ESSAYS ON PRIVATE AND PUBLIC DEBTS, FINANCIAL INTEGRATION AND ECONOMIC VOLATILITY

by

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ABSTRACT

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This dissertation consists of two essays on surges of private and public debt flows and how these debt flows through financial integration affect output and consumption volatility (risk sharing) in emerging markets. Chapter 1 focuses on a common characteristic of many of the recent emerging market financial crises – a preceding surge in the debt inflows not only in the public but also in the private sector. In this chapter, I examine the drivers of the occurrence and magnitude of foreign debt surges to 28 emerging market economies (EMEs) over 1990-2016. Using the threshold method of defining a surge on net external debt flows, I differentiate surges in private debt flows from surges in public debt flows to examine which surge flow is more sensitive to global (Push) factors or domestic (Pull) factors. The results suggest that global factors are the primary drivers for both types of debt flow surges, with global risk in particular associated with increases in public debt surges but decreases in private debt surges. In determining the magnitude of these surges, the size of public debt surges is more sensitive to the global factors than the domestic factors.

One benefit of financial integration according to economic theory is that it provides better opportunity whereby shocks to a country's output or consumption can be diversified away through

risk sharing. Evidence from recent empirical studies on international risk sharing shows that external debt liabilities are associated with higher economic volatility among emerging market economies due to the procyclical nature of debt flowing into these countries. However, other studies argue that the behavior of external debt liabilities can be countercyclical or procyclical depending on whether the debtor or creditor is a public or private entity. The second chapter of my dissertation focuses on the type of debtor (public and private) and the type of creditor (public and private) of external debt. Using a dynamic panel model, I examine how external debt liabilities from these debtors and creditors affect output and consumption growth volatility among 26 emerging economies from 1997-2016. The results suggest that i) external debt with private by a private borrower tends to have insignificant effect on economic volatility ii) Public debt from private lenders tends to increase output volatility significantly but not consumption volatility and iii) Public debt from public lenders or by public borrowers reduces both consumption and output volatility.

To

my late Parents,

my siblings,

and especially my wife.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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CHAPTER 1

SURGES OF PRIVATE AND PUBLIC DEBT FLOWS TO EMERGING MARKETS.

I. Introduction

Waves of foreign debt flows in many emerging market economies (EMEs) since the mid-1980s has raised concerns about the impact of such flows on the macroeconomic performance of these economies. After falling dramatically during the 2008 global financial crisis, debt flows to EMEs surged in the aftermath of the crisis and then contracted sharply again in the second half of 2011. While an integrated credit market promotes global risk sharing, higher productivity, and economic growth, the magnitude and volatility of debt may increase financial system vulnerabilities and aggravate overall macroeconomic instability

The academic literature on waves of capital flows (including debt) has a long tradition of identifying the drivers (either global or domestic factors) of these flows differentiating between those mainly caused by changes in the country's external liabilities and those caused by changes in its external assets. Several papers have examined the behavior of capital flows during "sudden stops" (when foreign capital decreases rapidly) and how these stops contribute to the severity of crises (Calvo 1998, Calvo et al 2004, Gupta et al 2007). Ghosh et al (2014) focused on surges (when foreign capital increases sharply) in capital flows for 56 EMEs over 1980-2011. They looked at the likelihood of a surge occurring and the magnitude of that surge. They further differentiated between surges driven by large asset flows from those of large liability flows. Forbes and Warnock (2012) also identified episodes of "surges" and "stops" (extreme increases and decreases, respectively, of gross inflows) and "flight" and "retrenchment" (sharp increases and

decreases, respectively, of gross outflows). Although this attention has been focused on what drives these aggregate and disaggregate capital flows, not much work has been done in identifying waves of private versus public debt inflows as a distinct component of such flows. Consequently, I focus on the debt component of capital flows and examine the characteristics and determinants of surges (extreme or sharp increase in net external debt inflows) to EMEs.

Economists over the years have been very outspoken about the high risk of public borrowing in EMEs but have taken a more benign view on the risk of excessive private debt accumulation in these regions (Schularick, 2013). It is often assumed that when a private entity borrows, it is acting in its own interest and will bear the full consequences of its actions. This makes policymakers a bit lax when it comes to the issue of private borrowing. However, the fact that taxes have been used to bail out private entities caught in a debt overhang that need to deleverage means private debt should be equally concerning to researchers as public debt. An example is the Emergency Economic Stabilization Act of 2008 (bank bailout 2008) proposed by the then US Treasury Secretary Henry Paulson to purchase up to $700 billion worth of mortgage-backed securities from banks (private investors who took risk to earn profit at taxpayers' expense). Although the proposal of this act was met with massive public disapproval including prominent economists penning a letter to the US Congress to question the "fairness" of the planned bailout[1], this act was still signed into law by President George W. Bush in October 2008. Globally, this act of government intervention to support failing private entities creates a situation where excess private debt invariably leads to higher public debt once there is deleveraging in the private sector. Jorda et al. (2013) argue that the risks of financial instability historically emanated from the private

[1] A copy of the letter can be found at the following web page
https://faculty.chicagobooth.edu/john.cochrane/research/papers/mortgage_protest.htm

sector. Consequently, my analysis focuses on the surges in both private debt (debt issued by private entities like private banks or bonds that are privately placed) and public debt (debt issued by a government or international organizations like the IMF, World Bank etc.). My main focus is the factors that determine the likelihood of these surges in private and public debt flows, examining both supply-push and demand-pull factors. After identifying the surges, I also calculate the magnitude of the surges.

I use debt data from International Debt Statistics of the World Bank's Global Development Finance (GDF) database that covers 28 emerging market economies (EMEs) over 1990-2016. To examine the drivers of occurrence and magnitude of foreign debt surges, I use the threshold method to define a surge on net external debt flows, differentiating surges of private debt flows from public debt flows. I focus on global factors such as global risk aversion, global interest rates, and global economic growth rates that are thought to push capital into a country. I also examine domestic factors such as a country's current account balance, international reserves, real GDP per capita, financial openness (measured by KAOPEN), the level of a country's domestic credit, and institutional quality that are thought to pull capital into a country.

The reminder of the paper is structured as followed: In section II, I discuss the determinants of debt flows, including global factors and domestic factors. Section III introduces the methodology to identify the types of debt surge and describes how I measure the occurrence and magnitude of these debt surges. Section IV discusses the data used with results in Section V. I discuss the conclusion and give some policy recommendations based on the findings in Section VI.

II. Determinants of Capital (debt) Flows

In this section, I discuss the literature on global and local factors that determine private versus public led episodes of extreme debt flows. To examine both global "push" factors and domestic "pull" factors as the determinants of debt flow episodes to recipient EMEs, I first explain how these factors have influenced both the movement of international capital flows and extreme episodes of capital flows in other studies. I then explain how I expect these factors to affect the two types of debt flows considered here: private and public debt flows.

Global factors are the external factors that induce investors, whether foreign or local, to increase their financial investment or exposure to the local country. These factors are largely beyond the control of the domestic countries. The idea of push factors stems from the neoclassical theory, which predicts that capital flows react to interest rate differentials between countries and that capital flows from countries with low expected returns to those with high expected returns. The pull factors, on the other hand, are country specific characteristics such as macroeconomic fundamentals, government policies, and market imperfections that affect the investment decisions of both local and foreign investors (Fernandez-Arias and Montiel, 1996). Seminal papers that examined drivers of capital flows include Chuhan et al. (1993), Griffin et al. (2004), and Fratzscher (2011), which show that both global and domestic factors are equally important while Calvo et al. (1993, 1996), Fernandez-Arias (1996), and Chuhan et al. (1998) find that global factors are more important than domestic fundamentals in driving capital flows.

The dynamics and factors that drive extreme episodes in capital flow movement may be quite different from the normal flows, but existing empirical evidence is limited. A few available studies that have looked at episodes of extreme capital flow movement either in its aggregate or disaggregate forms and what factors drive these flows include Forbes and Warnock (2012, 2014),

and Ghosh et al. (2014). Forbes and Warnock (2012) identified episodes of "surges" and "stops" (sudden increases and decreases, respectively of gross capital inflows) and "flight" and "retrenchment" (sudden increases and decreases, respectively, of gross capital outflows). They find that global factors, particularly global risk and global growth in real economic activity, are responsible for the extreme capital flow episodes. Forbes and Warnock (2014) later extended the analysis in Forbes and Warnock (2012) where they examined which type of capital flows are driving the episodes, focusing on debt flows versus equity flows. Their results show that most of these extreme capital flows are debt led. That is, 80% of episodes of extreme changes in capital inflows (driven by nonresidents) are mainly from changes in debt flows. Ghosh et al. (2014) suggest that although both global and domestic factors drive surges (extreme increase of net capital inflows), global factors like global risk aversion and global growth are significantly associated with the occurrence of surges. They also find that surges are predominantly liability driven after disaggregating the surges into liability flows and asset flows.

Following Forbes and Warnock's (2104) findings that a significantly large portion of extreme capital inflows are debt led, I question whether the type of debt matters in driving these episodes, disaggregating debt into private or public debt inflow components. Using a large cross section of developing countries, Alfaro at el (2014) examined whether private and public net capital flows affect productivity growth differently, and thus whether it is the aggregate of those two that leads to mixed results with respect to upstream flows. They find that net private capital flows are positively correlated with countries' growth while net sovereign debt flows are negatively correlated with growth only if net public debt is financed by other sovereign nations or a public creditor. From a policy perspective, it may be more meaningful and important to consider the determinants of extreme increases in debt flows (surges). Surges may matter to policymakers

because they bring the potential of sudden reversals of that debt inflow or an increase in interest on accumulated debt.

