results for all surges split by economy types. Dependent variables for Columns (4) to (8) are gross capital inflows in percent of nominal GDP conditional on being in surge types. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.12: Sensitivity Test Removing Global Interest Rate

VARIABLES	(1) All Economies	(2) Advanced Economies	(3) Emerging Economies	(4) All Surges	(5) Surges Leading to Normal	(6) Surges Leading to Stop	(7) All Surges Advanced	(8) All Surges Emerging
Global Growth$_t$	0.027	-0.054*	0.117***	0.451**	0.496*	0.098	-0.127	0.342***
	(0.022)	(0.031)	(0.033)	(0.199)	(0.274)	(0.283)	(0.443)	(0.118)
Global Liquidity Growth$_t$	0.001	-0.003	0.006	-0.024	-0.062	-0.041	-0.019	0.025
	(0.002)	(0.003)	(0.004)	(0.028)	(0.039)	(0.040)	(0.045)	(0.021)
Global Commodity Price$_t$	0.001	0.014	0.003	0.049	-0.090	0.293**	0.035	-0.049
	(0.006)	(0.011)	(0.008)	(0.065)	(0.085)	(0.126)	(0.187)	(0.038)
Global Risk Aversion$_t$	-0.008***	-0.006	-0.009	-0.059**	-0.043	-0.094	-0.098*	-0.026
	(0.003)	(0.004)	(0.005)	(0.030)	(0.033)	(0.061)	(0.059)	(0.020)
Domestic Output Gap$_{i,t}$	0.085***	0.057***	0.110***	0.375***	0.073	0.468***	0.710*	0.332***
	(0.011)	(0.020)	(0.015)	(0.112)	(0.171)	(0.140)	(0.427)	(0.059)
Market Capitalisation$_{i,t}$	0.001	0.001	-0.001	-0.009	-0.004	-0.015	0.005	0.000
	(0.000)	(0.001)	(0.001)	(0.007)	(0.008)	(0.012)	(0.014)	(0.006)
Domestic Credit$_{i,t}$	0.000	-0.001	0.003***	0.043***	0.037**	0.055**	0.059***	0.010*
	(0.001)	(0.001)	(0.001)	(0.013)	(0.016)	(0.022)	(0.019)	(0.006)
Capital Openness$_{i,t}$	-0.000	0.002	-0.001	0.019*	0.011	0.032***	-0.005	0.035***
	(0.001)	(0.001)	(0.001)	(0.010)	(0.015)	(0.008)	(0.025)	(0.005)
Per Capita Income$_{i,t}$	-0.003	-0.002	-0.006*	0.087***	0.114***	0.030	0.392***	0.028*
	(0.002)	(0.004)	(0.003)	(0.032)	(0.037)	(0.038)	(0.096)	(0.015)
Real Appreciation$_{i,t}$	0.002	0.007*	0.002	0.019	0.026	0.055	0.037	0.008
	(0.002)	(0.004)	(0.003)	(0.025)	(0.029)	(0.052)	(0.071)	(0.012)
Constant				-9.720**	-5.354	-15.548**	-34.570***	-0.517
				(3.790)	(4.595)	(6.408)	(10.737)	(1.971)
Estimation	Probit	Probit	Probit	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS
Observations	862	381	481	862	547	315	381	481
R-squared	0.129	0.059	0.236	0.198	0.176	0.262	0.207	0.354

Notes: Columns (1) to (3) show the marginal effects (at means) of probit estimates for the occurrence of surges ending in stops for the all, advanced and emerging economies. Dependent variables for Columns (1) to (3) are dummy variable which takes the value of 1 if surges lead to stops and 0 for surges ending in normal episode. R-squared refers to Pseudo R-squared. Columns (4) to (6) test the significance of global and domestic factors on the magnitude of gross inflows for surges and its two types. Columns (7) and (8) present the results for all surges split by economy types. Dependent variables for Columns (4) to (8) are gross capital inflows in percent of nominal GDP conditional on being in surge types. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.13: Sensitivity Test Using Domestic Credit Growth

VARIABLES	(1) All Economies	(2) Advanced Economies	(3) Emerging Economies	(4) All Surges	(5) Surges Leading to Normal	(6) Surges Leading to Stop	(7) All Surges Advanced	(8) All Surges Emerging
Global Growth$_t$	0.042*	-0.038	0.122***	0.103	0.047	0.228	-0.665	0.311**
	(0.022)	(0.032)	(0.034)	(0.206)	(0.258)	(0.413)	(0.490)	(0.122)
Global Interest Rate$_t$	0.000	-0.000	-0.001	-0.024	-0.043***	0.016	-0.057***	-0.001
	(0.002)	(0.002)	(0.003)	(0.016)	(0.013)	(0.037)	(0.021)	(0.010)
Global Liquidity Growth$_t$	0.003	-0.002	0.007*	-0.027	-0.052	-0.035	-0.027	0.030
	(0.002)	(0.003)	(0.004)	(0.028)	(0.035)	(0.039)	(0.048)	(0.021)
Global Commodity Price$_t$	0.002	0.006	0.000	0.077	0.018	0.174	0.388**	-0.058
	(0.006)	(0.011)	(0.009)	(0.069)	(0.091)	(0.119)	(0.173)	(0.039)
Global Risk Aversion$_t$	-0.008**	-0.007	-0.007	-0.069**	-0.059	-0.078	-0.133**	-0.026
	(0.003)	(0.004)	(0.005)	(0.031)	(0.036)	(0.061)	(0.067)	(0.021)
Domestic Output Gap$_{i,t}$	0.086***	0.062***	0.104***	0.266**	-0.036	0.435***	0.826*	0.321***
	(0.011)	(0.021)	(0.014)	(0.115)	(0.178)	(0.146)	(0.424)	(0.061)
Market Capitalisation$_{i,t}$	0.001**	0.000	0.001*	0.006*	0.004	0.008	0.002	0.005
	(0.000)	(0.001)	(0.001)	(0.004)	(0.005)	(0.005)	(0.012)	(0.004)
Domestic Credit Growth$_{i,t}$	-0.006	-0.011	-0.001	0.667***	0.730***	0.457**	1.250***	0.084**
	(0.006)	(0.008)	(0.011)	(0.175)	(0.215)	(0.232)	(0.297)	(0.038)
Capital Openness$_{i,t}$	0.000	0.002	-0.001	0.022**	0.018	0.028***	0.045**	0.032***
	(0.001)	(0.001)	(0.001)	(0.009)	(0.012)	(0.009)	(0.020)	(0.005)
Per Capita Income$_{i,t}$	-0.002	-0.002	-0.001	0.126***	0.119***	0.131***	0.171**	0.044***
	(0.002)	(0.005)	(0.003)	(0.028)	(0.033)	(0.042)	(0.082)	(0.013)
Real Appreciation$_{i,t}$	0.002	0.007*	0.001	0.014	0.030	0.003	0.009	0.011
	(0.002)	(0.004)	(0.003)	(0.024)	(0.030)	(0.042)	(0.061)	(0.012)
Constant				-11.089***	-7.424	-16.824**	-27.199**	-0.954
				(4.213)	(5.216)	(6.907)	(10.757)	(2.159)
Estimation	Probit	Probit	Probit	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS
Observations	859	379	480	859	547	312	379	480
R-squared	0.139	0.064	0.228	0.237	0.262	0.208	0.305	0.357

Notes: Columns (1) to (3) show the marginal effects (at means) of probit estimates for the occurrence of surges ending in stops for the all, advanced and emerging economies. Dependent variables for Columns (1) to (3) are dummy variable which takes the value of 1 if surges lead to stops and 0 for surges ending in normal episode. R-squared refers to Pseudo R-squared. Columns (4) to (6) test the significance of global and domestic factors on the magnitude of gross inflows for surges and its two types. Columns (7) and (8) present the results for all surges split by economy types. Dependent variables for Columns (4) to (8) are gross capital inflows in percent of nominal GDP conditional on being in surge types. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Appendix 3.1: Dataset on Capital Inflows

The primary source for the quarterly gross capital inflows data is the Balance of Payments Statistics presented in the International Monetary Fund's (IMF) International Financial Statistics (IFS). We access the data from CEIC Database. We define gross capital inflows to include foreign direct investment liabilities, portfolio investment liabilities and other investment liabilities. Our primary period coverage runs from 1970Q1 to 2014Q4 for 55 economies. Table 3.A1 presents the list countries and their classification along with the dates when quarterly data are first available.

Table 3.A1: Country Sample

Advanced Economies		Emerging Economies	
Economies	Start	Economies	Start
Australia	1Q1970	Argentina	1Q1976
Austria	1Q1970	Bangladesh	1Q1976
Canada	1Q1970	Bolivia	1Q1988
Denmark	1Q1975	Brazil	1Q1975
Finland	1Q1975	Chile	1Q1987
France	1Q1975	Colombia	1Q1992
Germany	1Q1971	Croatia	1Q1993
Greece	1Q1976	Czech Republic	1Q1993
Iceland	1Q1976	Estonia	1Q1992
Ireland	1Q1981	Hungary	4Q1989
Italy	1Q1970	India	1Q1975
Japan	1Q1977	Indonesia	1Q1981
Netherlands	1Q1970	Israel	1Q1972
New Zealand	1Q1980	Jordan	1Q1977
Norway	1Q1975	Korea	1Q1976
Portugal	1Q1975	Latvia	1Q1993
Spain	1Q1975	Lithuania	1Q1993
Sweden	1Q1975	Mexico	1Q1979
United Kingdom	1Q1970	Moldova	1Q1994
United States	1Q1973	Pakistan	1Q1976
		Peru	1Q1977
		Philippines	1Q1977
		Poland	1Q1985
		Romania	1Q1991
		Russia	1Q1994
		Singapore	1Q1986
		Slovakia	1Q1993
		Slovenia	1Q1992
		South Africa	1Q1985
		Sri Lanka	1Q1977
		Taiwan	1Q1981
		Thailand	1Q1976
		Turkey	1Q1984
		Ukraine	1Q1994
		Venezuela	1Q1990

Several modifications are made to make the dataset usable and consistent.

- We select countries closely following the sample of Forbes and Warnock (2012a and 2012b). However, we exclude Belgium-Luxembourg, Guatemala, Hong Kong, Malaysia, Nicaragua, Panama, and Switzerland because they either have short period coverage or limited data availability for capital inflows. But we add four countries to increase the sample size. These countries have longer quarterly gross capital flows data available. They include Jordan, Moldova, Pakistan, and Ukraine.
- IFS reports some values in billions of U.S. dollars, while most are in millions of U.S. dollars. Although the reported unit will not affect the identification of episodes, all values are converted to millions of U.S. dollars for consistency.
- Quarterly data before 2012Q1 follows the IMF's Balance of Payments Manual 5; while data from 2012Q1 onwards follows Balance of Payment Manual 6. The signs of gross inflows categories were made consistent to that using Balance of Payments Manual 5. No attempt was made to reconcile both series as small categorical changes are made for financial account liabilities, mostly involving intra-category changes for foreign direct investment liabilities. The transition from BPM5 to BPM6 does not affect our computed aggregate gross capital inflows.
- Data for Taiwan is sourced from the Central Bank of the Republic of China (Taiwan) accessed through CEIC Database.
- For some countries, data points are extended to increase the available periods in computing for rolling mean and standard deviation. Quarterly data for Chile (1987Q1-1990Q4), Colombia (1992Q1-1995Q4), and Venezuela (1990Q1-1993Q4) are computed by dividing the annual values sourced from the IFS by four. This modification departs from Forbes and Warnock (2012a and 2012b) approach where they do not extend the series for some countries. A justification for extending the series by four years for some countries is that the actual dating of an episode will start after the fourth year or 17th quarter from the start of available data. The extended data points will in effect be used only for computing the rolling mean and rolling standard deviation.
- Data gaps for Greece (1998Q1-1998Q4), Norway (1992Q1-1993Q4), Peru (1985Q1-1990Q4), Poland (1996Q1-1999Q4), and Slovakia (2001Q1-2001Q4) are filled in by using annual values sourced from the IFS or from national sources divided by four. Data gaps are filled in to generate continuous series needed to calculate rolling standard deviation and mean for episode identification.

- Unlike Forbes and Warnock (2012a and 2012b), we do not make adjustments to fill in data gaps in the series. Forbes and Warnock (2012a and 2012b) replace interior missing data with zeros if the string of missing values is surrounded with zeros or other values; and/or used data on net error and omissions to fill in the gaps. In this paper, no adjustments are made so as to consider only those classified financial transactions from the Balance of Payments.
- Similar to Forbes and Warnock (2012a and 2012b) , our computed inflows exclude financial derivative liabilities as unlike other debt instruments, no principal amount is advanced to be repaid and no investment income accrues for derivatives.

Appendix 3.2: Surge Episodes

Table 3.A2: Surge Episodes in Advanced Economies

Economy	Surges Leading to Normal	Surges Leading to Stops	Economy	Surges Leading to Normal	Surges Leading to Stops
Australia	1993q4-1994q3	1982q4		1995q3-1996q3	
	1999q3-1999q4	1988q4-1989q1		1997q4-1999q1	
	2002q3-2002q4	1995q3-1996q3		2003q3-2004q2	
	2006q1-2007q1	2003q4-2004q3		2014q2-2014q4	
Austria	1992q2-1993q1	1999q2-2000q1	Italy	2002q4-2003q4	1990q3-1991q1
	2003q4-2005q4			2005q2-2006q1	
Canada	1996q4-1997q3			2010q4-2011q3	
	2000q1-2001q1		Japan	1986q2-1987q3	
	2006q2-2007q1			1993q4-1995q1	
Denmark	2005q1-2005q4	1985q4-1986q2		2009q4-2011q1	
Finland	1987q1-1987q4	1984q3-1985q1	Netherlands	1997q4-1998q4	
	1996q3-1997q3	2011q3-2011q4		2005q2-2006q2	
	1998q4-1999q1		New Zealand	2000q2-2001q1	1986q3-1987q2
	2004q3-2004q4				2006q3-2007q3
	2010q2-2010q3		Norway	1984q3-1985q3	1982q4
France	1986q3-1987q4	2001q1-2001q2		1992q3-1993q2	1996q4-1997q1
	1989q1-1989q4			2002q4-2003q2	2000q3-2000q4
	1997q4-1998q3				2005q4-2007q1
Germany	1989q2-1990q1	1986q1-1986q4	Portugal	1988q4-1990q2	2003q4-2004q2
	2005q1-2005q4	1992q3-1993q3		1994q3-1995q3	2009q4-2010q2
		2007q2-2008q1		2000q1-2000q4	
Greece	1998q2-1999q1	1989q4-1991q1	Spain	1987q1-1988q2	1993q2-1993q4
	2002q2-2003q1	1995q1-1995q2		1990q4-1991q3	2000q3-2001q1
	2007q1-2007q4	1996q3-1997q1		2014q2-2014q4	
		2005q1-2005q3	Sweden	1985q3-1987q3	1989q2-1990q4
Iceland	1987q1-1987q4			2004q4-2005q3	
	1995q4-1996q4		United Kingdom	1985q3-1987q2	1992q2-1993q4
	1998q3-1999q4				2000q3-2000q4
	2003q3-2006q1				2007q2-2007q4
Ireland	1986q4-1987q3	2006q3-2007q3	United States	1986q1-1986q4	1997q1-1997q3
	1989q3-1990q2			1993q3-1994q3	1999q4-2000q3
	1992q3-1993q4				2006q4-2007q2

Notes: Dating of surge episodes follows Forbes and Warnock (2012a and 2012b). Surge episode for Australia and Norway in 1982Q4 pertains to the last quarter for that surge period.

Table 3.A3: Surge Episodes in Emerging Economies

Economy	Surges Leading to Normal	Surges Leading to Stops	Economy	Surges Leading to Normal	Surges Leading to Stops
Argentina	1990q3-1992q3		Latvia	2003q3-2005q1	2006q2-2007q4
Bangladesh	1989q1-1989q4	2010q1-2010q2	Lithuania	2004q2-2004q3	2005q4-2008q1
	1998q1-1998q3		Mexico	1989q2-1991q2	2007q3-2008q2
	2003q4-2004q1		Moldova		2006q4-2008q3
	2005q1-2005q2		Pakistan	1985q3-1986q2	2005q1-2007q3
	2012q2-2013q2			1988q2-1989q1	
Bolivia	1996q1-1996q3	1997q4-1998q4		1992q4-1993q3	
	2007q2-2008q4			2001q1-2001q4	
Brazil	1990q2-1991q1	1994q1-1994q3		2013q1-2014q4	
	1992q2-1992q3	2006q3-2007q4	Peru	1990q4-1992q3	2006q4-2008q2
	1995q3-1996q2			1994q2-1995q1	
Chile	2005q4-2006q3	2007q4-2008q3	Philippines	1994q2-1994q3	1996q1-1997q1
Colombia	2005q4-2006q3				2005q2-2005q4
	2010q4-2011q2				2006q4-2007q3
Croatia		2002q4-2003q4	Poland	2003q4-2004q4	2007q1-2008q2
Czech Republic	2002q3-2003q1		Romania	1996q4-1997q3	2006q4-2007q4
Estonia	2003q1-2005q1	1997q4-1998q1		2000q4-2001q2	
		2007q1-2007q4		2004q1-2005q3	
Hungary	2002q4-2003q4		Russia		2007q1-2008q1
	2005q1-2005q3		Singapore	1995q2-1996q1	1997q1-1997q2
	2006q3-2008q1				2006q4-2007q4
India	1984q1-1985q2	2006q4-2008q1	Slovakia	2013q2-2014q1	2004q3-2005q2
	1987q1-1987q3		Slovenia	2002q3-2003q3	2007q1-2007q4
	1993q4-1994q4		South Africa	1994q3-1995q4	1997q2-1998q1
	1996q2-1997q1			2003q4-2006q2	
	2003q3-2005q3		Sri Lanka	1989q3-1990q3	1982q4-1983q2
Indonesia	1990q3-1991q2	2005q4-2006q1		2011q1-2013q2	
	1995q2-1996q2		Taiwan	2003q3-2004q2	1986q4-1987q2
	2009q4-2010q4			2009q3-2010q3	1999q2-2000q2
Israel	1989q3-1990q3		Thailand	1987q4-1990q2	1995q2-1996q1
	1999q1-2000q1				2004q3-2006q1
	2006q1-2006q4		Turkey	1990q1-1990q4	1992q3-1993q4
	2012q4-2013q3				2000q1-2000q3
Jordan	2004q4-2005q4	1991q2-1992q1	Ukraine		2004q1-2008q2
	2013q1-2013q4		Venezuela	1996q3-1998q1	2005q1-2005q4
Korea	1988q1-1989q1	2006q2-2007q2		2007q1-2008q1	
	1994q3-1995q4				
	2009q3-2010q2				

Note: Dating of surge episodes follows Forbes and Warnock (2012a and 2012b).

Chapter 4

Are Capital Inflows Expansionary or Contractionary in the Philippines?

4.1 Introduction

Standard open economy models along the lines of Mundell (1963) and Fleming (1962) illustrate that capital inflows lead to currency appreciation, lower net exports and so are contractionary. However, more recent empirical studies in the boom-bust literature, including Caballero (2014) and Milesi-Ferretti and Tille (2011), tell another story. As capital flows to a country, it facilitates domestic credit boom. The conversion of foreign currency to domestic currency technically leads to expansion of domestic money supply putting downward pressure on domestic interest rates. As borrowing costs fall, investment and output increase. And so, capital inflows can be expansionary. But empirical evidence including those from Reinhart and Reinhart (2009), as well as policy dilemma faced by emerging economies indicate that capital inflows lead to currency appreciations, credit booms, and output increases. This could potentially lead to contractions, crises, and reversals of capital inflows. In short, empirics and practice point to an amalgamation of capital flow effects.

In response to this dichotomy of effects, Blanchard et al. (2015 and 2016) propose a portfolio choice model with two asset class.[60] They assume two types of capital inflows, bonds and non-bonds. These two types of capital inflows are assumed to be imperfect substitutes such that there are separate

[60] Throughout this chapter, we cite Blanchard et al. (2015) as it is in their working paper version where they develop and test their model predictions.

interest rates for each. For bonds, it is the policy rate; while for non-bonds, it is the bank borrowing rate. Intuitively, bond inflows are linked to the policy rates as bonds are used as instruments in the conduct of open market operations. Non-bond inflows relate more to borrowing cost as they increase the supply of loanable funds in the financial market. The rationale for differentiating between bond and non-bond inflows is their varying impact on non-bond (borrowing) interest rate which pertains to the cost of financial intermediation. Bond inflows tend to increase the borrowing rate to counteract the expected currency depreciation following currency appreciation; whereas non-bond inflows decrease borrowing rate as the supply loanable funds in the financial markets increases. Blanchard et al. (2015) argues that for a given policy rate, bond inflows lead only to currency appreciation but an increase in borrowing rate and so are contractionary. In contrast, non-bond inflows lead to both currency appreciation and a decline in borrowing rate. Depending on which effect dominates, capital inflows maybe expansionary.

Testing their theoretical model using instrumental variable approach to examine the effect of various types of capital inflows on output and credit growth for 19 emerging countries, Blanchard et al. (2015) find that bond inflows have negative but insignificant sign, while non-bond inflows have positive and significant effect on output and credit growth[61]. However, using cross-country estimation to assess the impact of capital inflows on output hides the fact that countries attract different types of capital inflows and respond to them differently. For instance, the insignificance of bond inflows in their empirical test might be caused by differences in amounts of bond inflows coming in to their emerging economy sample and so would have different effects. For this reason, testing Blanchard's et al. (2015) model on an individual country basis is warranted.

Among the emerging economies included in the Blanchard et al. (2015) empirical test, we focus on the Philippines for the following reasons. First, output growth in the Philippines is largely driven by consumption growth. Net exports and investment account for lower share of output growth. In fact, Philippines relies less on foreign trade as source of growth in contrast to other countries like Indonesia and Malaysia which are commodity exporters, and Korea which is industrialized. Since the Philippines relies less on foreign trade, currency appreciation might not have strong contractionary impact on overall output growth (although overseas remittances do on the current account balance). Second, among the other economies in the sample, the Philippines is less open and attracts less foreign direct investments. Until now, several sectors of the economy are barred to foreign investors. Under such condition, one might expect that the expansionary effect of capital inflows on

[61] Emerging economies include Brazil, Chile, Colombia, Czech Republic, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, Russia, Thailand, Turkey, and South Africa. Period covers 2000 onwards using annual data.

output growth in the Philippines will be weaker compared to other countries that are more open to foreign direct investments. Third, the Philippine central bank intervened in the foreign exchange market more so in the 1970s right up to mid-1997 in order to maintain a stable exchange rate. Having a managed exchange rate system weakens the link between capital inflows and currency appreciation. In summary, the Philippines offers an example of a small open economy that is vulnerable to external forces and faces monetary policy trilemma but at the same time relies less on foreign trade and foreign direct investments. These circumstances run contrary to its neighbours like Indonesia, Malaysia, and Thailand which are export-dependent and highly open to all types of foreign investments. For these reasons, this chapter focuses solely on the Philippines.

Previous studies on capital inflows in the Philippines have focused on describing the patterns and policy responses. Few studies have look on the impact of capital inflows on output or components of output. Even in Lamberte (1995) and Yap (2008) there are no distinctions on whether capital inflows are expansionary or contractionary on output and credit growth, along the lines of Blanchard et al. (2015). It is this gap in the literature that this chapter contributes to.

This chapter asks the following questions. First, are capital inflows expansionary or contractionary on output and credit growth in the Philippines? This allows us to look at the overall impact of capital inflows on output and credit. Second, are bond inflows contractionary and are non-bond inflows expansionary? This tests the model of Blanchard et al. (2015) on whether bond inflows account for the contractionary impact of capital inflows on output and credit. Third, are different types of capital inflows expansionary or contractionary? If the approach of Blanchard et al. (2015) on differentiating between types of capital inflows to explain the contractionary or expansionary effect is the right way to go, we can then expect to see that different types of capital inflows could have the same expansionary or contractionary effects. For example, we expect foreign direct investment inflows to be expansionary and not contractionary. This somehow extends the literature in differentiating between types of capital inflows.

Understanding whether capital inflows are expansionary or contractionary has important implications for literature and policy. On literature, to reconcile the contrasting impact of capital inflows, Blanchard et al. (2015) develop a theoretical model that differentiates between different types of capital inflows. They argue that one type of capital inflows can be expansionary while the other could be contractionary. Using country case study approach will demonstrate that in some cases capital inflows that are expected to be contractionary might turn out to be expansionary, as in

the case for the Philippines, as countries receive different amounts and respond to capital inflows differently. For instance, bond inflows going to productive sectors, such as utilities, mining, and real estate development could have expansionary impact on growth, while bond inflows used for the purpose of interest payments and portfolio diversification would not have any real effects on the economy and so will only lead to currency appreciation, which is contractionary for growth. Therefore, testing the model using a country case study will inform the literature under what conditions the model predictions are valid and whether or not differentiating different types of capital inflows is the right approach in reconciling different effects of capital inflows.

On policy, the main policy recommendation of Blanchard et al. (2015) is to attract expansionary non-bond inflows and control the contractionary bond inflows. But these policy implications might be a mistake for a country whose bond inflows are expansionary. More importantly, such policy implications based on theoretical model, would be counterproductive in developing emerging market bond markets which could be an alternative source of domestic financing from bank lending. Therefore, caution must be made in addressing the contractionary and expansionary impact of capital inflows using different types of inflows.

In order to address the questions set out in this chapter, we use annual data on different types of gross capital inflows to the Philippines from 1977 to 2015. We use the same variables as in the Blanchard's et al. (2015) empirical test. The variables include total inflows, bond inflows, non-bond inflows, foreign direct investment inflows, portfolio equity inflows, other debt inflows, foreign country growth, change in terms of trade, domestic policy rate, and foreign exchange reserves. However, unlike their empirical test, we do not instrument for capital inflows to the Philippines to address potential endogeneity issues. The reasons are as follows. First, previous studies have shown that capital inflows to the Philippines are largely driven by external factors. This suggests that output growth in the Philippines per se does not attract foreign investments. Second, finding a suitable instrument for bond inflows and public bond inflows in line with instrument choice of Blanchard et al. (2015) is extremely difficult as foreign purchases of public bonds depend on sovereign debt risks that vary across countries. For these reasons, we proceed with our empirical test using ordinary least squares estimation but interpret the results in the context of causation.

The results point to several important considerations in explaining the expansionary or contractionary impact of capital inflows to emerging economies. In the Philippines, bond inflows have expansionary impact on output and credit growth, particularly private bond inflows. This could

be explained by the fact that the exchange rate is managed for most part of the sample period, bond market is relatively underdeveloped, bond inflows are small, and some proceeds from debt issuance are channelled to productive investments. In contrast, non-bond inflows have an overall positive effect on output and credit growth despite having restrictions on foreign direct investments. These findings clearly demonstrate that there is a lot to be considered in explaining why the impact of capital inflows in the standard open macro-economy model is at odds with policy experience of emerging economies.

This chapter proceeds as follows. Section 4.2 provides theoretical motivation and empirical literature. Section 4.3 presents the empirical specification. Section 4.4 discusses the patterns and policy responses of capital inflows to the Philippines as well as data description. Section 4.5 discusses the baseline and sensitivity results. Section 4.6 offers concluding remarks.

4.2 Conceptual Framework

4.2.1 Theoretical Motivation

Standard open economy models along the lines of Mundell (1963) and Fleming (1962) indicate that capital inflows lead to currency appreciation which, in turn, lowers net exports and so are contractionary. Crucial to the Mundell-Fleming model is the assumption of perfect capital mobility, where domestic and foreign interest rates are equal such that any disequilibria between the two will trigger capital flows. For instance, a decline in foreign interest rate will lead to an imbalance between domestic and foreign rates. Given that foreign interest rate is now lower than domestic interest rate, this will trigger capital inflows to the domestic economy as it has higher interest rate. If uncovered interest rate parity condition holds, the decline in foreign interest rate, given a constant domestic interest rate and expected future exchange rate, the exchange rate will increase or will lead to currency appreciation. In turn, this appreciation will make domestic exports expensive relative to foreign products and so net exports and output will decline. In this case, capital inflows are contractionary.

However, more recent empirical studies in the boom-bust literature, including Caballero (2014) and Magud et al. (2014), tell another story. As capital flows to a country, it triggers a domestic credit boom. A channel for this is that capital inflows will eventually have to be exchanged or converted to domestic currency. This technically leads to an expansion of money supply, which puts downward

pressure on domestic interest rates. But lower interest rate will reduce the cost of borrowing, which will increase investment and output. In this case, capital inflows are expansionary. Empirical evidence including those from Reinhart and Reinhart (2009), as well as policy dilemma faced by emerging economies indicate that capital inflows lead to currency appreciations, credit booms, and output increases. This could potentially lead to contractions, crises, and reversals of capital inflows. In short, theory and empirics point to an amalgamation of capital flows effects.

In response to this dichotomy of capital flows effects, Blanchard et al. (2015) propose a portfolio choice model. They assume two types of capital inflows, bond and non-bond inflows. Bond inflows pertain to portfolio debt liabilities while non-bond inflows include foreign direct investment, portfolio equity and other investment liabilities of Financial Accounts of the Balance of Payments. These two types of capital inflows are assumed to be imperfect substitutes such that there are separate interest rates for both. For bonds, it is the policy rate, while for non-bonds, it is the non-bond interest rate which relates to the borrowing rate. Blanchard et al. (2015) argue that capital inflows act through both non-bond borrowing rate and the exchange rate as indicated in their general condition equations

$$R_N = 1 + \frac{1}{6}s_B - \frac{1}{6}s_N \tag{1}$$

$$E = 1 + \frac{1}{3}s_B + \frac{1}{6}s_N \tag{2}$$

$$B_F - \overline{B}_F + N_F - \overline{N}_F = \frac{1}{2}\beta s_B + \frac{1}{2}\beta s_N \tag{3}$$

where R_N is the borrowing rate; E is the exchange rate; S_B stands for bond inflows; S_N stands for non-bond inflows; $\overline{B}_F, \overline{N}_F$ are initial bond and non-bond foreign holdings; B_F, N_F are foreign demand for domestic bond and non-bond assets; and β is a coefficient.