I examine the factors (global and domestic) associated with both extreme large private and public debt inflows by drawing on the existing literature. Recent studies have identified a range of global push and domestic pull factors as possible determinants of extreme capital (debt) flows to emerging economies (e.g., Forbes and Warnock (2012), Forbes and Warnock (2014) and Ghosh et al (2014)). I explain below the choice of factors and their expected impact on public versus private debt flows.

In this study, I consider the following global factors: global interest rates, global risk aversion, and global GDP growth. I include the US long-term 10-year government bond interest rate as a measure of global interest rates. The global interest rate affects the cost of servicing the debt and the likelihood of default. Hence, an increase in the global interest rate is expected to lower the level of debt flows into EMEs and vice versa. The second global factor that affects not only financial asset prices, but also extreme debt flows is global risk aversion. Global risk is related to macroeconomic instability. A high global risk index (measured by the CBOE volatility of the S&P 500 index) makes investment in risky assets less attractive, which is likely to lower the flows of debt (capital) to EMEs since developed countries are mostly considered safe even in times of high market uncertainties. The third global factor is global GDP growth. All else equal, higher world growth is an indication or would mean higher incomes to invest (save) worldwide, meaning greater flows of capital to EMEs. Thus, I expect an increase in world GDP growth to lower debt inflows to EMEs.

In terms of the domestic factors that are important for determining both private and public debt flows, I focus on institutional quality of the recipient country, the economic performance of the country, the country's level of international reserves relative to GDP, the current account balance relative to GDP, the level of financial openness of the country, and the level of the country's credit that is provided by the financial sector as a share of GDP. Alfaro et al (2008) point to institutions as being a key indicator of the socio-economic and political stability of a country. Investors are more confident investing in a country where the security of their investment is not just promised but will be realized. Hence, a country with better institutions is more likely to attract more foreign debt flows. I also include real GDP per capita growth among the domestic factors as a measure of a country's economic growth. A fast-growing economy is more likely to attract large debt flows (foreign investment) especially from international private lenders because investors may be attracted to the potential productivity gains and returns. The level of a country's international reserves significantly influences how debt flows in or out of the country especially when financial stress increases (Alberola et al, 2015). For this reason, many emerging economies accumulate reserves through the central banks to protect the domestic credit markets. I measure this effect by using the ratio of foreign reserves to GDP of a country among the domestic variables. I also include a measure for a country's current account balance position relative to GDP. A country's current account balance measures the difference between its domestic saving and domestic investment. Government uses fiscal policy as a buffer during economic downturns (countercyclical Keynesian policy). That is, most EME's increase their fiscal deficit (access international government credit) during recession to stabilize their economies or balance their economic budget. I expect a current account deficit to trigger an increase in debt (particularly public debt) flows to EMEs and vice versa. I measure capital controls or de jure financial openness using the KAOPEN index by Chinn

and Ito (2008). A country that is more open to international capital transactions is likely to attract more debt inflows. I include domestic credit provided by the financial sector as a share of GDP to measure a country's banking sector depth and financial sector development in terms of size. Higher domestic credit indicates better financial development in a country and would pull in additional external private debt, allowing residents to smooth their consumption or output (promote risk sharing).

III. Empirical Methodology

I use annual net debt flow data in a sample of 28 EMEs over the period from 1990 through 2016. Following Ghosh et al (2014), I identify a surge as a sharp increase in net public or private debt inflows and use the most common identification method in the existing empirical literature, that of a threshold method to identify a surge. Several methodologies have been used in identifying capital flow episodes. The threshold approach is the most common approach used in the empirical literature applied to aggregate capital flows. Reinhart and Reinhart (2008) define a bonanza of total net capital flows (as a percent of GDP) by selecting a threshold of 20th percentile across countries using quarterly data on gross inflows from 1980 through 2009. Forbes and Warnock (2012) define a surge as an annual increase in gross inflows that exceeds one standard deviation above the (five-year rolling) average and where the increase is at least two standard deviations more than the average in at least one quarter. Ghosh et al. (2014) use annual data on net capital flows and define a surge episode based on two criteria : (i) define an observation as a surge episode if it falls within the top 30th percentile of the country's own distribution of net capital flows (as a percentage of GDP); and (ii) to be classified as an episode, the observation also has to lie within the top 30th percentile of the whole sample's distribution of net capital flows (as a percentage of GDP). I define a surge similar to Ghosh et al (2014), using two different measures for comparison.

Thus, I define a surge if the net debt flows lies within the top 30th percentile of the country's distribution and lies within the top 30th percentile of the entire countries distribution of net debt flows as a percentage of GDP and call this the full sample definition. I also define a surge if net debt flows lie within the top 30th percentile of the country's own distribution of net debt flows as a percentage of GDP and call this the country sample definition.

III A. Public and Private Debt Decomposition

To decompose total external debt flows into its private and public components. I follow Alfaro et al (2014), who define an appropriate measure of net private and public capital flows. They examined the correlation between net capital flows and growth and showed that such correlation can have different signs when capital flows are divided into public versus private capital flows. Depending on which one dominates the other in a data sample determines the overall correlation sign between capital flows and growth. Figure 1 shows the decomposition used by Alfaro et al (2014). I apply this method to data from the International Debt Statistics of the World Bank's Global Development Finance (GDF) database, which provides information on the annual changes in a country's debt stocks (stock of liabilities minus stock of assets). I define public debt in two ways: 1. sovereign to sovereign debt or official public debt (OPD) and 2. total public debt, i.e. the sum of official public debt and public and publicly guaranteed debt financed by private creditors (TPuD) similar to Alfaro et al (2014). I also define private debt in two ways: 1. private non-guaranteed debt (PNGD) and 2. total private debt, i.e. the sum of private non-guaranteed debt and short-term debt (TPvD).

III. B. Identifying Surges

I define a surge as any year where the net debt inflows exceed some threshold value, using two different thresholds. First, to ensure that the identified surge is large enough by both the

country's own specific characteristics and the entire (cross countries) sample specifics, I define the surge to include the entire sample distribution. Thus, a surge is identified where the observation lies within the top 30th percentile of the country's own distribution of net debt flows and lies in the top 30th percentile for the entire sample distribution of net debt flows as a percentage of GDP (full sample). Second, I redefine a surge as an observation that lies within the top 30th percentile of the country's own distribution of net debt flows as a percentage of GDP (country sample). For the full sample surge identification method, I have 222 surges observations for each of the four surge measures (OPD surge, TPuD surge, PNGD surge and TPvD surge) which is about 30 percent of the total sample. For the country sample surge identification method, I have 210 surges observations for each of the four surge measures (OPD surge, TPuD surge, PNGD surge and TPvD surge), which is about 28.3 percent of the total sample.

Tables 1.8a and 1.8b list the countries defined as having a surge in public debt while Tables 1.8c and 1.8d show surges of private debt using the full sample surge identification while Tables 1.9a and 1.9b list the countries defined as having a surge in public debt while Tables 1.9c and 1.9d show surges of private debt using the country sample surge identification. Focusing on Albania in Table 1.8a (list of countries with surge in official public debt) in the full sample for example, there is a surge duration of 1990-1996 for official public debt for Albania and the next surge period happened in year 1998. This means that a surge occurred (S=1) in each year for Albania for official public debt from 1990-1996 and again in 1998, but no surge occurred (S=0) in 1997. In the case of the country sample, a surge in official public debt occurred for Albania 1990 and the next surge occurred in year 1992 (Table 1.9a). This means that a surge occurred (S=1) in 1990 for Albania for official public debt but no surge occurred (S=0) in 1991. I consider both the country and full

sample definitions to capture surges in debt that are large for a particular country and those that are large across all countries.

The threshold approach is appropriate here to ensure a consistent and fair treatment across countries while allowing significant cross-country variation in the absolute threshold of the episodes. Further, using alternative methods in calculating a surge help determine whether the outcome of the study is sensitive to how the surges are defined.

III. C How different are Surges from Normal inflows?

As a first step in examining the debt surges, I estimate a quantile regression to determine whether these surges behave distinctly differently from the normal debt flows across the entire sample. I follow Ghosh et al. (2014) who used the quantile regressions to establish that large capital inflows (surges in total capital inflows) behave qualitatively differently from the normal capital flows, thus justifying the focus on surges in capital inflows.[2] I estimate equations 1 and 2 below through quantile regression to show that surges in private and public debt flows behave distinctively differently from the normal private and public debt flows.[3]

$$PrivDebt_{it} = G_t'\alpha_1^q + D_t'\beta_1^q + \mathcal{E}_{it} \qquad q = 30,50,70,90 \qquad (1)$$

$$PubDebt_{it} = G_t'\alpha_1^q + D_t'\beta_1^q + \mathcal{E}_{it} \qquad q = 30,50,70,90 \qquad (2)$$

where $\mathrm{PrivDebt_{it}}$ and $\mathrm{PubDebt_{it}}$ denote the net private and public debt expressed as a percentage of GDP respectively, to country i at time t. G and D denote global and domestic factors, q represents the different quantiles of net debt flows (percentage of GDP), and Ɛ is the random error term.