Their model predicts that even if the policy rate (the rate on bonds) is given, both bonds and non-bond inflows lead to currency appreciation. However, both types of capital inflows have varying impact on non-bond interest rate. Bond inflows increase non-bond interest rate to offset the expected currency depreciation, following the appreciation due to capital inflows. Non-bond inflows

decrease non-bond interest rate as the increase in non-bond inflows increases the supply of loanable funds in the financial market. The positive effect of lower borrowing rate on domestic demand may then offset the adverse effects of currency appreciation on external demand. Therefore, capital inflows need not, but may, be expansionary even for a given policy rate. It is this theoretical implication which this chapter tests in the context of the Philippines.

4.2.2 Empirical Literature

The economics literature on capital flows is vast. There are several research areas dealing with various aspects of capital flows. One area pertains to the drivers of capital flows across countries. An overarching theme in this strand of the literature looks into factors that matter most for capital flows. These factors are broadly categorized as "push" factors that are external to an economy and "pull" factors that pertain to domestic macroeconomic fundamentals (Calvo et al. 1993 and 1996, Fernandez-Arias, 1996, and Chuhan et al. 1998).[62] Another branch looks into the patterns of capital flows particularly during extreme episodes or crisis periods. For instance, Calvo (1998), Forbes and Warnock (2012a and 2012b), Ghosh et al. (2014) and Reinhart and Reinhart (2009) focus on episodes of sudden stops and capital bonanzas, while Broner et al. (2013) and Milesi-Ferretti and Tille (2011) look at the patterns of capital flows before, during, and after crises. These studies deal with the determinants and patterns of capital inflows as they have important implications on how best to harness and mitigate the advantages and disadvantages of capital flows.

Another important branch in the literature specifically looks at the impact of capital inflows on growth or development. Several studies have looked into whether financial openness leads to stronger growth in developing and emerging economies. For instance, Easterly (2000) finds that average growth rate among emerging countries remained stable at a low level despite a surge of capital flows in the 1990s. Rodrick (1998) shows using a cross-country analysis that financial openness is not associated with higher growth. Prasad et al. (2007) also find no evidence that an increase in foreign capital inflows directly boosts growth. In fact, some studies argue that developing countries that rely less on foreign capital seem to growth faster (Bosworth and Collins, 1999; and Prasad et al. 2007).

Several explanations have been put forth explaining the weak empirical support for financial openness on growth and development (World Bank, 2001). First, the high volatility of capital flows

[62] See Koepke (2015) for detailed literature review on drivers or determinants of capital flows.

may negate their beneficial impact. Assessing the potential benefits of financial openness depends on what other factors are accounted for growth. In a panel data set-up, this could be dampened by the inclusion of dummy variables as controls. In a cross-sectional set-up, accounting for the volatility of capital inflows leads to a positive relation between growth and capital flows. Another explanation for the weak evidence is that capital flows may not be associated with more rapid growth when absorptive capacity is poor. This is the explanation of Lucas (1990) as he argues that not all developing countries exhibit high marginal productivity of capital. In fact, Martin and Taddie (2013) argue that capital inflows can cause adverse selection leading to an overall decline in productivity as less productive investments acquire funding via foreign capital inflows.

A clearer assessment of the impact of financial openness on growth is using a comparable stock or flow measure of financial openness and growth. For instance, Blanchard et al. (2015) assessed the impact of capital inflows on growth and credit using flow measures for 2000 to 2014. In effect, capital inflows are used as a flow measure for financial openness, while real GDP growth is used as a flow measure of output.

Distinct from Blanchard et al. (2015) is their focus on the expansionary and contractionary impact of capital inflows on annual growth and credit change. Standard macroeconomic models show that at a given interest rate, capital inflows lead to currency appreciation which lowers net exports and hence, have contractionary impact on output. However, actual experience of emerging economies point to another channel. Capital inflows can trigger domestic credit booms and so have expansionary impact on output growth and credit (Caballero 2014, and Magud et al. 2014). Using a theoretical model, Blanchard et al. (2015) show that bond inflows can be contractionary while non-bond inflows can be expansionary, depending on which effect dominates determines the overall impact of capital inflows on growth.

Using a cross-country pooled set-up for 19 emerging economies, Blanchard et al. (2015) find that non-bond inflows are expansionary for output growth, while bond inflows have negative insignificant sign, suggesting their potential contractionary effect. They also find that capital inflows have positive but insignificant impact on domestic credit, which is contrary to their model predictions. But the theoretical model and empirical test of Blanchard et al. (2015) leaves room for further research. Using cross-country pooled set-up may lead to insignificant results, such as their insignificant estimated parameter for bond inflows, as individual countries respond differently to capital inflows, possibly due to differences in the amount of capital inflows they receive, their

absorptive capacity, policy responses to capital flows, and level of financial development. Therefore, in order to validate Blanchard's et al. (2015) theoretical model, individual country studies must be considered.

Country case studies in the context of capital inflows have been conducted in the past. For instance, Chamon and Garcia (2016) look into the impact of capital controls for Brazil and find mixed evidence on the effectiveness of capital controls. The authors show that capital controls had some success in segmenting domestic market from the international financial market, but they did not lead to significant changes in the exchange rate. Various papers have also used country-case studies to look at the patterns, effects and policy responses of individual countries in managing capital inflows. The Asian Development Bank Institute commissioned several studies examining how individual Asian economies managed their capital inflows. These include those from Chow (2008) for Singapore, Foong (2008) for Malaysia, and Sangsubhan (2008) for Thailand.

For the Philippines, several authors have already looked at the patterns, determinants, and impact of capital flows. Gochoco-Bautista and Canlas (2002) show that domestic interest rates would have been higher in the absence of capital inflows to the Philippines and that money demand would also have been higher. Gonzales (2008) highlights the external factors, such as low global interest rates, trigger capital inflows to the Philippines, and how the Philippine central bank manages capital inflows. IMF (2015) finds that capital inflows to the Philippines are primary driven by global factors such as global risk aversion and global interest rates and that non-FDI inflows are highly correlated with domestic demand. Lamberte (1995) finds that net portfolio inflows from 1986 to 1994 to the Philippines have been expansionary for domestic investment. Intal and Llanto (1998) argue that the worsening of terms of trade in the Philippines in the 1990s was partly due to the real appreciation of the Philippine peso in line with surging capital inflows. Finally, Yap (2008) concludes that the impact of capital inflows on consumption, investment, and government expenditure appears insignificant based on impulse response functions from a vector error correction model.

However, these country studies focusing on the Philippines do not specifically address whether capital inflows are expansionary or contractionary for output and credit growth in line with Blanchard's et al. (2015). Conversely, the model predictions of Blanchard et al. (2015) have not been tested in an individual country-case study. Focusing on one country case study could potentially shed light under what conditions Blanchard's model predictions hold true or not, while taking into account a country's peculiarities. It is this gap in the literature which this chapter addresses.

4.3 Empirical Specification

In order to address the questions set out in this chapter, we follow the specification of Blanchard et al. (2015) for one country, the Philippines, using annual data from 1977 to 2015. Specifically, we estimate the equation

$$Y_t = \alpha_0 + \beta_1 X_t + \beta_2 Y_{t-1} + \beta_3 Y_t^* + \beta_4 \Delta TOT_t + \beta_5 PR_t + \beta_6 FXR_t + \varepsilon_t \quad (4)$$

where Y_t refers to annual output or credit growth (change in domestic credit as percent to GDP). X_t refers to different types of capital flows. We first include total gross capital inflows as percent of GDP, and then we use bond (portfolio debt inflows) and non-bond split. Unlike Blanchard et al. (2015), we also disaggregate bond inflows into private and public bond inflows as percent of GDP, and then split non-bond inflows into foreign direct investment, portfolio equity, and other debt (investment) inflows. Similar to Blanchard et al. (2015), we include control and policy variables. For controls variables, we include lagged dependent variable Y_{t-1}, growth of major trading partner country Y_t^* (United States), and change in terms of trade ΔTOT. For policy variables, we include domestic interest rate, PR_t, and foreign reserves as percent of GDP, FXR_t. ε_t is the error term.

Unlike Blanchard et al. (2015), we look into different categories of output and credit growth as dependent variables. For output growth, we look into the tradable versus non-tradable sector growth. Differentiating between the two will test whether capital inflows are contractionary for tradable sector growth due to exchange rate appreciation and expansionary for non-tradable sector. For credit growth, we look into credit provided by the banking sector to both public and private sectors to assess which sector capital inflows lead to credit expansion.

In estimating Equation (4), we use different specifications pertaining to different types of gross capital inflows.[63] First, we show the impact of total gross capital inflows on output and credit including control and policy variables. Second, we split total gross capital inflows into bonds and non-bond inflows. Bond inflows pertain to gross portfolio debt inflows, while non-bond inflows include gross foreign direct investment inflows, gross portfolio equity inflows, and gross other

[63] Since our independent variables change given different types of capital inflows, we run ordinary least squares regression instead of seemingly unrelated regression.

investment inflows (other debt inflows). This is in line with theoretical model of Blanchard et al. (2015).

Third, we look into whether there is difference between public and private bond inflows. In Blanchard et al. (2015), they highlight the contractionary impact of bond inflows at given policy rate but they did not differentiate between public and private bond inflows. In this chapter, we test whether the contractionary impact holds for both private and public bond inflows. The rationale for separating the two is to test whether private bond inflows could have expansionary effect as corporations might be issuing bonds to finance business expansions, and so private bond inflows might have expansionary impact on growth. On the other hand, public bonds, particularly sovereign bonds, could be issued to finance government interest payments or for portfolio diversification motive and so they might not have an impact on overall growth.

Fourth, we decompose non-bond inflows into foreign direct investment inflows, portfolio equity inflows, and other debt inflows; and include bond inflows. This provides a disaggregated look into the impact of different types of capital inflows. Lastly, we decompose bond inflows into public and private bond inflows and include the components of non-bond inflows, which are foreign direct investment inflows, portfolio equity inflows, and other debt investment inflows. This will show the expansionary or contractionary impact of the most disaggregate type of gross capital inflows.

Similar to Blanchard et al. (2015), we include control and policy variables in Equation (4). For control variables, lagged dependent variable is included to capture growth dynamics. A positive sign implies high domestic growth momentum, which could attract more foreign investments. U.S. GDP growth is included to account for domestic growth in the Philippines' major trading partner. A significant estimated parameter will suggest strong economic links between the two countries and indicate the importance of U.S. investment in the Philippines. Change in terms of trade is included to capture the effect of currency movement on the trade balance. A negative sign implies that currency appreciation leads to worsening of trade balance due to the loss of export competitiveness. For policy variables, policy rate is included to account for the impact of interest rate on growth; while foreign reserves are added to capture the impact of foreign exchange sterilization on growth. Blanchard et al. (2015) argue that full sterilization of bond inflows have no effect on output and credit growth as it only facilitates change of bond ownership between domestic and foreign investors. But for non-bond inflows, sterilization leads to a greater decline in borrowing rate which further increases credit and output growth.

We estimate Equation (4) using ordinary least squares to show the causation between output and credit growth with capital inflows. Ideally, in establishing whether capital inflows are expansionary or contractionary in the Philippines, we should be using an instrumental variable approach following Blanchard et al. (2015) so as to address potential endogeneity. For instrument variable choice, we can instrument different types of gross capital inflows to the Philippines with the corresponding aggregate capital inflows to Indonesia, Malaysia and Thailand, and instrument policy rate and foreign reserves with U.S. policy rate and a measure of global risk aversion (VXO), respectively. However, we limit our estimation results to ordinary least squares for the following reasons.

First, for an instrumental variable approach to be appropriate, we need to have valid instruments. In this regard, we can follow the approach of Blanchard et al. (2015) in using the aggregate capital inflows to selected emerging economies as instruments for capital inflows to the Philippines. For example, total gross capital inflows to the Philippines can be instrumented using aggregate total gross capital inflows to Indonesia, Malaysia, and Thailand as we expect the total gross inflows pattern to these countries are highly correlated to that for the Philippines. But capital inflows to those countries do not influence output and credit growth in the Philippines. As such, it would then be a valid instrument. However, the Angrist-Pischke multivariate F-test statistic in the first stage for bond inflows is 1.03 which suggests very weak nature of the instrument. This is corroborated by the insignificant estimated parameter from the bivariate regression between bond inflows to the Philippines and emerging East Asia bond inflows, suggesting weak correlation between endogenous and instrument variables.

Furthermore, breaking down bond inflows to private and public bond inflows, we find that the estimated parameter for public bond inflows is also insignificant. This is expected as public bond inflows differ from one country to another as foreign purchases of public bonds are highly responsive to default probability or fiscal position of the issuing country. Consequently, we do not have a strong instrument for bond and public bond inflows to the Philippines following the approach of Blanchard et al. (2015).[64]

[64] We run a test using instrument variable approach following Fuller's (1977) modified limited-information maximum likelihood (FLIML) estimation for several reasons. First, since we have small sample size, we cannot use generalized method of moments as it could lead to biased estimates (Baum et al. 2007, Hayashi 2000, and Wooldridge 2001). Second, two-stage least squares (TSLS) would also be inappropriate given that bond, public bond, and foreign reserves have weak instruments and so would yield biased estimates (Anderson et al. 1982). Third, although limited-information maximum likelihood (LIML) would be an alternative, unfortunately, it does not to have finite sample moments of higher order (Hahn et al. 2004). Fuller's (1977) modified limited-information maximum likelihood (FLIML) addresses small sample size with weak instruments and has finite sample moments (Hahn et al. 2004). In effect, the FLIML modifies the LIML

Second, IMF (2015) and Yap (2008) establish that capital inflows to the Philippines are primary driven by push or global factors including global risk aversion and interest rate differentials. Given their findings, it would be reasonable to assume that gross inflows to the Philippines can be treated as exogenous such that Philippine output and credit growth have no impact on capital flows going to the country. This assumption is in line with previous studies including those from Gochoco-Bautista and Canlas (2002) and Gonzales (2008) where they argue that capital inflows to the Philippines are driven by global or external factors including global investor sentiment, global liquidity, and global interest rate. Given these two points, we proceed using the OLS results in establishing causation between output and credit growth and gross capital inflows to the Philippines.

4.4 Data Sources and Stylized Facts

4.4.1 Capital Flows to the Philippines

Before addressing whether capital inflows are expansionary or contractionary in the Philippines, we first look at an overview of the patterns of different types of capital inflows to the country for the period of 1977-2015. Figure 4.1 presents total gross and net inflows. Figures 4.2 and 4.3 split total gross inflows to bond and non-bond gross inflows (Figure 4.2) as well as the breakdown of different types of non-bond gross inflows (Figure 4.3). Figure 4.4 compares total gross inflows to the Philippines as well as the aggregate gross inflows to Indonesia, Malaysia and Thailand, which we denote as EA inflows. Data on capital inflows are expressed as percent of nominal GDP in US dollars and are taken from the International Monetary Fund's Balance of Payments Statistics. We use data from the IMF instead those from national sources or from the Bangko Sentral ng Pilipinas as we want to be consistent with international classification of different types of capital inflows.[65]

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estimator by subtracting from LIML root, λ_0, a number which is asymptotically negligible as the sample size increases (Davidson and MacKinnon 1993; and Kadiyala and Oberhelman 1992). We used $\alpha = 4$ as it has smaller root mean square (better model fit) and instrument capital inflows to the Philippines using their corresponding aggregate inflows to Indonesia, Malaysia, and Thailand. The results indicate that total gross inflows to the Philippines have expansionary impact on both output and credit growth. Similar to the baseline results, we find non-bond inflows have expansionary effect on output and credit growth, while private bond inflows have expansionary effect on credit. FDI inflows are insignificant and other debt inflows are significant and positive for credit growth, but not for output growth. Likewise, foreign reserves still have contractionary impact on credit. Overall, the key findings from the baseline estimation hold when we use FLIML estimation. The results are available upon request.

[65] Earlier data on Philippine capital account use the convention of inflows and outflows to pertain to the direction on gross flows. As such, we cannot differentiate between domestic and foreign resident driven inflows. Furthermore, earlier data on capital flows classifies different inflows as direct investment, portfolio investment and short- and long-term borrowing. It also includes overseas development aid

Figure 4.1 illustrates the pattern of gross and net inflows. We note several observations. First, notice that the magnitude or size of gross and net inflows are roughly similar in the 1970s and 1980s. This implies that domestic-driven gross capital outflows are relatively small compared to foreign-driven gross capital inflows, such that the net inflows and gross inflows are roughly the same in magnitude.[66] But starting in 1990s, we see a divergence between gross and net inflows reflecting the fact that domestic-driven flows have been increasing in line with capital account liberalization measures implemented in the early 1990s.

Second, the pattern of gross inflows clearly reflects global macroeconomic conditions. Gross inflows amount to more than 5 percent of GDP in the late 1970's, mostly driven by foreign bank inflows caused by petrodollar recycling in the 1970s. However, there was a clear reversal of foreign gross inflows in the early 1980's as the Philippines experienced sovereign debt crisis and massive capital flight triggered by the increase in global interest rates which made debt interest payment burdensome. This pattern is similar in severity as those experienced by Latin American and other economies during the debt crisis of 1980s. Nonetheless, the recovery from the economic collapse of 1983-1985 has been slow until the late 1980's which can be seen in the tepid foreign inflows during the late 1980's. It was only in the early 1990's to mid-1990's when the Philippines experienced an unprecedented surge in gross inflows following the implementation of capital account liberalization measures in 1991 and the return of Philippine assets in international capital markets following the end of debt moratorium imposed by the IMF stabilization programme. But this surge in gross inflows is in line with those experienced by other emerging economies in the mid-1990s, such that the huge inflows to the Philippines are not driven by country-specific factors.

However, the surge was short-lived due to the Asian financial crisis of 1997-98. Gross inflows have been smaller and more volatile in 2000s. Given the low risk aversion and low global interest rate, the Philippines witnessed another episode of surging gross inflows right before the global financial crisis of 2008-09. At the height of the last financial crisis, there was a reversal of foreign-driven gross inflows, but then capital inflows quickly returned to the pre-crisis level in late 2009. Again, this episode of surging gross inflows, following the global financial crisis, is not unique to the Philippines.

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as part of capital account. For these reasons, we limit the use of financial inflows data to the Philippines using the IMF's Balance of Payments Statistics, specifically following Balance of Payments Manual 6.

[66] Values on gross inflows and net inflows for 1983 to 1985 are very similar suggesting that gross outflows are roughly zero. However, this hides the fact that there was a huge capital flight out of the country in line with the economic collapse and debt crisis the country experienced in the early 1980's. Said capital flight is recorded under net errors and omissions of the Balance of Payments Statistics.

Other emerging countries also experienced such massive return of foreign capital driven by very low interest rates in advanced economies. It is around this time that policy makers in emerging economies confront the adverse effects of unfretted gross inflows leading to currency appreciation and asset price inflation, which could have exacerbated financial vulnerabilities in emerging markets once global interest rates begin to rise. Overall, Figure 4.1 tells a story that gross capital inflows in the Philippines have been driven largely by external factors.

Figure 4.2 splits total gross inflows into bond and non-bond inflows. Non-bond inflows clearly follow the pattern of gross inflows, suggesting that bond inflows have been very small relative to other types of gross inflows. In fact, bond inflows have only started to increase in the 1990s when the Philippines started floating public debt instruments in the international capital markets following capital account liberalization measures and the debt restructuring under the Brady plan. Although bond inflows have been very small throughout the late 1970s to early 1990s, there were still bond inflows going to the private sector. The private sector bond inflows go to not only private entities but also quasi-private entities or state-owned enterprises.

Figure 4.3 illustrates the pattern for different types of gross inflows. The dominant type of flows is other debt inflows or other investment liabilities. These are dominantly bank inflows. There are two episodes of strong other debt inflows. The first occurred in the late 1970s in line with government borrowing in the 1970s. The second occurred in the early to mid-1990s. The second episode is primary caused by domestic banks facilitating private sector foreign borrowing. Notice that FDI inflows have been comparatively small compared to other types of inflows. For portfolio equity inflows, the Philippines received a significant amount of foreign inflows of this type in the mid-1990s. This is consistent with the general pattern of increasing portfolio inflows to emerging economies in the mid-1990s (Calvo et al. 1993 and 1996, Lamberte 1995 and Gonzales 2008).

Figure 4.4 shows aggregate gross inflows to Indonesia, Malaysia, and Thailand. The Philippines exhibits a broadly similar pattern such that the correlation between aggregate gross inflows to these countries and the Philippines is very high. But there are marked differences. First, the Philippines had more inflows in the late 1970s in line with its foreign borrowing in the 1970s that led to a debt crisis in the early 1980s unlike Malaysia and Thailand. Second, the Philippines received larger gross inflows prior to the Asian financial crisis. However, this masks the fact that the Philippines received smaller inflows for more than a decade. In other words, the Philippines is a late recipient of gross inflows in the 1990s which shielded it from the worst impact of the Asian financial crisis. Third, gross

inflows to the Philippines came in tune with regional inflows around 2004-2005, reflecting low global risk and interest rate setting.

4.4.2 Policy Responses to Capital Inflows to the Philippines

The patterns of gross capital inflows, discussed in the previous section, have been influenced mainly by global factors. In response to gross inflows, several policy measures were undertaken to try to limit the destabilizing consequences of gross inflows to the Philippines. Specifically, policies implemented in the mid-1990s and in 2000s were geared toward mitigating currency appreciation and encouraging outward investments. Measures in place from 1987 to 1997 are broadly grouped into four categories (Lamberte 1995 and Yap 2008).

The first measure involves the reduction of foreign currency supply by cutting back requests for loan rescheduling under the Paris Club debt program. In addition, the Bangko Sentral ng Pilipinas (BSP) also increased allowable outward investment that can be sourced from the banking system and lifted restrictions on the repatriation of foreign investments made under the debt-to-equity conversion program. Second, to increase the demand for foreign currency, the central bank engaged in sterilized intervention. It did so by buying dollars in the foreign exchange market and then selling government securities in its portfolio to prevent money supply from increasing. This has been the standard sterilization procedure undertaken by the central bank. Third, the BSP instituted several measures to lower the cost of production of exporters to maintain their competitiveness. Specifically, they allowed exporters access to foreign currency denominated loans offered by foreign currency deposit units (FCDUs). Lastly, as prudential measure, the central bank reduced oversold position of banks to prevent banks from speculating in the foreign exchange market.

Following the Asian financial crisis of 1997-98, the BSP instituted regulatory and supervisory reforms to improve risk management, strengthen regulatory framework, and promote transparency. Some of these measures include following international data dissemination standards, compliance with international standards and codes, and participation in the IMF-World Bank Financial Sector Assessment Program. Apart from these measures, the BSP continued to implement measures that reduced the supply of foreign exchange inflows and increased the demand for foreign currency. But in addition to these standard measures, the monetary authority has undertaken new measures to encourage outward investments to reduce capital inflows and reserve accumulation.

Some of these outward investment promotion measures include: encouraging investments by overseas Filipinos using their remittances, encouraging private sector capital outflows by liberalizing foreign exchange transactions such as expanding the use of foreign exchange swaps, increasing the allowable outward investment by residents without prior BSP approval, and increasing the allowable foreign currency purchases of residents from banks to cover payments to beneficiaries for non-trade purposes without support documents.

Among these measures, the most visible policy response undertake by the central bank in response to capital inflows is its sterilized intervention in the foreign exchange market. Yap (2008) argues that intervention had become stronger after the Asian financial crisis when the Philippine peso was allowed to float more freely in the foreign exchange market. This currency intervention was conducted to ease sharp fluctuations in the exchange rate (Gonzales, 2008) in the post-Asian crisis period as shown in Figures 4.5 and 4.6. Gochoco-Bautista and Canlas (2002) find that for the period 1980 to 2000, the exchange rate remained very stable while monetary growth and interest rate exhibited large variability, suggesting currency intervention. Lamberte (1995) estimates the offset coefficient between domestic and foreign assets, and finds that the offset coefficient is -0.88, which is very close to -1, suggesting inefficient sterilization measure.

However, the sterilization intervention of the central bank led to higher domestic interest rate, particularly in the early to mid-1990s. As pointed out by Gochoco-Bautista and Canlas (2002), the mopping up activity of the central bank kept domestic interest rate higher than it would have been without intervention. Given that there are few domestic firms who can tap the international market, the higher interest rate caused domestic firms to channel their foreign borrowing through domestic banks (Intal and Llanto, 1998). This facilitated currency and maturity mismatches in the run up to the Asian financial crisis of 1997-98. However, as a latecomer in the international financial market, the degree of foreign bank lending and currency and maturity mismatches are less pronounced that in other crisis-hit economies in the region. Nonetheless, the private sector has been hardly hit by the crisis due foreign over-borrowing in the early to mid-1990s.

4.4.3 Data Sources

To assess the impact of capital inflows on output and credit growth in the Philippines, we focus on gross capital inflows as we want to assess the impact of foreign-driven inflows into the economy. Using net capital inflows would include domestic-driven inflows whose pattern can be symmetric or

asymmetric with respect to foreign-driven inflows.[67] For this reason, this chapter focuses on gross capital inflows which pertain to foreign resident inflows into the Philippines.

Data on gross capital inflows are taken from the International Monetary Fund's Balance of Payment Statistics following Manual 6. The values are expressed as percentage of nominal GDP, both in millions US dollar. Nominal GDP in US dollars is taken from International Monetary Fund's International Financial Statistics. Data for both are available on an annual basis starting 1977 to 2015.[68] Gross inflows pertain to foreign direct, portfolio equity, portfolio debt, and other investment liabilities of Balance of Payments Statistics. We split bond inflows into public and private bond inflows based on reporting sector. Public bond inflows pertain to portfolio debt liabilities of the central bank and general government, whereas private bond inflows refer to portfolio debt liabilities of depository taking corporations excluding central bank and other sectors.[69]

For dependent variables, data on output growth refers to the year-on-year change of real GDP in billions of Philippine peso from 1977-2015 taken from World Bank's World Development Indicators Database. Growth of tradable sector includes agriculture and manufacturing sectors; while non-tradable includes non-manufacturing industry and services sectors. Data on credit growth pertains to the change in domestic credit measured as the difference between current and previous year's domestic credit as percentage of nominal GDP in billions Philippine Peso, from 1977-2015 taken from International Monetary Fund's Monetary Survey. Domestic credit, specifically, pertains to claims of other depository corporations.

For growth control variables, we include lagged output or credit growth, growth rate of major trading partner (United States), and the change in terms of trade. Data on U.S. output growth are taken from World Bank's World Development Indicators Database. The change in terms of trade is the difference between current and previous year's terms of trade index. Data on terms of trade is taken from World Bank's World Development Indicators Database and refers to Net Barter Terms of

[67] For instance, using net inflows hides the huge decline in net capital inflows in 1983-1985 as domestic investors engage in capital flight recorded in the net errors and omissions. Using gross inflows would then just focus on the foreign-driven capital outflows during the period. Nonetheless, as sensitivity test, we also look into the impact of net capital inflows to the Philippines.

[68] Given the volatile nature of quarterly gross capital inflows, data in this chapter focus on annual gross capital inflows. Furthermore, quarterly output and credit growth are also volatile as they are subject to seasonality effects. Using more volatile higher frequency data on output and credit growth and capital inflows might capture more noise in the data and, hence, lead to inconsistent results. Nonetheless, we run a sensitivity test using quarterly data to assess whether the baseline findings hold at higher frequency data. The results are discussed in Section 4.5.2.

[69] State-owned corporations are classified under private bond inflows.

Trade Index for 1980 onwards using 2000 as base year. For 1976 to 1979, the data was derived from the Terms of Trade Index of the National Bureau of Economic Research (NBER). For policy control variables, we include both Philippine policy rate and foreign reserves. Data on Philippine policy rate is in percent per annum taken from the International Financial Statistics of the International Monetary Fund, while data on foreign reserves refer to reserve asset as percent of nominal GDP in US dollar millions.

4.5 Empirical Analysis

4.5.1 Baseline Results

Tables 4.1 to 4.3 present the OLS estimates for the impact of capital inflows on output and credit growth. Columns (1) and (6) include total gross inflows for both output growth (1) and credit change (6). Columns (2) and (7) differentiate between bond and non-bond inflows. Columns (3) and (8) split bond inflows to private and public bond inflows along with non-bond inflows. Columns (4) and (9) disaggregate non-bond inflows to FDI, portfolio equity and other debt inflows along with bond inflows, while Columns (5) and (10) differentiate all types of capital inflows. Table 4.1 focuses on output and credit growth. Table 4.2 breaks down output growth into tradable and non-tradable sector growth, and Table 4.3 splits credit change to public and private sector credit. Tables 4.1 to 4.3 indicate that we have 39 observations corresponding to annual data from 1977 to 2015, and relatively good model fit given by the R-squared. The results on capital flows will first be discussed, followed by the control variables, and then policy variables.