[2] Ghosh et al. (2104) estimated a quantile regression to assess whether large capital inflows (surges in total capital inflows) behave qualitatively different from the normal capital flows. Forbes and Warnock (2012) assume the behavior of the capital episodes are distinctly different from the normal capital flows and do not test this directly.

[3] The quantile regressions (equations 1 and 2) are on the levels of the debts flows whiles the probit model (equation 3) is on the surges of the debt flows.

III. D Occurrence of Surges

To examine the role of the global and domestic factors in the likelihood of having a debt surge, I estimate a probit model of the following form:

$$\Pr(S_{it} = 1) = F(G_t'\alpha_1 + D_t'\beta_1) \qquad (3)$$

S_{it} is a dummy variable that takes a value of 1 if the country i experiences a surge in period t; G and D denote vectors of global and domestics factors lagged by one period. Equation 3 is the key equation in this study. I use lagged values of both the global and domestic factors to curb any potential issue of endogeneity (Ghosh et al. 2014). I also include region specific effects and cluster the standard errors at the country level. The clustered standard errors account for heteroskedasticity across "clusters" (countries) in the data and help mitigate the likelihood of correlation in the error term when analyzing panel data, where each unit is observed across time.[4] Second, I account for regional differences. The sample is characterized by heterogeneous countries that differ in their ability to attract inflows. By assigning region dummies I group them according to their continents since countries within a particular continent may share some common characteristics. The five regions considered are Africa, Asia, Europe, South America (Latin) and North/Central America.[5]

III. E Magnitude of debt flows during Surges

After identifying the likelihood of a debt surge occurring using the probit model, I measure the magnitude of each of the surges and examine the determinants of the size of the surge. I

[4] Using robust standard errors produce greater significant results than the clustered standard errors. However, I report only the results with clustered standard errors.

[5] The regions and their corresponding countries are **Africa** (Algeria, Morocco, Nigeria, South Africa and Tunisia), **Asia** (Armenia, Azerbaijan, China , India, Indonesia, Kazakhstan, Malaysia, Philippines, Sri Lanka, Thailand and Vietnam), **Europe** (Albania, Belarus, Bulgaria and Ukraine), **South America** (Argentina, Brazil, Colombia, Dominican Republic, Ecuador and Paraguay) and **North/Central America** (Costa Rica and Mexico).

estimate this by regressing each type of debt flow conditional on the surge occurring on the same independent variables considered previously.

$$(PrivDebt_{it}|S_{it}) = G_t'\alpha_1 + D_t'\beta_1 + \mathcal{E}_{it} \qquad (4)$$

$$(PubDebt_{it}|S_{it}) = G_t'\alpha_1 + D_t'\beta_1 + \mathcal{E}_{it} \qquad (5)$$

$(PrivDebt_{it}|S_{it})$ and $(PubDebt_{it}|S_{it})$ are the private debt flows (to GDP) and public debt flows (to GDP) respectively to country i in time t, conditional on a surge. G and D are vectors of global and domestic factors lagged one period and $\mathcal{E}$ is the random error term. I include region-specific effects in equation 4 and 5 and cluster the standard errors at the country level.

IV. Data description

IV. A Decomposition of debt flows

In this study, I use annual Data for 28 EMEs from 1990-2016. The International Financial Statistics (IFS) database issued by the International Monetary Fund (IMF) is the standard data source for a country's total capital flows (Alfaro et al, 2014). However, this source does not provide unique and comprehensive division of debt securities by private and public issuers and holders. This is especially true for EMEs, which are the focus of this study. I therefore rely on the International Debt Statistics (IDS) of the World Bank's Global Development Finance (GDF) database, which provides detailed information on the decomposition into the private and public issuers and holders of a country's total debt flows. Figure 1 shows the decomposition used by Alfaro et al (2014). It displays graphically net external debt as the sum of short-term debt, long-term debt, and use of IMF credits. However, long-term debt is decomposed into private non-guaranteed debt (which is solely private) and the public and publicly guaranteed debt. While public and publicly guaranteed debts (PPG) are public from the debtor standpoint, the creditor in the total PPG debt could either be a private entity or an official entity. I therefore define public debt in two

ways. The first is Official Public Debt (OPD), which is the sum of public and publicly guaranteed debt by official creditors (i.e. bilateral and multilateral public flows) and IMF credits (considered official public debt as they are provided by a quasi-government body). Second is Total Public Debt (TPuD), which is the sum of the official public debt and public and publicly guaranteed debt when creditors are private entities (i.e. commercial banks and corporate bonds). One challenge with this decomposition of debt flows is that it is difficult to separate short-term debt into private and public components. Alfaro et al. (2014) assign short term flows to private flows. However, I consider them separately in this study and thus measure private debt in two ways. First, I define private debt as the Private Non-guaranteed Debt (PNGD). Second, I define private debt as Total Private Debt (TPvD) calculated asthe sum of Private Non-guaranteed Debt and the short-term external debt (similar to Alfaro et al. (2014)). I compare the responses of PNGD and TPvD to those of OPD and TPuD.

I measure global interest rates by the US long-term 10-year government bond interest rate, which is considered as the standard indicator for the long-term interest rate. For global risk, I use the CBOE Volatility Index (VIX) which measures the implied volatility of Standard & Poor (S&P) 500 index. To measure the state of the global economy, I use the average of GDP growth (in real terms) of the G7 countries (Canada, France, Germany, Italy, Japan, United Kingdom, United States). Data for the first two global factors (US 10-year long-term government bond interest rate and VIX) were obtained from the Federal Reserve Economic Data and real GDP data from the G7 countries were obtained from the World Bank database.

I include six variables to capture the domestic factors in this study. I measure a country's economic performance by the real GDP per capita growth (natural logarithm of the ratio of real GDP per capita for year 2 to real GDP per capita of year 1). I also control for the current account

position of a country as the ratio of current account balance position relative to GDP. If there is a deficit on the current account balance, it means the country is not generating enough savings to finance its own investment needs and must attract surplus foreign savings in the form of a capital (debt) inflow to balance the account. I also measure a country's reserves as the ratio of international reserves to GDP. Domestic credit is measured as the domestic credit provided by the financial sector as a share of GDP. When domestic financial institutions, such as banks, are well structured, more reliable, and able to supply adequate loanable funds to domestic investors, all else equal, it leads to a decline in the inflow of foreign debt. Similarly, better domestic financial institutions could mean more ability to borrow from abroad (i.e., knowing funds are safe) and this could complement foreign flows of debt Data for these variables are taken from the World Bank Development Indicators. I measure capital controls or de jure financial openness using the KAOPEN index by Chinn and Ito (2008), which is based on the IMF's Annual Report on Exchange Arrangement and Exchange Restrictions (AREAER). This index is normalized between zero and one where higher values of this index indicate that a country is more open to cross-border capital transactions.

There are several data sources available when it comes to measuring institutional quality. I use the Kauffman and Kraay World Governance Indicator (WGI) index, which is a composite indicator based on over 30 data sources. The WGI index is a research dataset summarizing the views on the quality of governance provided by many enterprises, citizen and expert survey respondents, think tanks, non-governmental organizations, international organizations, and private sector firms. This dataset is combined and scaled to create six broad dimensions of governance for over 200 countries and territories over the period 1996 to 2017 but without 1997 and 2001. These dimensions include Voice and Accountability, Political Stability and Absence of Violence,

Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption. I use the average (composite measure) of all these measures as a measure of institutional quality index. The composite measure ranges from -2.5 to 2.5 with higher values corresponding to better governance (a more stable political country and an absence of crime or low crime rate country). Also, because this measure of institutional quality is slow to change (and most variation comes from cross-country comparisons rather than the time variation) and the data starts from 1996 where as my research starts 1991, I assign 1996 values backward, that is I assign 1996 values to 1991-1996, 1998 values to 1997-1998, 2000 values to 1999-2000 and 2002 values to 2001-2002. From 2003 through to 2016, data was available for each of the years.

IV. B. Descriptive Statistics

Tables 1.1a -1.1c provide the descriptive statistics of the variables used in this study. Table 1a. shows the descriptive statistics of the variables in levels. The four debt flows (which are the variables of interest) in level form show both positive and negative values, hence they do not clearly show the direction of the debt flows although on average the values are negative, indicating outflow. Tables 1.1b and 1.1c show the distinction between the surges and non-surges. I define an observation as a surge if net debt flows lie within the top 30th percentile of the country's and the entire countries distribution of net debt flows as a percentage of GDP (full sample) and if net debt flows lie within the top 30th percentile of the country's own distribution of net debt flows as a percentage of GDP (country sample). Here, the minimum, mean, and maximum values of all four debt surges are positive. This shows the direction of the debt surges, where a positive value indicates a debt inflow. For example, Table 1.1b shows that the average of OPD surge flows to

GDP surge is 3.9%, the average of TPuD surge flows to GDP is 5.3%, the average of PNGD surge flows to GDP is 4.0% and the average of TPvD surge flow to GDP is 6.6%.[6]

Table 1.2a provides a correlation analysis among the different types of debt flows while Tables 1.2b and 1.2c show the correlation analysis among the four different surges using the full sample and the country sample respectively. Table 1.2a shows that official public debt is positively correlated to total public debt, (correlation of .62), but the correlation becomes weaker with private non-guaranteed debt (0.07) and total private debt (0.10). The correlation between the two measures of private debt flow is strongly positive, about 0.56. With regard to the surges, Tables 1.2b and 1.2c show the correlation between official public debt (OPD) surge and both private debt surge measures are negative. In Table 1.2b for example, the correlation between official public debt surge and private non-guaranteed debt surge is -0.017, but with total private debt surge is -0.035. However, the correlation between either the total public debt surge (sum of OPD and Public and Publicly Guaranteed debt from private creditors) and each of the private debt surge measures is positive, about.045, meaning PPG debt from private creditors is the debt component driving this positive relation between TPuD and the private debts. The correlation matrix in both Table 2a and Table 2b show a similar pattern.