Tables 4.1 to 4.3 provide clear evidence on the expansionary impact of gross capital inflows on output and credit growth. Total gross inflows have positive and significant effect on both output growth and credit change as illustrated in specification (1). Specifically, a one percent increase in total gross inflows to GDP increases output growth by 0.3 percent and credit growth by 0.9 percent. This finding clearly indicates that capital inflows have an overall positive effect on output and credit in the Philippines. This result holds for both tradable and non-tradable sector growth. Literature on capital inflows shows that capital inflows have expansionary impact on non-tradable sector growth at the expense of tradable sector growth due to currency appreciation (Benigno et al., 2015; Calvo et al., 1993; and Reinhart and Reinhart 2009). However, Table 4.2 indicates that gross inflows have expansionary impact even for the tradable sector in the Philippines despite the Philippine peso being overvalued prior to 1997. A possible explanation for this is that capital inflows to the Philippines help

in the expansion of the tradable sector by providing additional source of financing for both agricultural and manufacturing sectors. Table 4.3 shows that total gross inflows have expansionary effect on banking sector credit to private sector, but not for the public sector.

Across types of capital inflows, Tables 4.1 to 4.3 specifications (2), (4), (7) and (9) illustrate that bond inflows have positive but insignificant effect on output growth but positive and significant impact on credit growth, particularly for the private sector (Table 4.3). These results are inconsistent with Blanchard's et al. (2015) model and empirical results. Their estimates show that bond inflows have negative but insignificant impact on output growth, indicating potential contractionary effect in line with their model predictions. In contrast, Tables 4.1 and 4.2 indicate that bond inflows have positive but insignificant effect on output growth.

There are several plausible explanations for this. First, the contractionary impact of bond inflows on output growth assumes a more flexible exchange rate. In fact, in Blanchard et al. (2015), they cover the period starting 2000 when most emerging economies adapted a more flexible exchange rate regime. In this chapter, the period coverage begins in 1977 when the Philippines have a managed exchange rate regime, which end in the Asian financial crisis of 1997-98. Under such condition, the channel in which capital inflows lead to currency appreciation would be weak. Hence, we do not see the contractionary impact of bond inflows on output. Even accounting for foreign exchange intervention, our estimates indicate that foreign reserves are insignificant for output growth. A related explanation would be that under a fixed or managed exchange rate regime, capital inflows could be larger and more expansionary as having a fixed or managed exchange rate acts as a guarantee for foreign investors, in line with the findings of Magud et al. (2014). Another explanation would be that bond inflows to the Philippines are relatively small (on average 0.8 percent of GDP for 1977 to 2015). This reflects that fact that debt markets in the Philippines are underdeveloped. As such, bond inflows would be too small to have significant impact on the exchange rate for it to be contractionary. Lastly, it is possible that bond inflows can be expansionary depending on whether the debt inflows go to productive investments. Lamberte (1995) argue that net portfolio inflows, mostly bond inflows, from 1986 to 1994 have positive effect on investment in the Philippines. This concurs with the results presented in Tables 4.1 to 4.3.

Similar to Blanchard et al. (2015), bond inflows have positive sign for credit growth but unlike their estimates and theoretical predictions, the results in Tables 4.1 and 4.3 are significant. For instance, a one percent increase in bond inflows to GDP leads to a credit increase of around 1.5 percent of GDP

in Table 4.1. A possible explanation on why bond inflows can be expansionary to credit is that bond inflows and other types of capital inflows might not necessary be imperfect substitutes. In the Blanchard et al. (2015) model, bond and non-bond inflows are treated as imperfect substitutes so that capital inflows can potentially affect the return on non-bonds at a given rate on bonds, which is assumed to be the policy rate. This assumption, although valid, could be simplistic as in some cases both bond and non-bond inflows can in fact complement each other. For instance, both public and private sectors can finance expansions by issuing bond and/or borrowing from the international financial market through the domestic banking system. Intal and Llanto (1998) described the channel through which bond inflows can increase domestic credit. Given that the Philippines have undergone significant capital account liberalization in the early 1990's, very few domestic firms tapped international foreign capital markets. The route taken by domestic firms in the Philippines is through foreign borrowing or through issuance of bond. Both have been coursed through domestic banks which increase private sector credit.

As Tables 4.1 to 4.3 illustrate, bond inflows have expansionary effect on credit change in the Philippines. Disaggregating bond inflows to private and public sectors allows us to know which inflows are expansionary or contractionary. Specifications (3), (5), (8) and (10) in Tables 4.1 to 4.3 clearly indicate that private sector bond inflows account for the expansionary effect of bond inflows to output and credit growth. In fact, most of the estimated coefficients in Tables 4.1 to 4.3 for private bond inflows have positive sign, and most are significant expect for Table 4.2, where private bond inflow is only expansionary for tradable sector growth in specification (5). In contrast, public bond inflows mostly have negative but insignificant effect on output growth and more so for credit change. This indicates that public sector bond inflows could potentially be the type of capital inflows that is contractionary. The expansionary impact of private bond inflows can be explained by the fact that foreign purchases or sales of private sector bonds come mostly from utilities, real estate, manufacturing, mining and banking sectors. Debt issuance of these sectors would have expansionary effect on output and can be coupled with domestic financing, thereby increasing bank credit.

Non-bond inflows have expansionary impact on output and credit growth as shown in specifications (2), (3), (7) and (8) in Tables 4.1 to 4.3. A one percent increase in non-bond inflows to GDP increases output growth by 0.3 percent and credit growth by 0.7 percent. The results hold for the tradable and non-tradable sector growth (Table 4.2) and domestic credit to private sector (Table 4.3). This finding is consistent with the model predictions of Blanchard et al. (2015). These results suggest that the contractionary impact of capital inflows via exchange rate appreciation is offset by the significant

reduction in domestic returns on non-bonds, leading to an overall expansionary impact. Gochoco-Bautista and Canlas (2003) find that in the absence of capital inflows to the Philippines, domestic nominal interest rates would have been substantially higher. Hence, this supports the model predictions of Blanchard et al. (2015).

Looking at different types of non-bond inflows in Tables 4.1 to 4.3 specifications (4), (5), (9), and (10), other debt inflows have positive and significant impact on output growth both for tradable and non-tradable sector growth and credit change to the private sector. A one percent increase in other debt inflows to GDP increases output growth by around 0.3 percent and credit growth by around 0.5 percent. Foreign direct investment inflows have positive but insignificant impact. This runs contrary to the empirical test of Blanchard et al. (2015), where they find a positive and significant impact of FDI gross inflows on output and credit growth for a sample of 19 emerging countries including the Philippines. But this result is not surprising given that the Philippines has several existing restrictions on foreign direct investments and so receives less FDI inflows compared to other countries in the region. Lastly, portfolio equity inflows have negative and insignificant effect.

Among the control variables, we find evidence that output growth in the United States significantly increases output growth in the Philippines, even across tradable and non-tradable sectors. However, we do not find evidence of significant effect of U.S. credit growth on Philippine credit growth. Both lagged dependent variable and change in terms of trade are insignificant. Although both control variables are insignificant, they show the correct sign. Lagged dependent variable has positive sign, implying growth momentum. Change in terms of trade has negative sign across specifications, suggesting the contractionary impact of currency appreciation due to loss of export competitiveness.

For the policy variables, Tables 4.1 to 4.3 indicate that policy rate significantly reduces output and credit growth in the Philippines. For instance, a one percent per annum increase in domestic policy rate lowers output growth by 0.5 percent and credit growth by 0.4 percent. This result is both expected and consistent with Blanchard et al. (2015). In contrast, we find evidence that foreign reserves, which serve as proxy for foreign exchange sterilization measure, significantly lower credit growth, particularly credit to the private sector. This finding is consistent with the empirical test of Blanchard et al. (2015) but at odds with their model predictions. In their model, to leave the exchange rate constant given non-bond inflows, non-bond returns must significantly fall thereby intensifying the expansionary impact of capital inflows on output and credit growth. However, the contractionary impact of foreign exchange sterilization is in line with the actual experience of

emerging countries. For instance, in the Philippines, surging capital inflows, particularly in the early to mid-1990's, were sterilized with higher domestic lending rate to keep the exchange rate stable right up to the Asian financial crisis. As such, domestic bank lending rates remained relatively high in the Philippines, compared to other countries in the East Asian region. This triggered private sector foreign over-borrowing via the domestic banking sector.

Taken together, these results imply that non-bond inflows have significant expansionary impact on both output and credit growth via lower borrowing rates. In fact, borrowing rates would have been higher in the absence of capital inflows as argued by Gochoco-Bautista and Canlas (2003). But capital inflows have been sterilized in the Philippines. This kept the borrowing rate higher than what would have been in the absence of intervention or from falling further in the absence of intervention. The Philippine case then provides a counter example wherein exchange rate intervention may not necessarily lead to lower interest rate given non-bond inflows. This is one argument which might have been overlooked by Blanchard et al. (2015).

4.5.2 Sensitivity Tests

Given the baseline results presented in Tables 4.1 to 4.3, several sensitivity tests are conducted to address potential endogeneity and data considerations. First, given that there could be potential reverse causality between output or credit growth and capital inflows, it would be prudent to address potential endogeneity between these two parameters. One approach is to use lagged values of the regressors. The rationale for doing so is that lagged values of the regressors should not affect current output growth and credit change. Table 4.4 presents the results using lagged values of the regressors. The results are broadly consistent with the baseline results. However, other debt inflows and foreign reserves are now insignificant. Nonetheless, we still see the expansionary impact of total gross inflows, private bond inflows, and non-bond inflows, consistent in Tables 4.1 to 4.3.

Second, given that we used data on gross inflows from 1977 to 2015, several sensitivity tests are conducted addressing data considerations. First, knowing the expansionary impact of gross capital inflows on output and credit in the Philippines, there is merit to assess whether the same hold when we look at net capital inflows. Distinguishing between gross and net inflows is important in the literature as it takes into account the responses of foreign as well as domestic investors. Using gross inflows, the focus is on the impact of foreign-induced capital inflows in the Philippines, while net inflows consider both the actions of foreign and domestic investors. It would be important to assess

whether net inflows themselves have expansionary or contractionary effect. Data on gross capital outflows from the Philippines are taken from the IMF's Balance of Payments Statistics, and net inflows are computed as liabilities minus assets following the Balance of Payments Manual 6.

Table 4.5 presents the OLS results using net inflows. The estimates are similar to the baseline results using gross inflows. Total net inflows, bond net inflows, private bond net inflows, non-bond net inflows, and other debt net inflows have expansionary impact on output and credit growth. However, portfolio equity net inflows are now significant for credit change. In addition, U.S. GDP growth increases output growth and foreign reserves decreases credit change. These results are consistent with the baseline results for gross inflows. These findings indicate that capital inflows, whether gross or net, have expansionary effect on output and credit in the Philippines.

Another data consideration pertains to the treatment of unavailable data. In the IMF's Balance of Payments Statistics, some years have unavailable or have no data, specifically for portfolio equity inflows and public bond inflows. The OLS results presented in Tables 4.1 to 4.3 consider these cases as gross capital inflows having zero values. For instance, data on portfolio equity inflows started only in the early 1990's in line with stock market liberalization measures in the Philippines. As such, data in the 1970's to 1980's should be treated as zeros as there are no foreign capital inflows during that time. Furthermore, indicating zero values for gross inflows would lead to constant sample size of 39 observations in the OLS estimation. However, indicating zero values could potentially bias the results. This could explain why portfolio equity inflows have negative but insignificant values in Tables 4.1 to 4.3.

As sensitivity test, we ran the same estimation removing years when data is unavailable, instead of treating them as zeros. Table 4.6 presents the results when we remove the zeros from portfolio equity inflows and public bond inflows when data are unavailable. Again, the results are broadly consistent with baseline results in Tables 4.1 to 4.3; however portfolio equity inflows now have positive but still insignificant sign. But we note that foreign direct inflows have negative sign albeit insignificant. The estimates validate the baseline results such that total gross inflows, bond inflows, private bond inflows, non-bond inflows, and other debt inflows have expansionary impact on output and credit growth in the Philippines.

Since our sample period covers almost four decades of data, a lot of structural changes could have taken place. One would be the shift in monetary policy stance from monetary aggregate targeting to

inflation targeting framework. Another would be the policy response to the exchange rate. In order to validate the expansionary impact of capital inflows to the Philippines, we split the sample into two periods. The first period includes 1977 to 1997 covering the years when the currency was managed or relatively fixed. The second period covers 1998 to 2015 when the currency was allowed to be more flexible and market-determined. This structural break corresponds to the Asian financial crisis of 1997-98.

Tables 4.7 and 4.8 present the results for output and credit growth, respectively, for the two sample periods. Here, we find interesting results. In Table 4.7, bond inflows are expansionary for output growth in period 1, while in Table 4.8, it is contractionary in period 2. But the expansionary impact of bond inflows on output growth in period 1 is driven by private bond inflows while public bond inflows have negative signs. In period 2, the estimated coefficient is positive for private bond inflows and negative for public bond inflows. These results suggest two things. First, the expansionary impact of bond inflows is strong when the exchange rate is relatively managed or fixed. Second, the expansionary impact of bond inflows can be primarily due to private bond inflows while the contractionary impact can be attributed to public bond inflows. For credit growth in Table 4.8, bond inflows are expansionary in both periods. This is at odds with the theoretical model of Blanchard et al. (2015).

Lastly, annual data limits the number of observations to 39. Using quarterly data would be one way to check whether the baseline results hold. Table 4.9 presents the quarterly results.[70] The results show that private bond inflows and non-bond inflows, including other debt inflows, have expansionary impact on output and credit growth. Public bond inflows tend to have negative sign but insignificant, while foreign direct investments have positive but insignificant sign. Overall, using quarterly data yields consistent results as with the baseline results. It is important to note that the estimated parameters have consistent signs and significance across specifications, unlike in the baseline results.

In summary, the results point to several important considerations in explaining the expansionary or contractionary impact of capital inflows to emerging economies. In the Philippines, bond inflows have an expansionary impact on output and credit growth. Non-bond inflows still have an overall positive effect on output and credit growth despite small foreign direct investment inflows because

[70] Quarterly data capital flows data are taken from the International Financial Statistics of the International Monetary Fund. Quarterly data for control and policy variables are taken from Oxford Economics Database. Quarterly data start in 1981Q4 as the data on terms of trade are available only in 1980Q1.