V. Results and Interpretation

In this section, I first examine whether debt inflows to EMEs behave significantly differently from the normal flows. Then I discuss the findings on my main question, which is what factors (both global and domestic) determine the likelihood of a surge (extreme large increase in foreign debt flows). I then discuss the magnitudes of these surges.

[6] Short-term is about 18.4% of the total sample debt on average.

V. A. Results from Quantile Regression

For comparative purpose, I present both OLS and quantile regressions of both net private debt to GDP and net public debt to GDP in Tables 1.3a, 1.3b and 1.3c (the OLS results in cols. [1] and quantile results in cols. [2]- [5]). The OLS result shows that global market uncertainty is a common determinant that drives both private and public debt inflows in levels into emerging countries.

Moving beyond the OLS results, I show that large flows behave significantly differently from normal flows, and hence deserve a separate analysis. The quantile regression results show that the association between both types of debt flows and several of the push and pull factors depends on the magnitude of the flows. For example, in Table 1.3a (quantile results for the net official public debt) the coefficients of global market uncertainly, global interest rate, KAOPEN, CA/GDP, ratio of reserves to GDP, and institutional quality are increasing as the percentile for the distribution increases. This similar argument holds for the private debt flows as shown in Tables 3c and 3d. Among the factors that drive both private debt flows, the coefficients on KAOPEN, CA/GDP, and ratio of reserves to GDP are larger and increase along different points along the private debt flow distribution. These results generally suggest that there are significant differences in the responsiveness of debt flows to the various push and pull factors at different points along the debt distribution and more importantly the difference in the responses (coefficients) increases as the percentile of the distribution increases, thus justifying my focus on surges.

V. B. Main findings – Determinants of Debt Surges

The main results from this study are reported in Tables 1.4a and 1.4b. These two tables show the key drivers of surges for the different types of public and private debts in this study using both the full sample and the country sample of surge identification.

V.B.(i). Determinants of Public Debt Surges

Table 1.4a shows that an increase in global market uncertainty increases the likelihood of public debt (both official public debt and public debt financed by private creditors) surges to EMEs. A higher global interest rate, which signals the high cost of borrowing from foreign investors or institutions for EME's, is positively correlated to the official public debt surges. This finding is consistent with the countercyclical Keynesian policy, where government uses fiscal policy as a buffer during economic downturns. That is, most EME's increase their fiscal deficit (access international government credit) during periods of global uncertainties or recession to stabilize their economies because of the countercyclical nature of international government borrowing (Galindo and Panizza (2018)).

In the case of domestic factors, the positive and significant coefficient of the KAOPEN index shows that countries that are better integrated into global financial markets are more likely to attract large public debts. A reduction in the accumulation of international reserves increases the likelihood of a public debt surge in EME's. That is, an emerging market can increase its foreign reserves by lending abroad (buying US Treasury securities for example) so a decrease in reserves means a reversal of public lending (selling off these securities). Also, domestic GDP per capita growth, institutional quality, and the current account deficit, are significant and have the expected signs. That is, the result shows that higher GDP per capita attracts public debt surges into EME's while emerging markets with weak institutions are more likely to attract large public debt like IMF credits to strength their institutions and stabilize the economy. The coefficient on the current account deficit is statistically significantly negative, meaning the country is not generating enough savings to finance its own investment needs and must attract surplus foreign savings in the form

of a capital (debt) inflow to balance the account. The results in Table 1.4a are remarkably similar across the different definition of public debt surges using the full sample versus the country sample.

V.B.(ii). Determinants of Private Debt Surges

Table 1.4b shows that private debt surges to EMEs are statistically and significantly influenced by global risk and global real GDP growth (in both the full sample and the country sample). That is, private debt surges (using the private debt measure that includes short-term debts) become more likely in periods when global real GDP growth is sluggish or when there is low risk or uncertainty in the financial markets. This result is only true for total private debt (TPvD) surges, i.e. it is true when the private debt measure includes short term debts but in the case of private debt without short-term debt (PNGD) the result is insignificant. This result is in line with Rey (2013) that large short-term capital (debt) flows to EMEs are mostly determined by global factors, particularly global risk.

Turning to the domestic factors, the positive association between private debt surge (private non-guaranteed debt) and international reserves supports the argument that higher level of reserves serves as an implicit insurance of foreign investors, thus reducing the riskiness of an investment in the domestic economy and hence enhancing the inflow of debt flows to EME's (similar to Aizenman and Marion (2004)). Also, the result shows that EMEs that are better integrated into the financial markets (higher KAOPEN) are more likely to attract private non-guaranteed debts (private debt that excludes the short-term debt). When a country has a large current account deficit, it is usually investing more abroad than saving at home, meaning foreign investors are essentially financing the country either through the government or private investors. The negative and significant association between current account balance and private surge, shows that increasing

current account deficit attracts private debt surges. Also, the positive relationship between real GDP per capita growth and private surge (large private non-guaranteed debt) suggest that fast growing countries or countries with high real GDP per capita growth are more likely to experience large private surge. Investors are more confident investing in countries with better institutional quality, hence I expected the coefficient of institutional quality for total private surge to be positive and significant. Instead, it is significantly negative. The negative relation is influenced by the short-term debt in the total private debt, thus better institutional quality is associated with fewer surges in short term debt (or worse institutional quality tends to draw in short-term private debt surges).

V. C. Magnitudes of private and public debt surges

The estimation results reported in Table 1.7a and Table 1.7b show the magnitude of the occurrence of both public and private debt surges respectively. In the case of the public debt surge (official public debt), the result shows that all the global factors (interest rate, VIX, global GDP growth) are positive and statistically significant but only the global interest rate is significant when the public debt measure includes public debt by public creditors and public debt by private creditors (TPuD). This shows that global factors increase the size of public debt surges especially when the debt is an official public debt. Domestic factors such as financial openness (KAOPEN), current account deficit, small size of the domestic credit and poor institutional quality increases the size of the public debt surge. Also, the result shows that more accumulation of international reserves as a ratio GDP leads to a decrease in the size of public debt surge.

However, in the case of the private debt surge, the results from the magnitude regression conditional on private debt surge (private debt that includes short-term debt) occurrence showed that all the factors are insignificant regardless of the sample used (either full or country sample).

However, when private debt is measure as private non-guaranteed debt, global interest rate is negative and significant while international reserves is positive and significant.

V. D Robustness Check

V.D.1 Alternative Threshold Measure

In this section, I check the robustness of the empirical results. First, I utilize an alternative threshold measure for surge identification similar to Reinhart and Reinhart (2008), who defined a bonanza or surge of total net capital flows (as a percent of GDP) by selecting a threshold of 20th percentile across countries using quarterly data on gross inflows from 1980 through 2009. I use this approach here and define surges as net debt flows that lies within the top 20^{th} percentile of either the country's distribution (country sample) or both the country's and the entire countries in the sample distribution (full sample)**.**

The results are robust to the different surge identification thresholds used in this study (as shown in Table 1.4[a &b] and Table 1.5[a &b]) particularly for global factors. Higher levels of global market uncertainty (VIX) are positively (negatively) associated with public (private non-guaranteed) debt surge while an increase in global GDP growth lowers the likelihood of a private debt (private debt measure that includes short-term debt) surge. Also, a higher global interest rate is associated with large inflows of official public debt into EMEs. Also, in the case of the domestic factors, the results from either surge identification measure are qualitatively identical for both types of public and private debt surge. Table 1.5a shows that a country that is more financially integrated, has a deficit on its current account balance, or has low foreign reserves is more likely to experience a public debt surge (similar to the findings in Table 1.4a). Results in Table 1.5b indicate that domestic factors such as current account balance, foreign reserves, institutional

quality and real GDP per capita growth are the determinants of private debt surge, which is in line with results in Table 1.4b. KAOPEN is the only factor that is significant when using the top 30th percentile surge measure to measure the likelihood of PNGD surge but becomes insignificant when using the 20th percentile surge measure.

V.D.2 Global Risk Measures

Global risk appears to be a big driver to both private and public debt surges regardless of the surge identification method. Hence, I consider other measures of global risks, examining how it drives these surges and whether the results are robust or sensitive to the measure of global risk.

VOX is an older version of VIX. VOX measures volatility using the market prices on the S&P 100 options index while VIX measures volatility using market prices on S&P 500 option index. The correlation between VIX and VOX is extremely high. about .98, for the period 1990-2016. Tables 1.6a and 1.6b show the entire regression results for the two surge identification measures using both global risk measures. There are not many changes in the results when both VOX and VIX are used. The factors that were significant for VIX remain significant for VOX and keep their expected coefficient signs as well. The only difference is that the size of the coefficients is bigger when VIX is used compared to VOX for most of the factors.

Overall, increases in the broad risk measures (VIX and VOX) increase the occurrence of public debt surges (both OPD and TPuD) and decrease the occurrence of private debt surge (TPvD) among EMEs.

VI. Conclusion

This paper examines the determinants of debt flow surges to emerging economies. I focus on surges in private debt flows versus public debt flows. Using data on net foreign debt flows for

28 EMEs over 1990-2016, I decompose external debt flows into large surges of private non-guaranteed debt (PNGD), total private debt (TPvD = PNGD plus short-term debt), official public debt (OPD) and total public debt (TPuD = OPD plus PPG from private creditors). The results suggest public debt (both OPD and TPuD) and private debt (TPvD) surges are driven by both global and domestic factors, but these surges are more sensitive to global factors than domestic factors. Also, global factors that affect the occurrence of public and private (TPvD) debt flow surges drive them in opposite direction. In the case of global risk for instance, while higher levels of global market uncertainty (VIX) significantly reduces the inflow of total private debt surges to EMEs, public debt still surges in the face of growing global uncertainty. In determining the size (magnitude) of these surges, the results show that the size of public debt surges is more sensitive to the global factors than the domestic factors. The size of private non-guaranteed debt surge is only influenced by global interest rate and foreign reserves, but once short-term debt is considered as private debt, the significance of these two factors is lost.

In conclusion, the result shows that global factors, particularly global market uncertainty, play a dominant role in driving the surges in public and private debt flows to EMEs. Also since these debt flows are more sensitive to global factors, which are beyond the control of the domestic countries, governments or policymakers in these (EMEs) should focus more on policies such as macroprudential measures or capital controls that will improve the country's resilience to financial-stability risks and strengthen their ability to withstand the influx of debt (capital) flows into their countries rather than to attempt to directly reduce these inflows. Additionally, with global factors playing a dominant role in driving these debt surges, there is a need for a multilateral coordination over these policies to ensure that the spillovers are minimized (Ostry et al., 2012).

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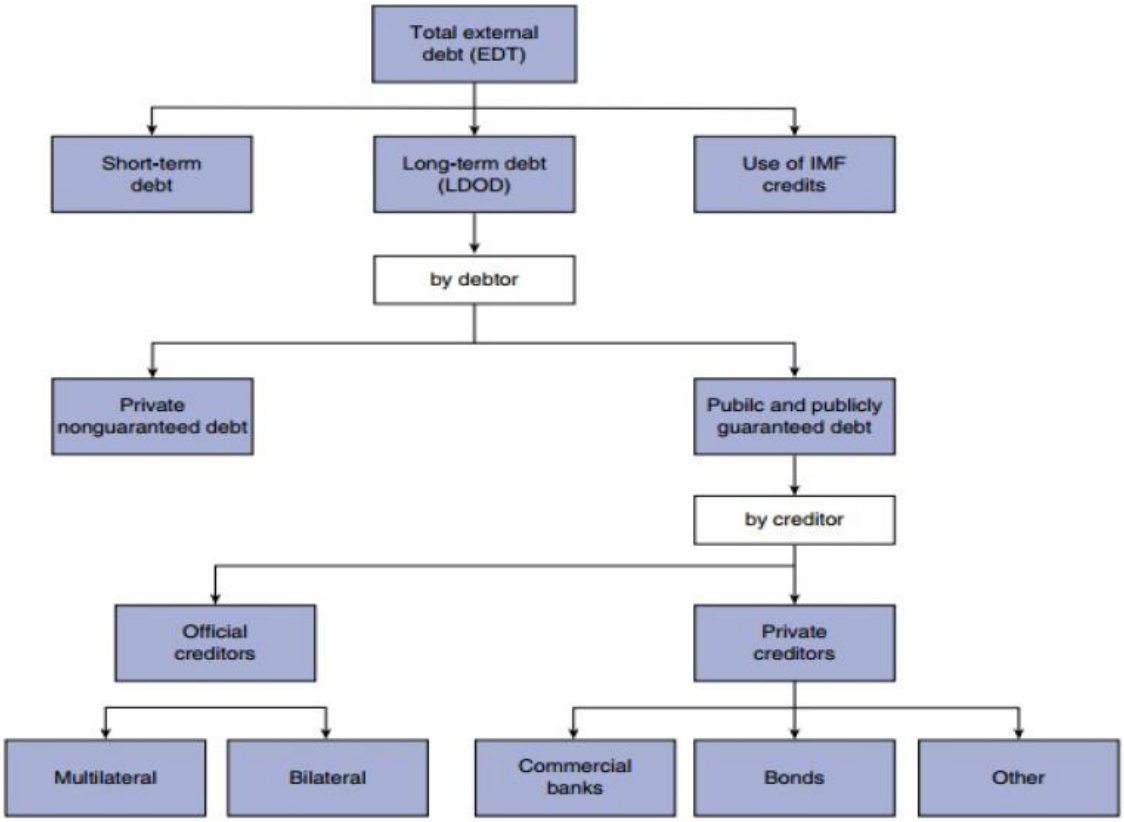
FIGURE 1: Decomposition of Net External Debt Flows into Private and Public components.



Source: Alfaro et al. (2014)

Descriptive Statistics:

Table 1.1a summary statistics calculated across all countries and time

	Observation	**Mean**	**Standard deviation**	**Min**	**Max**
Net official public debt flow to GDP (in %)	742	-1.150	48.980	-1322.747	45.148
Net total public debt flow to GDP (in %)	742	-5.122	169.909	-4623.594	92.412
Net private non-guaranteed det flow to GDP (in %) _	742	-1.484	63.347	-1719.302	32.934
Net total private debt flow to GDP (in %) _	742	-3.741	140.349	-1719.302	49.696
Global volatility risk Index (VIX)	756	19.677	5.763	12.389	32.693
Global interest rate	756	4.043	2.019	0.902	8.792
Global world growth	756	0.016	0.014	-0.043	0.037
KAOPEN (financial openness)	717	0.366	0.271	0	1
Current account to GDP	717	-1.475	6.634	-30.688	33.679
Reserves to GDP	717	0.010	0.043	-0.311	0.218
Institutional Quality Index	753	-0.327	0.457	-1.260	1.861
Domestic credit to GDP	734	58.117	42.617	-12.698	215.183
Real GDP per capita Growth	751	0.003	0.354	-3.411	2.619

	Observation	Mean	Standard deviation	Min	Max
Surges					
OPD/GDP (as %)	222	3.895	4.088	1.139	45.148
TPuD/GDP (as %)	222	5.320	7.434	1.963	92.412
PNGD/GDP (as %)	222	4.021	4.591	1.019	32.934
TPuD/GDP (as %)	222	6.569	6.610	2.141	49.696
Non-Surges					
OPD/GDP (as %)	520	-3.304	58.331	-1322.747	1.123
TPuD/GDP (as %)	520	-9.580	202.800	-4623.594	1.961
PNGD/GDP (as %)	520	-3.834	75.511	-1719.302	1.015
TPuD/GDP (as %)	520	-8.143	167.451	-3816.959	2.125

Table 1.1b. summary statistics for the different surge types (using the full sample)

Table 1.1c. summary statistics for the different surge types (using the country sample).

	Observation	Mean	Standard deviation	Min	Max
Surges					
OPD/GDP (as %)	210	3.619	4.370	0.073	45.148
TPuD/GDP (as %)	210	5.157	7.735	0.353	92.412
PNGD/GDP (as %)	210	3.775	4.781	0.002	32.934
TPuD/GDP (as %)	210	6.310	6.946	0.169	49.696
Non-Surges					
OPD/GDP (as %)	532	-3.033	57.686	-1322.747	5.918
TPuD/GDP (as %)	532	-9.180	202.511	-4623.594	5.644
PNGD/GDP (as %)	532	-3.560	74.670	-1719.302	10.188
TPuD/GDP (as %)	532	-7.708	165.569	-3816.959	11.908

Table 1.2a ***Correlation Matrix among the different types of debt flows measure.***

	TPuD/GDP	OPD/GDP	PNGD/GDP	TPvD/GDP
TPuD/GDP	1.000			
OPD/GDP	0.621	1.000		
PNGD/GDP	0.376	0.073	1.000	
TPvD/GDP	0.326	0.101	0.555	1.000

Table 1.2b ***Correlation Matrix among the four different Surges Using the Full Sample_ threshold***

	TPuD/GDP_ Surge	OPD/GDP_ Surge	PNGD/GDP _Surge	TPvD/GDP _Surge
TPuD/GDP_ Surge	1.000			
OPD/GDP_ Surge	0.575	1.000		
PNGD/GDP_ Surge	0.045	-0.017	1.000	
TPvD/GDP _Surge	0.045	-0.035	0.624	1.000

Table 1.2c. ***Correlation Matrix among the four different Surges Using the Country sample_ threshold***

	TPuD/GDP_ Surge	OPD/GDP_ Surge	PNGD/GDP _Surge	TPvD/GDP _Surge
TPuD/GDP_ Surge	1.000			
OPD/GDP_ Surge	0.562	1.000		
PNGD/GDP_ Surge	0.009	-0.009	1.000	
TPvD/GDP _Surge	0.010	-0.017	0.581	1.000

Table 1.3a.