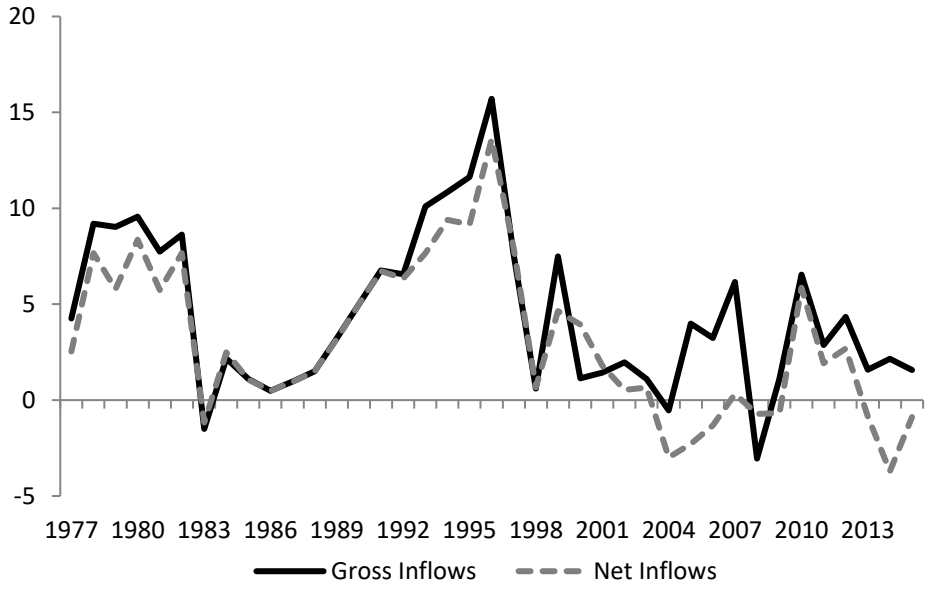
capital inflows can be in the form of other debt or banking inflows. The Philippines case clearly demonstrates that there is a lot to be considered in explaining why the impact of capital inflows in the standard open economy models is at odds with policy experience of emerging economies. Using a country-case study for the Philippines provides counter example on why bond inflows can have expansionary impact.

4.6 Concluding Remarks

This chapter sets out to address whether capital inflows to the Philippines are expansionary or contractionary in line with the model predictions of Blanchard et al. (2015). Using annual data on various types of gross capital inflows from 1977 to 2015, we find that total gross inflows to the Philippines are expansionary for output and credit growth, suggesting an overall positive effect of capital inflows. This result implicitly validates the procyclical nature of capital inflows in the Philippines. However, unlike the findings of Blanchard et al. (2015), we find that bond inflows to the Philippines are expansionary. Several possible explanations are provided. First, the link between capital inflows and currency appreciation is weak under a managed exchange rate regime. Second, the contractionary impact of bond inflows does not hold when the country has less developed capital markets or receives small bond inflows. Third, bond inflows might not necessary be contractionary if proceeds from debt issuance are channelled to productive investments.

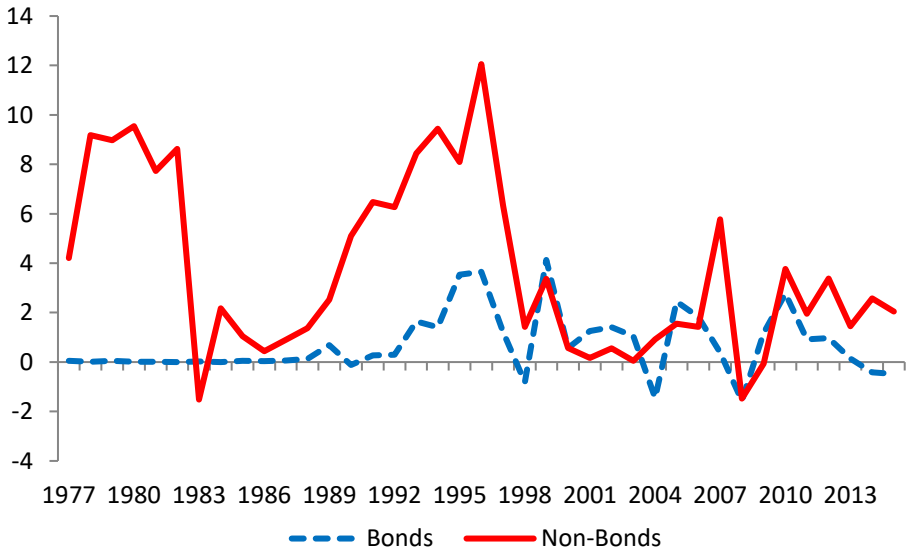
But similar to Blanchard et al. (2015), non-bond inflows have an overall positive effect on output and credit growth despite relatively restricted foreign direct investment inflows. By focusing on the Philippines, we find that even a country which relies less on external demand and foreign direct investment, has less developed capital market, and engages in foreign exchange intervention still benefits from the expansionary effect of capital inflows. This leaves room to consider other channels through which capital inflows can have contractionary effect on output.

Figure 4.1: Gross and Net Capital Inflows to the Philippines



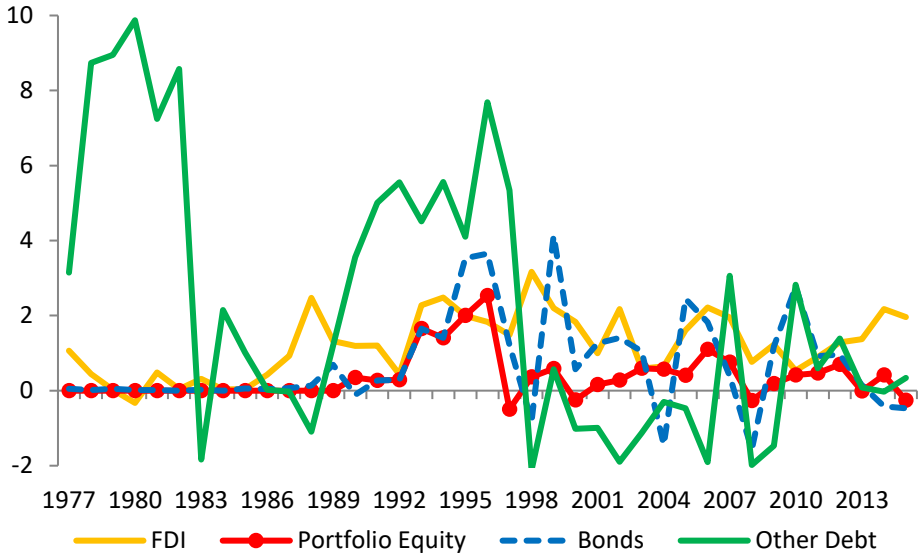
Notes: Gross and net inflows are in percent of nominal GDP. Data taken from the Balance of Payment Statistics of the International Monetary Fund.

Figure 4.2: Bond and Non-Bond Gross Inflows to the Philippines



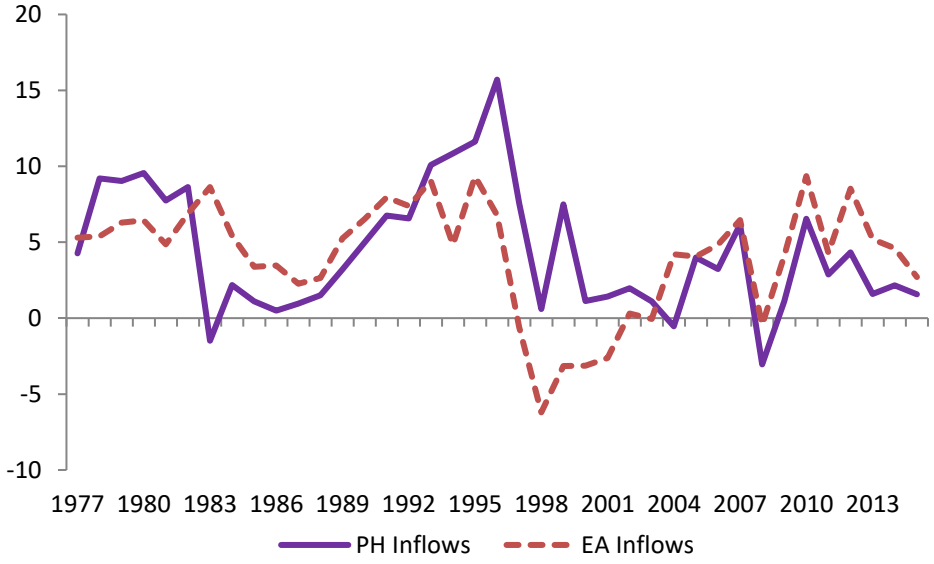
Notes: Bond inflows refer to portfolio debt gross inflows. Non-bond inflows refer to the sum of foreign direct investment, portfolio equity, and other debt gross inflows. Values are in percent of nominal GDP. Data taken from the Balance of Payment Statistics of the International Monetary Fund.

Figure 4.3: Different Types of Gross Capital Inflows to the Philippines



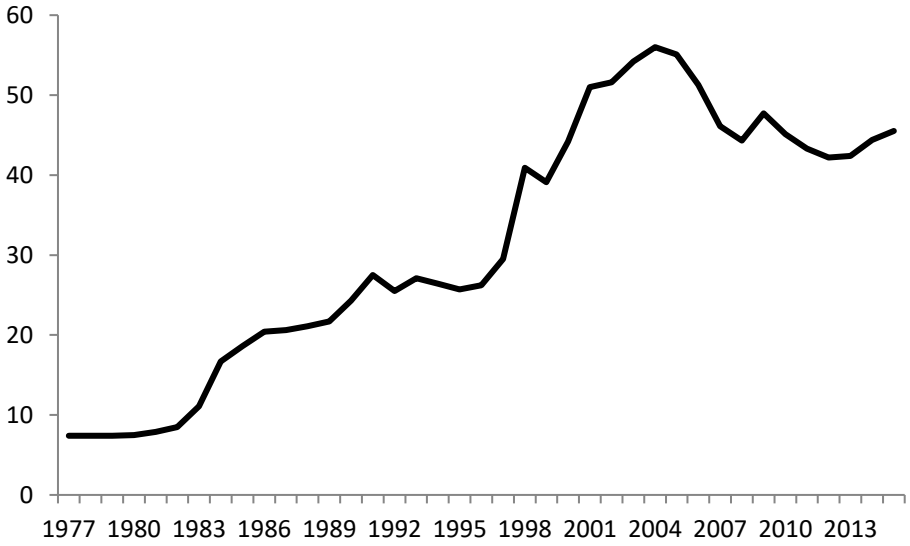
Notes: Bond inflows refer to portfolio debt gross inflows. Other debt inflows refer to other investment liabilities. Values are in percent of nominal GDP. Data taken from the Balance of Payment Statistics of the International Monetary Fund.

Figure 4.4: Gross Capital Inflows to the Philippines and Emerging East Asia



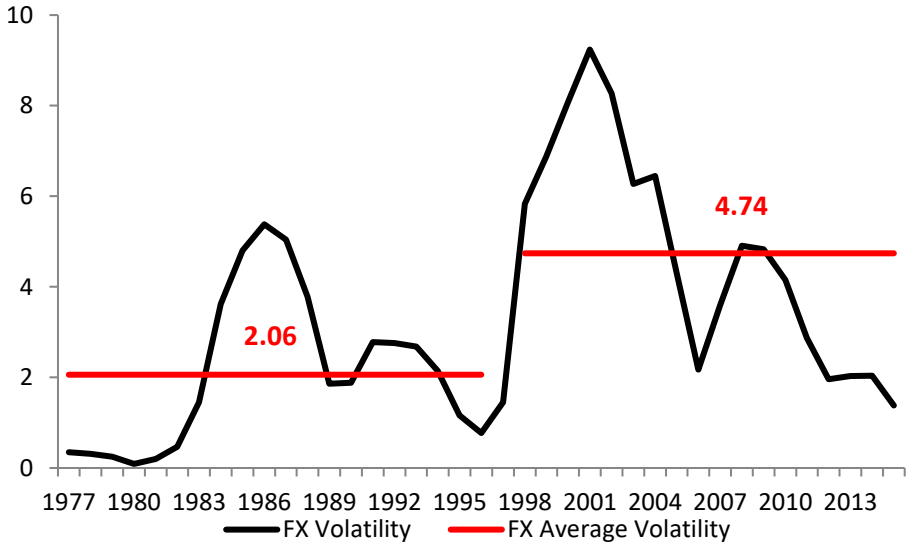
Notes: PH inflows refer to total gross capital inflows to the Philippines. EA inflows refer to the total gross capital inflows to Indonesia, Malaysia, and Thailand. Values are in percent of nominal GDP. Data taken from the Balance of Payment Statistics of the International Monetary Fund.

Figure 4.5: Philippine Peso-US Dollar Exchange Rate



Notes: Data pertains to average annual exchange rate (PHP per USD). Data taken from International Financial Statistics of the International Monetary Fund.

Figure 4.6: Volatility of Philippine Peso-US Dollar Exchange Rate



Note: Volatility refers to standard deviation of the exchange rate. Average annual exchange rate data taken from the International Financial Statistics of the International Monetary Fund.

Table 4.1: OLS Estimation of Output and Credit Growth on Gross Capital Inflows

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Output Growth					Credit Growth				
Inflows	0.266**					0.868***				
	(0.099)					(0.276)				
Bond Inflows		0.137		0.290			1.503**		1.527*	
		(0.260)		(0.340)			(0.612)		(0.773)	
Private Bond Inflows			0.360		1.002*			3.406***		0.904
			(0.351)		(0.566)			(1.158)		(0.670)
Public Bond Inflows			-0.036		0.024			-0.002		0.034
			(0.371)		(0.383)			(0.480)		(0.420)
Non-Bond Inflows		0.294**	0.252*				0.723**	0.429*		
		(0.113)	(0.142)				(0.272)	(0.239)		
FDI Inflows				0.432	0.423				0.246	0.682
				(0.643)	(0.631)				(1.315)	(0.682)
Portfolio Equity Inflows				-0.352	-1.098				0.954	-1.318
				(0.587)	(0.968)				(1.291)	(1.094)
Other Debt Inflows				0.338**	0.277*				0.697**	0.326**
				(0.126)	(0.141)				(0.288)	(0.129)
Lag Dependent Variable	0.287	0.277	0.278	0.264	0.256	0.093	0.117	0.006	0.133	0.073
	(0.221)	(0.233)	(0.232)	(0.229)	(0.223)	(0.194)	(0.192)	(0.155)	(0.168)	(0.119)
US GDP Growth	0.397**	0.414**	0.416**	0.424**	0.441**	-0.206	-0.288	-0.248	-0.251	0.459**
	(0.161)	(0.167)	(0.178)	(0.186)	(0.210)	(0.425)	(0.376)	(0.306)	(0.387)	(0.196)
Change in Terms of Trade	-0.023	-0.020	-0.019	-0.023	-0.023	-0.008	-0.026	-0.029	-0.020	-0.052
	(0.043)	(0.044)	(0.044)	(0.041)	(0.041)	(0.086)	(0.090)	(0.078)	(0.087)	(0.047)
Policy Rate	-0.458***	-0.470***	-0.469***	-0.480***	-0.491***	-0.396**	-0.354**	-0.362**	-0.373*	-0.562***
	(0.114)	(0.123)	(0.124)	(0.128)	(0.128)	(0.162)	(0.164)	(0.159)	(0.187)	(0.110)
Foreign Reserves	-0.068	-0.060	-0.024	-0.058	0.032	-0.985**	-1.029***	-0.780***	-1.030***	-0.015
	(0.168)	(0.171)	(0.188)	(0.166)	(0.195)	(0.367)	(0.361)	(0.276)	(0.364)	(0.182)
Constant	5.413***	5.501***	5.593***	5.495**	5.756***	3.213*	3.118*	3.873**	3.767	7.142***
	(1.745)	(1.845)	(1.880)	(2.042)	(2.024)	(1.737)	(1.723)	(1.587)	(2.519)	(1.235)
Observations	39	39	39	39	39	39	39	39	39	39
R-squared	0.638	0.640	0.645	0.648	0.667	0.509	0.530	0.648	0.533	0.634