OLS and Quantile Regression for *Official Public Debt flows*

Dependent Variable: net official public debt flow to GDP (log OPD/GDP)					
	OLS	**Quantile Regressions (Percentile)**			
		30th	50th	70th	90th
	(1)	(2)	(3)	(4)	(5)
Global Factors					
Risk (VIX)	**0.075**** **(0.028)**	**0.025**** **(0.010)**	**0.023**** **(0.010)**	**0.048***** **(0.014)**	**0.109***** **(0.036)**
Interest Rate	**0.397***** **(0.131)**	0.008 (0.044)	**0.083*** **(0.044)**	**0.210***** **(0.053)**	**0.742***** **(0.168)**
World GDP Growth	-15.983 (10.693)	**-11.326***** **(4.149)**	**-9.629**** **(3.944)**	-8.789 (7471)	12.977 (19.972)
Domestic Factors					
KAOPEN	**1.019*** **(0.559)**	0.287 (0.285)	**0.744**** **(0.364)**	**1.773***** **(0.325)**	1.548 (0.724)
Current account balance	**-0.060**** **(0.025)**	**-0.031**** **(0.014)**	**-0.041**** **(0.013)**	**-0.056***** **(0.012)**	**-0.078**** **(0.033)**
Reserves/GDP	-3.920 (2.605)	-1.046 (2.413)	**-3.217*** **(1.767)**	**-3.602*** **(0.003)**	**-8.102*** **(4.651)**
Domestic Credit /GDP	0.003 (0.005)	0.002 (0.002)	-0.001 (0.002)	-0.003 (0.002)	-0.003 (0.004)
Institutional Quality	**-1.147**** **(0.466)**	**-0.368**** **(0.155)**	**-0.326*** **(0.195)**	**-0.461**** **(0.211)**	**-1.365***** **(0.517)**
GDP per Capita (Growth)	1.253 (2.583)	0.477 (1.757)	1.007 (1.757)	0.945 (2.268)	**-0.058 (2.750)**
Observation	657	657	657	657	657
Regional Dummies	Yes	Yes	Yes	Yes	Yes
R-Squared	0.100	0.031	0.055	0.117	0.199

Notes: Dependent variable is net official public debt flow to GDP (log)to GDP. All the independent variables are lagged one period. Constant and region-specific effects are included in all specifications. Clustered and bootstrapped standard errors (with 100 replications) are reported in parentheses for OLS and quantile regressions respectively. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. R-squared for the quantile regressions are Pseudo R-squared

Table 1.3b.

OLS and Quantile Regression for *net total public debt flows to GDP*

Dependent Variable: net total public debt flow to GDP (log TPuD/GDP)					
	OLS	**Quantile Regressions (Percentile)**			
		30th	50th	70th	90th
	(1)	(2)	(3)	(4)	(5)
Global Factors					
Risk (VIX)	**0.108**** **(0.046)**	0.012 (0.016)	0.011 (0.018)	**0.074***** **(0.022)**	**0.158**** **(0.069)**
Interest Rate	**0.454*** **(0.241)**	-0.064 (0.069)	-0.007 (0.057)	0.106 (0.085)	**0.543**** **(0.261)**
World GDP Growth	-7.663 (13.566)	**-21.396**** **(8.575)**	**-17.107**** **(7.470)**	-0.827 (11.049)	21.702 (22.369)
Domestic Factors					
KAOPEN	1.293 (0.866)	0.272 (0.487)	**1.308***** **(0.449)**	**1.611***** **(0.508)**	**3.151**** **(1.464)**
Current account balance/GDP	**-0.072*** **(0.038)**	-0.050 (0.032)	**-0.033*** **(0.019)**	**-0.040**** **(0.020)**	-0.056 (0.044)
Reserves/GDP	3.002 (7.358)	0.175 (3.607)	-2.514 (3.266)	**-8.836*** **(4.672)**	**-12.435*** **(7.436)**
Domestic Credit /GDP	0.010 (0.008)	0.001 (0.002)	-0.002 (0.003)	-0.002 (0.004)	0.0001 (0.0085)
Institutional Quality	**-1.764**** **(0.820)**	-0.175 (0.317)	0.421 (0.319)	0.319 (0.361)	-0.215 (0.939)
GDP per Capita (Growth)	7.970 (5.591)	4.322 (5.660)	5.332 (5.659)	6.958 (5.388)	5.788 (8.132)
Observation	657	657	657	657	657
Regional Dummies	Yes	Yes	Yes	Yes	Yes
R-Squared	0.115	0.027	0.031	0.052	0.102

Notes: Dependent variable is net total public debt flow to GDP (log)to GDP. All the independent variables are lagged one period. Constant and region-specific effects are included in all specifications. Clustered and bootstrapped standard errors (with 100 replications) are reported in parentheses for OLS and quantile regressions respectively. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. R-squared for the quantile regressions are Pseudo R-squared

Table 1.3c.

OLS and Quantile Regression for *net private non-guaranteed debt flows to GDP*

Dependent Variable: *net private non-guaranteed debt to GDP (log PNGD/GDP)*					
	OLS	**Quantile Regressions (Percentile)**			
		30th	50th	70th	90th
	(1)	(2)	(3)	(4)	(5)
Global Factors					
Risk (VIX)	**-0.054** **(0.026)**	-0.012 (0.009)	-0.014 (0.010)	-0.015 (0.015)	0.008 (0.058)
Interest Rate	**-0.452*** **(0.220)**	-0.017 (0.027)	-0.032 (0.030)	-0.037 (0.045)	-0.212 (0.142)
World GDP Growth	-6.711 (8.495)	-1.195 (3.090)	-3.263 (3.807)	-1.126 (6.355)	9.607 (19.330)
Domestic Factors					
KAOPEN	0.912 (1.413)	0.204 (0.220)	**0.919**** **(0.360)**	**1.325***** **(0.407)**	**2.916*** **(1.672)**
Current account balance/GDP	**-0.091*** **(0.050)**	-0.005 (0.009)	-0.013 (0.012)	**-0.032***** **(0.009)**	**-0.144**** **(0.059)**
Reserves/GDP	**11.245*** **(6.424)**	**1.832*** **(0.951)**	2.108 (1.553)	**3.919**** **(1.653)**	**11.184*** **(5.900)**
Domestic Credit /GDP	-0.001 (0.008)	0.001 (0.001)	0.003 (0.002)	**0.005**** **(0.003)**	0.001 (0.009)
Institutional Quality	-0.499 (0.610)	-0.118 (0.135)	0.006 (0.188)	-0.024 (0.275)	-0.453 (0.862)
GDP per Capita Growth	**9.768*** **(5.635)**	1.907 (2.926)	1.484 (2.910)	1.310 (2.453)	2.650 (3.148)
Observation	657	657	657	657	657
Regional Dummies	Yes	Yes	Yes	Yes	Yes
R-Squared	0.178	0.014	0.036	0.0615	0.115

Notes: Dependent variable is net private non-guaranteed debt to GDP (log). All the independent variables are lagged one period. Constant and region-specific effects are included in all specifications. Clustered and bootstrapped standard errors (with 100 replications) are reported in parentheses for OLS and quantile regressions respectively. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. R-squared for the quantile regressions are Pseudo R-squared.

Table 1.3d.

OLS and Quantile Regression for *net total private debt flows to GDP*

Dependent Variable: *net total private debt to GDP (log TPvD/GDP)*					
	OLS		**Quantile Regressions (Percentile)**		
		30th	50th	70th	90th
	(1)	(2)	(3)	(4)	(5)
Global Factors					
Risk (VIX)	**-0.077*** **(0.041)**	**-0.039**** **(0.018)**	-0.032 (0.019)	0.001 (0.030)	0.002 (0.069)
Interest Rate	-0.406 (0.248)	-0.045 (0.063)	0.0001 (0.064)	0.061 (0.086)	0.126 (0.175)
World GDP Growth	-19.215 (13.644)	-6.708 (6.528)	-9.527 (8.051)	-7.009 (10.048)	-4.273 (23.077)
Domestic Factors					
KAOPEN	1.194 (1.705)	-0.519 (0.519)	0.846 (0.659)	**2.713***** **(1.015)**	**6.149***** **(1.672)**
Current account balance/GDP	**-0.177*** **(0.090)**	**-0.064***** **(0.016)**	**-0.067**** **(0.025)**	**-0.089**** **(0.035)**	**-0.173***** **(0.061)**
Reserves/GDP	**25.163**** **(11.242)**	**9.366***** **(2.914)**	**9.217**** **(3.746)**	**10.543***** **(3.943)**	**19.216*** **(10.596)**
Domestic Credit /GDP	0.004 (0.010)	**0.006*** **(0.003)**	0.004 (0.003)	**0.011**** **(0.005)**	-0.001 (0.009)
Institutional Quality	-1.621 (1.119)	-0.308 (0.348)	-0.007 (0.402)	-0.326 (0.461)	-0.164 (0.936)
GDP per Capita Growth	**13.185**** **(6.392)**	5.264 (5.769)	7.480 (5.036)	**9.760*** **(5.483)**	6.614 (7.453)
Observation	657	657	657	657	657
Regional Dummies	Yes	Yes	Yes	Yes	Yes
R-Squared	0.202	0.052	0.061	0.088	0.131

Notes: Dependent variable is *net total private debt to GDP (log)*. All the independent variables are lagged one period. Constant and region-specific effects are included in all specifications. Clustered and bootstrapped standard errors (with 100 replications) are reported in parentheses for OLS and quantile regressions respectively. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. R-squared for the quantile regressions are Pseudo R-squared.