Notes: Dependent variables are output and credit growth. Output growth refers to the year-on-year change of real GDP. Credit growth refers to the difference between current year and previous year domestic credit provided by the banking sector. Capital inflows and foreign reserves are expressed in percent of GDP. Private bond inflows include those from other sectors. Public bond inflows include general government and monetary authority. Other debt inflows refer to other investment liabilities in the Balance of Payments. Robust standard errors in are parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.2: OLS Estimation of Tradable and Non-Tradable Sector Growth on Gross Capital Inflows

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Tradable Sector Growth					Non-Tradable Sector Growth				
Inflows	0.275**					0.279**				
	(0.117)					(0.110)				
Bond Inflows		0.240		0.521			0.054		0.144	
		(0.295)		(0.397)			(0.286)		(0.367)	
Private Bond Inflows			0.349		1.244*			0.335		0.854
			(0.437)		(0.713)			(0.382)		(0.602)
Public Bond Inflows			0.152		0.236			-0.161		-0.118
			(0.389)		(0.418)			(0.403)		(0.418)
Non-Bond Inflows		0.283**	0.263*				0.328**	0.274		
		(0.135)	(0.153)				(0.131)	(0.170)		
FDI Inflows				0.323	0.355				0.574	0.548
				(0.675)	(0.650)				(0.746)	(0.741)
Portfolio Equity Inflows				-0.748	-1.530				-0.164	-0.896
				(0.535)	(1.048)				(0.743)	(1.083)
Other Debt Inflows				0.348**	0.294*				0.363**	0.299*
				(0.138)	(0.150)				(0.153)	(0.175)
Lag Dependent Variable	0.262	0.259	0.255	0.257	0.227	0.247	0.236	0.242	0.220	0.224
	(0.177)	(0.189)	(0.192)	(0.167)	(0.165)	(0.238)	(0.246)	(0.245)	(0.245)	(0.239)
US GDP Growth	0.616**	0.621*	0.623*	0.650*	0.670*	0.277*	0.306*	0.307*	0.300	0.316
	(0.285)	(0.308)	(0.314)	(0.324)	(0.338)	(0.161)	(0.164)	(0.178)	(0.191)	(0.218)
Change in Terms of Trade	-0.008	-0.008	-0.008	-0.008	-0.010	-0.043	-0.037	-0.036	-0.042	-0.040
	(0.054)	(0.054)	(0.055)	(0.050)	(0.050)	(0.044)	(0.046)	(0.045)	(0.045)	(0.044)
Policy Rate	-0.457***	-0.461***	-0.462***	-0.481***	-0.499***	-0.478***	-0.496***	-0.494***	-0.498***	-0.506***
	(0.115)	(0.124)	(0.125)	(0.130)	(0.130)	(0.129)	(0.139)	(0.142)	(0.142)	(0.144)
Foreign Reserves	-0.009	-0.008	0.008	-0.003	0.082	-0.136	-0.119	-0.073	-0.117	-0.024
	(0.175)	(0.177)	(0.182)	(0.163)	(0.177)	(0.195)	(0.197)	(0.224)	(0.199)	(0.239)
Constant	4.193***	4.222***	4.292**	4.344**	4.695**	6.510***	6.624***	6.708***	6.457***	6.663***
	(1.488)	(1.515)	(1.581)	(1.787)	(1.797)	(1.988)	(2.072)	(2.107)	(2.301)	(2.299)
Observations	39	39	39	39	39	39	39	39	39	39
R-squared	0.603	0.603	0.605	0.626	0.646	0.570	0.576	0.581	0.580	0.595

Notes: Dependent variables are tradable and non-tradable sector growth. Tradable sector includes agriculture and manufacturing. Non-tradable sector includes industry minus manufacturing and services. Growth refers to the year-on-year change of real GDP by sector. Capital inflows and foreign reserves are expressed in percent of GDP. Private bond inflows include those from other sectors. Public bond inflows include general government and monetary authority. Other debt inflows refer to other investment liabilities in the Balance of Payments. Robust standard errors in are parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.3: OLS Estimation of Public and Private Sector Credit Growth on Gross Capital Inflows

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Public Sector Credit Growth					Private Sector Credit Growth				
Inflows	0.059					0.789***				
	(0.048)					(0.240)				
Bond Inflows		0.205		0.205			1.228**		1.185*	
		(0.173)		(0.250)			(0.499)		(0.656)	
Private Bond Inflows			0.480*		0.739*			3.018***		4.195***
			(0.279)		(0.364)			(0.862)		(0.901)
Public Bond Inflows			-0.008		0.005			-0.258		-0.092
			(0.283)		(0.290)			(0.434)		(0.395)
Non-Bond Inflows		0.029	-0.022				0.681***	0.419**		
		(0.055)	(0.050)				(0.246)	(0.204)		
FDI Inflows				0.223	0.207				0.093	0.294
				(0.316)	(0.272)				(1.132)	(0.814)
Portfolio Equity Inflows				-0.101	-0.657				1.237	-1.832
				(0.463)	(0.446)				(1.099)	(1.099)
Other Debt Inflows				0.038	-0.009				0.631**	0.437**
				(0.049)	(0.050)				(0.262)	(0.209)
Lag Dependent Variable	0.045	0.008	0.007	0.008	0.016	0.097	0.129	-0.002	0.149	0.011
	(0.169)	(0.161)	(0.170)	(0.170)	(0.164)	(0.184)	(0.185)	(0.141)	(0.158)	(0.117)
US GDP Growth	-0.085	-0.101	-0.099	-0.117	-0.104	-0.086	-0.142	-0.107	-0.105	-0.035
	(0.088)	(0.083)	(0.083)	(0.091)	(0.091)	(0.366)	(0.329)	(0.250)	(0.342)	(0.236)
Change in Terms of Trade	0.004	-0.000	0.000	-0.002	-0.001	-0.032	-0.043	-0.045	-0.037	-0.042
	(0.022)	(0.024)	(0.022)	(0.025)	(0.023)	(0.068)	(0.071)	(0.057)	(0.068)	(0.051)
Policy Rate	0.014	0.025	0.025	0.033	0.025	-0.420***	-0.389**	-0.405***	-0.406**	-0.449***
	(0.046)	(0.045)	(0.044)	(0.049)	(0.046)	(0.139)	(0.144)	(0.137)	(0.165)	(0.127)
Foreign Reserves	-0.196***	-0.213***	-0.169**	-0.209***	-0.139*	-0.831**	-0.857***	-0.613**	-0.861***	-0.506**
	(0.066)	(0.068)	(0.077)	(0.076)	(0.078)	(0.309)	(0.304)	(0.223)	(0.307)	(0.226)
Constant	0.314	0.275	0.396	0.017	0.189	3.066**	2.999*	3.767***	3.745*	4.383***
	(0.531)	(0.526)	(0.506)	(0.701)	(0.648)	(1.453)	(1.479)	(1.329)	(2.203)	(1.437)
Observations	39	39	39	39	39	39	39	39	39	39
R-squared	0.171	0.189	0.235	0.200	0.273	0.561	0.573	0.714	0.580	0.752

Notes: Dependent variables are public and private sector credit growth. Public sector credit includes those to general government and monetary authority. Private sector credit includes those from other depository corporation, financial corporation, non-financial corporations, and households. Capital inflows and foreign reserves are expressed in percent of GDP. Private bond inflows include those from other sectors. Public bond inflows include general government and monetary authority. Other debt inflows refer to other investment liabilities in the Balance of Payments. Robust standard errors in are parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.4: OLS Estimation of Output and Credit Growth on Using Lagged Capital Inflows

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Output Growth					Credit Growth				
Inflows	0.206*					0.610***				
	(0.101)					(0.198)				
Bond Inflows		0.197		0.039			0.487		-0.505	
		(0.207)		(0.382)			(0.557)		(0.694)	
Private Bond Inflows			0.258		-0.099			2.372*		-0.576
			(0.252)		(0.770)			(1.271)		(1.188)
Public Bond Inflows			0.161		0.080			-0.336		0.073
			(0.347)		(0.422)			(0.487)		(0.346)
Non-Bond Inflows		0.208*	0.199				0.635***	0.452**		
		(0.119)	(0.132)				(0.214)	(0.207)		
FDI Inflows				0.235	0.222				0.608	0.505
				(0.699)	(0.745)				(1.239)	(0.744)
Portfolio Equity Inflows				0.759	0.892				4.363	1.021
				(0.944)	(1.402)				(3.001)	(1.462)
Other Debt Inflows				0.169	0.177				0.375	0.197
				(0.169)	(0.159)				(0.347)	(0.168)
Lag Dependent Variable	0.296	0.296	0.292	0.286	0.293	0.109	0.113	-0.082	0.076	0.139
	(0.230)	(0.233)	(0.242)	(0.236)	(0.249)	(0.213)	(0.218)	(0.253)	(0.196)	(0.179)
US GDP Growth	0.334*	0.337*	0.334	0.313	0.314	-0.425	-0.392	-0.479	-0.548	0.330
	(0.192)	(0.196)	(0.198)	(0.220)	(0.221)	(0.409)	(0.429)	(0.433)	(0.484)	(0.233)
Change in Terms of Trade	-0.002	-0.002	-0.004	-0.010	-0.008	0.051	0.050	0.012	0.008	-0.035
	(0.043)	(0.043)	(0.044)	(0.055)	(0.055)	(0.090)	(0.091)	(0.088)	(0.097)	(0.059)
Policy Rate	-0.417***	-0.418***	-0.420***	-0.407***	-0.401***	-0.257*	-0.269*	-0.294**	-0.181	-0.468***
	(0.105)	(0.111)	(0.113)	(0.121)	(0.129)	(0.127)	(0.133)	(0.120)	(0.181)	(0.112)
Foreign Reserves	0.141	0.141	0.138	0.125	0.129	-0.310	-0.307	-0.405	-0.399	0.091
	(0.141)	(0.141)	(0.148)	(0.156)	(0.162)	(0.280)	(0.283)	(0.244)	(0.280)	(0.150)
Constant	5.019***	5.020***	5.098**	4.977**	4.854**	2.282	2.309	3.529**	1.830	6.287***
	(1.685)	(1.718)	(1.857)	(1.999)	(2.067)	(1.653)	(1.689)	(1.484)	(2.184)	(1.318)
Observations	38	38	38	38	38	38	38	38	38	38
R-squared	0.606	0.606	0.606	0.613	0.614	0.346	0.347	0.404	0.464	0.582

Notes: Dependent variables are output and credit growth. Gross capital inflows are lagged by one period. Robust standard errors in are parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.5: OLS Estimation of Output and Credit Growth on Net Capital Inflows

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Output Growth					Credit Growth				
Inflows	0.315***					1.048***				
	(0.102)					(0.303)				
Bond Inflows		0.279		0.324			2.114***		1.890**	
		(0.299)		(0.360)			(0.739)		(0.736)	
Private Bond Inflows			0.509		0.736			3.580***		0.894*
			(0.382)		(0.509)			(0.746)		(0.497)
Public Bond Inflows			0.079		0.043			0.787		0.018
			(0.363)		(0.427)			(0.521)		(0.450)
Non-Bond Inflows		0.321***	0.292**				0.849***	0.724***		
		(0.106)	(0.122)				(0.269)	(0.252)		
FDI Inflows				0.503	0.651				0.334	0.779
				(0.551)	(0.556)				(1.003)	(0.572)
Portfolio Equity Inflows				0.032	-0.292				2.083**	-0.547
				(0.450)	(0.643)				(0.804)	(0.647)
Other Debt Inflows				0.330***	0.292**				0.807***	0.279**
				(0.114)	(0.125)				(0.290)	(0.130)
Lag Dependent Variable	0.305	0.305	0.290	0.295	0.261	0.025	0.075	-0.022	0.065	0.053
	(0.214)	(0.217)	(0.224)	(0.216)	(0.221)	(0.202)	(0.187)	(0.140)	(0.171)	(0.128)
US GDP Growth	0.466***	0.467***	0.493***	0.460**	0.492**	0.033	-0.016	0.167	-0.009	0.517**
	(0.155)	(0.159)	(0.172)	(0.183)	(0.203)	(0.439)	(0.376)	(0.352)	(0.404)	(0.199)
Change in Terms of Trade	-0.024	-0.024	-0.023	-0.028	-0.030	-0.030	-0.050	-0.040	-0.043	-0.064
	(0.042)	(0.045)	(0.044)	(0.042)	(0.040)	(0.081)	(0.083)	(0.069)	(0.080)	(0.046)
Policy Rate	-0.520***	-0.522***	-0.534***	-0.536***	-0.570***	-0.614***	-0.569***	-0.636***	-0.526**	-0.651***
	(0.116)	(0.119)	(0.121)	(0.120)	(0.122)	(0.181)	(0.180)	(0.163)	(0.202)	(0.107)
Foreign Reserves	-0.058	-0.052	-0.031	-0.036	0.015	-0.992**	-1.139***	-1.013***	-1.202***	-0.013
	(0.153)	(0.166)	(0.165)	(0.192)	(0.202)	(0.363)	(0.379)	(0.274)	(0.402)	(0.206)
Constant	6.011***	6.012***	6.262***	6.141***	6.669***	5.543***	5.550***	6.576***	5.251**	8.492***
	(1.687)	(1.713)	(1.837)	(1.734)	(1.897)	(1.707)	(1.756)	(1.648)	(1.947)	(0.990)
Observations	39	39	39	39	39	39	39	39	39	39
R-squared	0.653	0.653	0.661	0.657	0.672	0.550	0.597	0.713	0.615	0.629

Notes: Dependent variables are output and credit growth. Net inflows are computed as liabilities minus assets following Balance of Payment Statistics Manual 6 data presentation. Robust standard errors in are parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.6: OLS Estimation Output and Credit Growth on Gross Capital Inflows