Table 1.4a. **Occurrence** of **public debt surges: full sample vs country sample threshold**

Dependent variable is 1 if a debt surge occurs and 0 otherwise	**Full Sample**		**Country Sample**	
Debt Construction	TPuD/GDP	OPD/GDP	TPuD/GDP	OPD/GDP
Global Factors				
Risk (VIX)	**0.030*** (0.011)**	**0.046*** (0.010)**	**0.041*** (0.012)**	**0.074*** (0.013)**
Interest Rate	-0.016 (0.039)	**0.103*** (0.036)**	0.032 (0.049)	**0.194*** (0.045)**
World GDP Growth	-5.238 (3.718)	0.229 (3.575)	-5.800 (4.255)	0.807 (3.711)
Domestic Factors				
KAOPEN	**0.657** (0.259)**	**0.809** (0.361)**	0.298 (0.226)	0.431 (0.329)
Current Account Balance /GDP	**-0.026* (0.015)**	**-0.047*** (0.013)**	-0.014 (0.013)	**-0.028*** (0.008)**
Reserves/GDP	**-5.837*** (1.586)**	**-4.956*** (1.841)**	**-4.982*** (1.366)**	**-2.844** (1.569)**
Domestic Credit /GDP	-0.002 (0.002)	**-0.006** (0.003)**	**0.003** (0.002)**	**0.005** (0.002)**
Institutional Quality	0.135 (0.197)	-0.250 (0.186)	-0.112 (0.145)	**-0.336* (0.164)**
GDP per Capita Growth	-0.215 (0.176)	-0.091 (0.154)	**-0.353** (0.160)**	-0.099 (0.158)
Observation	664	664	664	664
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.104	0.185	0.080	0.132

Notes: Dependent variable is a binary variable equal to 1 if a surge occurs and 0 otherwise. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1] & [2] are Pseudo R-squared

Table 1.4b. **Occurrence** of **private debt surges: full sample vs country sample threshold**

Dependent variable is 1 if a surge occurs and 0 otherwise				
	Full Sample		**Country Sample**	
Debt Construction	TPvD/GDP	PNGD/GDP	TPvD/GDP	PNGD/GDP
Global Factors				
Risk (VIX)	**-0.014*** **(0.008)**	-0.007 (0.011)	**-0.021***** **(0.008)**	-0.005 (0.010)
Interest Rate	0.065 (0.046)	-0.003 (0.043)	0.061 (0.043)	-0.051 (0.048)
World GDP Growth	**-12.133***** **(4.152)**	-4.575 (3.737)	**-10.639**** **(3.856)**	-1.513 (4.036)
Domestic Factors				
KAOPEN	0.394 (0.373)	0.598 (0.436)	0.194 (0.248)	**0.482*** **(0.248)**
Current Account Balance /GDP	-0.005 (0.009)	**-0.020*** **(0.011)**	**-0.014*** **(0.008)**	**-0.023*** **(0.013)**
Reserves/GDP	-0.327 (1.886)	**4.112**** **(1.754)**	0.762 (1.678)	**3.955**** **(2.005)**
Domestic Credit /GDP	0.002 (0.002)	0.001 (0.003)	0.002 (0.001)	0.002 (0.002)
Institutional Quality	-0.192 (0.209)	0.307 (0.210)	**-0.274**** **(0.109)**	-0.124 (0.126)
GDP per Capita Growth	0.197 (0.145)	**0.270*** **(0.157)**	0.150 (0.128)	0.190 (0.164)
Observation	664	664	664	664
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.052	0.069	0.023	0.036

Notes: Dependent variable is a binary variable equal to 1 if a surge occurs and 0 otherwise. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1] & [2] are Pseudo R-squared

Table 1.5a. Sensitivity analysis: alternative threshold measure for surge identification (debt within the top 20th percentile)

Occurrence of **public debt surges: full sample vs country sample threshold**

Dependent variable is 1 if a surge occurs and 0 otherwise				
	Full Sample		**Country Sample**	
Debt Construction	TPuD/GDP	OPD/GDP	TPuD/GDP	OPD/GDP
Global Factors				
Risk (VIX)	**0.042*** (0.013)**	**0.056*** (0.009)**	**0.031** (0.012)**	**0.071*** (0.015)**
Interest Rate	0.039 (0.042)	**0.124*** (0.042)**	0.049 (0.046)	**0.230*** (0.042)**
World GDP Growth	-2.511 (3.853)	1.481 (4.336)	-4.404 (3.901)	2.172 (4.356)
Domestic Factors				
KAOPEN	**0.808*** (0.235)**	**0.857*** (0.393)**	**0.342* (0.193)**	0.414 (0.300)
Current Account Balance /GDP	**-0.38** (0.016)**	**-0.047*** (0.004)**	-0.007 (0.011)	**-0.027*** (0.009)**
Reserves/GDP	**-7.540*** (2.041)**	**-6.540*** (1.995)**	**-4.638** (1.911)**	**-4.717*** (1.797)**
Domestic Credit /GDP	0.001 (0.002)	-0.002 (0.003)	**0.004** (0.002)**	**0.003* (0.002)**
Institutional Quality	-0.175 (0.234)	-0.436 (0.269)	-0.137 (0.121)	-0.192 (0.152)
GDP per Capita Growth	-0.193 (0.170)	-0.193 (0.148)	-0.170 (0.176)	-0.083 (0.153)
Observation	664	664	664	664
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.157	0.232	0.058	0.147

Notes: Dependent variable is a binary variable equal to 1 if a surge occurs and 0 otherwise. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1] & [2] are Pseudo R-squared. **Full Sample=** Define a surge if net debt flows lies within the top 20th percentile of the country's and the entire countries in the sample distribution of net debt flows (as a percentage of GDP). **Country Sample=** Define a surge if net debt flows lie within the top 20th percentile of the country's own distribution of net debt flows (as a percentage of GDP)

1.5b. **Sensitivity analysis: alternative threshold measure for surge identification** (**debt within the top 20th percentile)**

Occurrence of p**rivate debt surges: full sample vs country sample threshold**

Dependent variable is 1 if a surge occurs and 0 otherwise				
	Full Sample		**Country Sample**	
Debt Construction	TPvD/GDP	PNGD/GDP	TPvD/GDP	PNGD/GDP
Global Factors				
Risk (VIX)	**-0.018*** **(0.009)**	-0.006 (0.011)	**-0.023**** **(0.010)**	-0.012 (0.011)
Interest Rate	0.075 (0.054)	-0.026 (0.052)	0.053 (0.046)	-0.083 (0.041)
World GDP Growth	**-11.969***** **(4.648)**	-6.447 (4.041)	**-9.419**** **(4.593)**	-0.511 (5.665)
Domestic Factors				
KAOPEN	0.693 (0.467)	0.439 (0.479)	0.226 (0.245)	0.143 (0.274)
Current Account Balance /GDP	-0.009 (0.010)	**-0.025*** **(0.016)**	-0.011 (0.010)	**-0.031***** **(0.010)**
Reserves/GDP	0.666 (2.397)	**3.917*** **(2.000)**	0.394 (1.975)	2.897 (2.178)
Domestic Credit /GDP	0.002 (0.003)	0.001 (0.003)	0.001 (0.002)	-0.0004 (0.0017)
Institutional Quality	-0.044 (0.226)	0.252 (0.250)	**-0.217*** **(0.122)**	0.072 (0.141)
GDP per Capita Growth	0.143 (0.163)	0.074 (0.163)	0.086 (0.142)	**0.399*** **(0.210)**
Observation	664	664	664	667
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.098	0.078	0.020	0.022

Notes: Dependent variable is a binary variable equal to 1 if a surge occurs and 0 otherwise. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1] & [2] are Pseudo R-squared. **Full Sample=** Define a surge if net debt flows lies within the top 20th percentile of the country's and the entire countries in the sample distribution of net debt flows (as a percentage of GDP). **Country Sample=** Define a surge if net debt flows lie within the top 20th percentile of the country's own distribution of net debt flows (as a percentage of GDP)

Table 1.6a.

Occurrence of public debt surge with alternate global risk measures: (full sample threshold)

Dependent variable is 1 if a surge occurs and 0 otherwise				
Debt Construction	TPuD/GDP	OPD/GDP	TPuD/GDP	OPD/GDP
Global Factors	VIX	VIX	VOX	VOX
Risk **(VIX, VOX)**	**0.030*** (0.011)**	**0.046*** (0.010)**	**0.0236*** (0.010)**	**0.040*** (0.010)**
Interest Rate	-0.016 (0.039)	**0.103*** (0.036)**	-0.018 (0.039)	**0.099** (0.036)**
World GDP Growth	-5.238 (3.718)	0.229 (3.575)	**-5.987* (3.602)**	**-1.088 (3.530)**
Domestic Factors				
KAOPEN	**0.657** (0.259)**	**0.809** (0.361)**	**0.664*** (0.258)**	**0.821** (0.359)**
Current Account Balance /GDP	**-0.026* (0.015)**	**-0.047*** (0.013)**	**-0.026* (0.015)**	**-0.047*** (0.013)**
Reserves/GDP	**-5.837*** (1.586)**	**-4.956*** (1.841)**	**-5.805*** (1.586)**	**-4.944*** (1.854)**
Domestic Credit /GDP	-0.002 (0.002)	**-0.006** (0.003)**	**-0.002 (0.002)**	**-0.005** (0.003)**
Institutional Quality	0.135 (0.197)	-0.250 (0.186)	0.129 (0.198)	-0.258 (0.186)
GDP per Capita Growth	-0.215 (0.176)	-0.091 (0.154)	-0.228 (0.179)	-0.107 (0.154)
Observation	664	664	664	664
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.104	0.185	0.104	0.185

Notes: Dependent variable is a binary variable equal to 1 if a surge occurs and 0 otherwise. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1]- [4] are Pseudo R-squared.