(Excluding Zeros for Public Bond Inflows and Portfolio Equity Inflows)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Output Growth					Credit Growth				
Inflows	0.266**					0.868***				
	(0.099)					(0.276)				
Bond Inflows		0.137		0.263			1.503**		1.766***	
		(0.260)		(0.226)			(0.612)		(0.368)	
Private Bond Inflows			0.358		0.110			0.453		-0.022
			(0.727)		(0.786)			(2.106)		(0.732)
Public Bond Inflows			-0.304		-0.207			2.040**		-0.031
			(0.456)		(0.369)			(0.856)		(0.281)
Non-Bond Inflows		0.294**	0.328				0.723**	2.221**		
		(0.113)	(0.285)				(0.272)	(0.770)		
FDI Inflows				-0.430	-0.589				-0.011	-0.683
				(0.459)	(0.465)				(0.562)	(0.403)
Portfolio Equity Inflows				0.220	0.026				0.196	0.158
				(0.406)	(0.617)				(0.815)	(0.623)
Other Debt Inflows				0.361**	0.455				1.726***	0.540*
				(0.131)	(0.282)				(0.204)	(0.271)
Lag Dependent Variable	0.287	0.277	-0.324	0.155	-0.262	0.093	0.117	-0.058	-0.006	-0.073
	(0.221)	(0.233)	(0.214)	(0.176)	(0.224)	(0.194)	(0.192)	(0.124)	(0.096)	(0.049)
US GDP Growth	0.397**	0.414**	0.569**	0.665***	0.622**	-0.206	-0.288	-2.218***	-1.077**	0.579**
	(0.161)	(0.167)	(0.235)	(0.118)	(0.218)	(0.425)	(0.376)	(0.541)	(0.370)	(0.207)
Change in Terms of Trade	-0.023	-0.020	-0.119	-0.041	-0.118**	-0.008	-0.026	-0.221	-0.171	-0.114***
	(0.043)	(0.044)	(0.077)	(0.046)	(0.046)	(0.086)	(0.090)	(0.142)	(0.099)	(0.031)
Policy Rate	-0.458***	-0.470***	-0.448***	-0.495***	-0.406***	-0.396**	-0.354**	-0.340	-0.485***	-0.358***
	(0.114)	(0.123)	(0.121)	(0.074)	(0.081)	(0.162)	(0.164)	(0.213)	(0.130)	(0.067)
Foreign Reserves	-0.068	-0.060	-0.123	-0.180	-0.104	-0.985**	-1.029***	-1.962***	-1.428***	-0.158
	(0.168)	(0.171)	(0.237)	(0.151)	(0.190)	(0.367)	(0.361)	(0.513)	(0.220)	(0.208)
Constant	5.413***	5.501***	7.693***	6.446***	8.376***	3.213*	3.118*	5.154***	6.582***	6.997***
	(1.745)	(1.845)	(1.609)	(1.183)	(1.154)	(1.737)	(1.723)	(1.637)	(1.205)	(0.559)
Observations	39	39	20	26	20	39	39	20	26	20
R-squared	0.638	0.640	0.761	0.797	0.872	0.509	0.530	0.892	0.862	0.867

Notes: Dependent variables are output and credit growth. The values of zero were removed for public bond inflows and portfolio equity inflows whenever data is unavailable. Consequently, the sample size for specifications (3), (4), (5), (8), (9), and (10) are smaller than the baseline sample. Robust standard errors in are parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.7: OLS Estimation of Output Growth on Gross Capital Inflows Period Split

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Period 1					Period 2				
Inflows	-0.029					0.118				
	(0.123)					(0.268)				
Bond Inflows		0.404		1.067*			-0.151		-0.044	
		(0.445)		(0.567)			(0.329)		(0.208)	
Private Bond Inflows			0.520		1.018*			0.421		0.126
			(0.662)		(0.492)			(0.764)		(0.834)
Public Bond Inflows			-1.020		3.960			-0.399		-0.103
			(2.602)		(2.204)			(0.514)		(0.389)
Non-Bond Inflows		-0.145	-0.146				0.393	0.236		
		(0.189)	(0.196)				(0.344)	(0.442)		
FDI Inflows				1.042*	1.350**				-0.492	-0.511
				(0.550)	(0.585)				(0.397)	(0.433)
Portfolio Equity Inflows				-2.091**	-2.596**				0.867	0.712
				(0.742)	(0.900)				(0.720)	(1.222)
Other Debt Inflows				-0.035	-0.005				0.769**	0.736
				(0.153)	(0.154)				(0.308)	(0.417)
Lag Dependent Variable	0.462**	0.482**	0.485**	0.366	0.330	-0.236	-0.344	-0.364	-0.205	-0.209
	(0.214)	(0.213)	(0.220)	(0.206)	(0.236)	(0.209)	(0.191)	(0.223)	(0.223)	(0.242)
US GDP Growth	0.268	0.180	0.179	0.136	0.125	0.634**	0.512*	0.627*	0.453**	0.485
	(0.273)	(0.313)	(0.336)	(0.359)	(0.357)	(0.250)	(0.254)	(0.291)	(0.172)	(0.296)
Change in Terms of Trade	-0.016	-0.024	-0.024	-0.046	-0.051	-0.133**	-0.143**	-0.115	-0.138***	-0.131*
	(0.043)	(0.045)	(0.048)	(0.047)	(0.049)	(0.052)	(0.057)	(0.077)	(0.041)	(0.060)
Policy Rate	-0.767***	-0.755***	-0.752***	-0.729***	-0.728***	-0.564***	-0.517***	-0.497***	-0.331**	-0.324**
	(0.143)	(0.143)	(0.152)	(0.166)	(0.172)	(0.137)	(0.155)	(0.152)	(0.124)	(0.114)
Foreign Reserves	0.111	0.146	0.179	0.181	0.128	-0.016	-0.079	0.011	-0.268	-0.243
	(0.245)	(0.260)	(0.274)	(0.239)	(0.261)	(0.192)	(0.212)	(0.260)	(0.161)	(0.243)
Constant	11.836***	12.213***	12.086***	10.973***	10.895***	7.587***	7.950***	7.988***	7.854***	7.842***
	(2.342)	(2.373)	(2.492)	(2.589)	(2.695)	(1.764)	(1.590)	(1.731)	(1.185)	(1.286)
Observations	21	21	21	21	21	18	18	18	18	18
R-squared	0.800	0.811	0.813	0.852	0.858	0.752	0.788	0.798	0.893	0.894

Notes: Output growth refers to the year-on-year change of real GDP. Period 1 covers 1977-1997; while Period 2 includes 1998-2015. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.8: OLS Estimation of Credit Growth on Gross Capital Inflows Period Split

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Period 1					Period 2				
Inflows	0.469					1.149***				
	(0.305)					(0.284)				
Bond Inflows		2.413***		2.541			1.223**		1.646***	
		(0.685)		(1.456)			(0.444)		(0.271)	
Private Bond Inflows			2.143**		0.026			-0.584		0.026
			(0.753)		(0.861)			(2.471)		(0.745)
Public Bond Inflows			5.441		3.964			1.918**		0.048
			(3.517)		(2.485)			(0.777)		(0.322)
Non-Bond Inflows		0.051	0.036				1.051**	1.518**		
		(0.301)	(0.305)				(0.349)	(0.570)		
FDI Inflows				0.879	0.710				0.082	-0.589
				(1.903)	(0.836)				(0.429)	(0.384)
Portfolio Equity Inflows				-0.513	-2.106				-2.160**	0.796
				(2.036)	(1.392)				(0.658)	(1.048)
Other Debt Inflows				0.144	-0.224				2.309***	0.788*
				(0.510)	(0.161)				(0.283)	(0.401)
Lag Dependent Variable	0.348*	0.292*	0.308	0.220	0.417**	-0.154	-0.148	-0.157	-0.092*	-0.050
	(0.179)	(0.157)	(0.177)	(0.299)	(0.135)	(0.127)	(0.129)	(0.125)	(0.046)	(0.049)
US GDP Growth	0.600	0.285	0.273	0.275	0.096	-1.624***	-1.581***	-1.931***	-1.758***	0.458
	(0.391)	(0.225)	(0.248)	(0.226)	(0.306)	(0.305)	(0.340)	(0.448)	(0.168)	(0.263)
Change in Terms of Trade	-0.026	-0.073	-0.072	-0.080	-0.077*	-0.120	-0.120	-0.208	-0.165***	-0.126**
	(0.078)	(0.066)	(0.072)	(0.073)	(0.041)	(0.150)	(0.158)	(0.128)	(0.037)	(0.045)
Policy Rate	-0.935**	-0.892**	-0.902**	-0.836**	-0.972***	-0.504**	-0.527**	-0.596*	-0.106	-0.292**
	(0.361)	(0.311)	(0.332)	(0.351)	(0.141)	(0.228)	(0.233)	(0.303)	(0.110)	(0.109)
Foreign Reserves	-0.638*	-0.565	-0.623	-0.581	0.138	-1.376***	-1.353***	-1.617***	-1.773***	-0.278
	(0.334)	(0.333)	(0.384)	(0.368)	(0.202)	(0.317)	(0.335)	(0.436)	(0.210)	(0.281)
Constant	10.886*	12.331**	12.731*	10.600	16.864***	6.138***	6.240***	6.501***	7.368***	6.753***
	(6.082)	(5.652)	(6.003)	(8.019)	(2.047)	(1.441)	(1.400)	(1.489)	(0.622)	(0.683)
Observations	21	21	21	21	21	18	18	18	18	18
R-squared	0.705	0.803	0.808	0.808	0.901	0.824	0.825	0.849	0.971	0.886

Notes: Credit growth refers to the difference between current year and previous year domestic credit provided by the banking sector. Period 1 covers 1977-1997; while Period 2 includes 1998-2015. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4.9: OLS Estimation of Output and Credit Growth on Gross Capital Inflows

(Using quarterly data)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Output Growth					Credit Growth				
Inflows	0.614***					0.971***				
	(0.199)					(0.336)				
Bond Inflows		0.139		0.083			0.441		0.470	
		(0.372)		(0.415)			(0.643)		(0.631)	
Private Bond Inflows			0.973*		0.929*			2.741***		2.688***
			(0.510)		(0.505)			(0.968)		(0.936)
Public Bond Inflows			-0.362		-0.457			-0.926		-0.917
			(0.370)		(0.459)			(0.588)		(0.632)
Non-Bond Inflows		0.762***	0.669***				1.140***	0.890**		
		(0.212)	(0.223)				(0.389)	(0.388)		
FDI Inflows				1.081	1.163				0.482	0.704
				(0.933)	(0.899)				(1.309)	(1.185)
Portfolio Equity Inflows				1.111	0.860				2.741	2.089
				(1.143)	(1.071)				(2.237)	(2.155)
Other Debt Inflows				0.733***	0.635**				1.098***	0.851**
				(0.230)	(0.248)				(0.392)	(0.389)
Lag Dependent Variable	0.124	0.111	0.109	0.105	0.099	0.430***	0.424***	0.417***	0.432***	0.419***
	(0.097)	(0.099)	(0.098)	(0.098)	(0.096)	(0.083)	(0.083)	(0.089)	(0.081)	(0.086)
US GDP Growth	0.228	0.253*	0.260*	0.243	0.247*	-0.238*	-0.207	-0.186	-0.210	-0.194
	(0.145)	(0.144)	(0.144)	(0.149)	(0.149)	(0.141)	(0.146)	(0.137)	(0.152)	(0.139)
Change in Terms of Trade	0.005	0.007	0.013	0.004	0.010	-0.070*	-0.067*	-0.048	-0.060*	-0.046
	(0.036)	(0.037)	(0.036)	(0.036)	(0.036)	(0.036)	(0.037)	(0.035)	(0.036)	(0.035)
Policy Rate	-0.408***	-0.422***	-0.430***	-0.418***	-0.424***	-0.101	-0.113	-0.131*	-0.115	-0.128*
	(0.063)	(0.065)	(0.064)	(0.067)	(0.066)	(0.072)	(0.074)	(0.071)	(0.078)	(0.074)
Foreign Reserves	-0.318	-0.301	-0.218	-0.303	-0.212	-0.893***	-0.871***	-0.645**	-0.903***	-0.669**
	(0.320)	(0.321)	(0.331)	(0.334)	(0.346)	(0.291)	(0.287)	(0.277)	(0.300)	(0.287)
Constant	6.502***	6.605***	6.693***	6.502***	6.550***	1.782**	1.804**	1.991***	1.970**	1.992**
	(0.917)	(0.927)	(0.917)	(0.986)	(0.976)	(0.709)	(0.718)	(0.690)	(0.821)	(0.794)
Observations	136	136	136	136	136	136	136	136	136	136
R-squared	0.515	0.520	0.531	0.521	0.532	0.402	0.408	0.473	0.414	0.476

Notes: Dependent variables are year-on-year quarterly output and credit growth. Quarterly capital inflows data are taken from the International Financial Statistics of the International Monetary Fund. Quarterly data on control and policy variables are taken from Oxford Economics Database. Estimates cover the period of 1981Q1 to 2015Q4 as terms of trade data for the Philippines on quarterly basis is only available in 1980. Robust standard errors in are parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Chapter 5

Conclusion

This thesis extends the literature on transitions and impacts of gross capital inflows. In Chapter 2, we address the questions on whether there is cross-country variation in the transitional likelihood of moving between episodes of gross capital flows. We find that there is variation as indicated by the standard deviation and coefficient of variation. Chapter 2 also shows that state-dependence variables, such as duration and occurrence, significantly covary with the transitional likelihood. In turn, duration and occurrence of various capital flow episodes covary with domestic factors such as output volatility, de facto and de jure financial openness, and foreign reserve holdings. These covariations exist both for debt and equity episodes.

Crucial to the premise and findings of Chapter 2 is the cross-sectional approach in understanding covariation between transitional likelihood, state-dependence variables and domestic factors. Under cross-section approach, we abstract from global factors that are common across countries. This approach implies that, given common global or external conditions, the vulnerability or propensity of countries experiencing long and frequent episodes are related to domestic factors. This approach is new to the literature.

In Chapter 3, we highlight the existence of two types of surges. One pertains to surges ending in normal episodes, and the other refers to surges ending in stops. Differentiating between these two types of surges, based on the global and domestic factors correlated with the magnitude or size of gross inflows during these surge types, allows us to understand which factors are relevant for the existence of a particular surge type. Here, we find the importance of commodity prices and domestic

output gap for surges ending in stops. More importantly, Chapter 3 deals with the occurrence of surges ending in stops. Employing the push and pull framework, the findings indicate that global risk aversion and domestic output gap are the relevant factors in explaining the occurrence of surges transitioning to stops.

Unlike Chapters 2 and 3 which focus on transitions of foreign-driven capital inflow episodes, Chapter 4 looks at a case study on the impact of gross capital inflows on output and credit growth in the Philippines. The contradicting expansionary and contractionary impacts of capital flows illustrate the need for a theoretical model explaining this dichotomy. Blanchard et al. (2015) propose differentiating bond and non-bond inflows in understanding under what conditions capital inflows can be expansionary or contractionary.

In the Philippine case, as presented in Chapter 4, we find that non-bond inflows, particularly other debt inflows, which are banking inflows, have expansionary impact on both output and credit growth. Interestingly, non-bond inflows can still exhibit expansionary impact even if foreign direct investment is insignificant as in the case of the Philippines. Contrary to the model predictions and empirical test of Blanchard et al. (2015), bond inflows to the Philippines have expansionary impact on output and credit, specifically private bond inflows. Several explanations are offered in Chapter 4. These results validate the procyclical nature of gross capital inflows to the Philippines.

The main contribution of Chapter 4 is the conjecture that differentiating between types of capital inflows may not necessary be the right approach in understanding the dichotomous effects of capital inflows on output and credit growth. Countries differ in the amount of inflows they receive, and on how they respond to those inflows. Therefore, looking at country-case studies in assessing the impact of capital inflows would be more appropriate as managing capital inflows do not adhere to one size fits all approach, and country-case studies offer counter examples to theoretical model predictions.

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