Table 1.6b.

Occurrence of public debt surge with alternate global risk measures: (country sample threshold)

Dependent variable is 1 if a surge occurs and 0 otherwise				
Debt Construction	TPuD/GDP	OPD/GDP	TPuD/GDP	OPD/GDP
Global Factors	VIX	VIX	VOX	VOX
Risk **(VIX, VOX)**	**0.041*** (0.012)**	**0.074*** (0.013)**	**0.036*** (0.011)**	**0.064*** (0.012)**
Interest Rate	0.032 (0.049)	**0.194*** (0.045)**	0.028 (0.049)	**0.189*** (0.045)**
World GDP Growth	-5.800 (4.255)	0.807 (3.711)	**-6.924* (4.116)**	-1.134 (3.525)
Domestic Factors				
KAOPEN	0.298 (0.226)	0.431 (0.329)	0.306 (0.227)	**0.447 (0.330)**
Current Account Balance /GDP	-0.014 (0.013)	**-0.028*** (0.008)**	-0.014 (0.013)	**-0.029*** (0.008)**
Reserves/GDP	**-4.982*** (1.366)**	**-2.844** (1.569)**	**-4.944*** (1.369)**	**-2.800* (1.591)**
Domestic Credit /GDP	**0.003** (0.002)**	**0.005** (0.002)**	**0.003** (0.002)**	**0.005** (0.002)**
Institutional Quality	-0.112 (0.145)	**-0.336* (0.164)**	-0.121 (0.146)	**-0.351** (0.165)**
GDP per Capita Growth	**-0.353** (0.160)**	-0.099 (0.158)	**-0.372** (0.163)**	-0.119 (0.157)
Observation	664	664	664	664
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.080	0.132	0.080	0.133

Notes: Dependent variable is a binary variable equal to 1 if a surge occurs and 0 otherwise. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1]- [4] are Pseudo R-squared.

Table 1.6c. Occurrence of Private debt surge with alternate Global risk measures (full sample threshold)

Dependent variable is 1 if a surge occurs and 0 otherwise				
Debt Construction	TPvD/GDP	PNGD/GDP	TPvD/GDP	PNGD/GDP
Global Factors	VIX	VIX	VOX	VOX
Risk **(VIX, VOX)**	**-0.014*** **(0.008)**	-0.007 (0.011)	**-0.013*** **(0.007)**	-0.005 (0.010)
Interest Rate	0.065 (0.046)	-0.003 (0.043)	0.066 (0.045)	-0.002 (0.043)
World GDP Growth	**-12.133*** ** (4.152)**	-4.575 (3.737)	**-11.771*** ** (4.083)**	-4.292 (3.620)
Domestic Factors				
KAOPEN	0.394 (0.373)	0.598 (0.436)	0.392 (0.374)	0.597 (0.436)
Current Account Balance /GDP	-0.005 (0.009)	**-0.020*** **(0.011)**	-0.005 (0.009)	**-0.020*** **(0.011)**
Reserves/GDP	-0.327 (1.886)	**4.112** ** **(1.754)**	-0.338 (1.883)	**4.123** ** **(1.757)**
Domestic Credit	0.002 (0.002)	0.001 (0.003)	0.002 (0.002)	0.001 (0.003)
Institutional Quality	-0.192 (0.209)	0.307 (0.210)	-0.190 (0.209)	0.307 (0.210)
GDP per Capita (log)	0.197 (0.145)	**0.270*** **(0.157)**	0.200 (0.144)	**0.272*** **(0.157)**
Observation	664	664	664	664
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.052	0.069	0.052	0.069

Notes: Dependent variable is a binary variable equal to 1 if a surge occurs and 0 otherwise. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1]- [4] are Pseudo R-squared.

Table 1.6d. Occurrence of Private debt surge with alternate Global risk measures (country sample threshold)

Dependent variable is 1 if a surge occurs and 0 otherwise				
Debt Construction	TPvD/GDP	PNGD/GDP	TPvD/GDP	PNGD/GDP
Global Factors	VIX	VIX	VOX	VOX
Risk **(VIX, VOX)**	**-0.021*** (0.008)**	-0.005 (0.010)	**-0.020*** (0.007)**	-0.004 (0.009)
Interest Rate	0.061 (0.043)	-0.051 (0.048)	0.063 (0.043)	-0.050 (0.048)
World GDP Growth	**-10.639** (3.856)**	-1.513 (4.036)	**-10.297*** (3.821)**	-1.285 (4.034)
Domestic Factors				
KAOPEN	0.194 (0.248)	**0.482* (0.248)**	0.189 (0.249)	**0.482* (0.248)**
Trade Openness/GDP	**-0.014* (0.008)**	**-0.023* (0.013)**	**-0.014* (0.008)**	-0.023* (0.013)
Reserves/GDP	0.762 (1.678)	**3.955** (2.005)**	0.716 (1.678)	**3.964** (2.007)**
Domestic Credit	0.002 (0.001)	0.002 (0.002)	0.002 (0.001)	0.002 (0.002)
Institutional Quality	**-0.274** (0.109)**	-0.124 (0.126)	**-0.271** (0.110)**	-0.123 (0.126)
GDP per Capita (log)	0.150 (0.128)	0.190 (0.164)	0.155 (0.128)	0.191 (0.163)
Observation	664	664	664	664
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.023	0.036	0.024	0.036

Notes: Dependent variable is a binary variable equal to 1 if a surge occurs and 0 otherwise. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1]- [4] are Pseudo R-squared.

Table 1.7a. Magnitude of public debt surges: full sample vs country sample threshold

Dependent variable is net public debt flow to GDP conditional on surge occurrence				
	Full Sample		**Country Sample**	
Debt Construction	TPuD/GDP	OPD/GDP	TPuD/GDP	OPD/GDP
Global Factors				
Risk (VIX)	0.051 (0.042)	**0.125***** **(0.030)**	0.051 (0.042)	**0.075**** **(0.033)**
Interest Rate	**0.208*** **(0.112)**	**0.286***** **(0.100)**	0.178 (0.121)	0.041 (0.122)
World GDP Growth	19.160 (11.633)	**20.498**** **(9.631)**	17.803 (11.311)	**21.306**** **(8.510)**
Domestic Factors				
KAOPEN	**1.926***** **(0.626)**	**1.710***** **(0.551)**	**2.674**** **(1.145)**	**2.860***** **(0.981)**
Current Account Balance /GDP	**-0.045*** **(0.036)**	-0.042 (0.025)	**-0.069*** **(0.040)**	**-0.083**** **(0.033)**
Reserves/GDP	**-20.845***** **(5.685)**	**-16.668**** **(7.100)**	**-17.400**** **(6.348)**	**-17.674**** **(6.619)**
Domestic Credit /GDP	0.002 (0.006)	-0.009 (0.006)	-0.005 (0.007)	**-0.021***** **(0.006)**
Institutional Quality	-0.553 (0.518)	**-0.578*** **(0.294)**	-0.326 (0.704)	-0.310 (0.463)
GDP per Capita Growth	**0.695*** **(0.372)**	0.339 (0.444)	**-0.774**** **(0.288)**	-0.080 (0.421)
Observation	186	181	176	173
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.208	0.263	0.253	0.450

Notes Dependent variable is net public debt flow to GDP conditional on surge occurrence. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1] & [2] are Pseudo R-squared

Table 1.7b. Magnitude of private debt surges: full sample vs country sample threshold

Dependent variable is net private debt flow to GDP conditional on surge occurrence				
	Full Sample		**Country Sample**	
Debt Construction	TPvD/GDP	PNGD/GDP	TPvD/GDP	PNGD/GDP
Global Factors				
Risk (VIX)	-0.032 (0.090)	-0.015 (0.062)	0.025 (0.098)	-0.035 (0.054)
Interest Rate	-0.159 (0.244)	**-0.347*** **(0.190)**	-0.067 (0.339)	-0.217 (0.265)
World GDP Growth	20.906 (17.502)	17.929 (19.507)	30.124 (23.161)	16.216 (17.006)
Domestic Factors				
KAOPEN	1.327 (3.363)	-0.784 (2.553)	3.581 (5.053)	0.158 (3.106)
Current Account Balance /GDP	-0.036 (0.095)	-0.141 (0.090)	0.001 (0.101)	-0.097 (0.073)
Reserves/GDP	11.727 (8.075)	**21.681**** **(9.240)**	4.635 (8.314)	11.179 (7.577)
Domestic Credit /GDP	-0.030 (0.021)	-0.022 (0.015)	-0.018 (0.026)	-0.025 (0.021)
Institutional Quality	0.746 (1.668)	-0.469 (1.238)	0.661 (2.079)	0.847 (1.319)
GDP per Capita Growth	0.826 (0.764)	-0.018 (0.414)	1.431 (1.056)	0.379 (0.432)
Observation	208	218	195	202
Regional Dummies	Yes	Yes	Yes	Yes
R-Squared	0.098	0.154	0.164	0.154

Notes Dependent variable is net private debt flow to GDP conditional on surge occurrence. Statistics reported in parentheses are clustered standard errors (at the country level). Constant and region-specific effects are included in all specifications. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. All variables are lagged one period. R-squared for cols [1] & [2] are Pseudo R-squared

Table 1.8a. List of surges of **official public debt/GDP (OPD/GDP)** using **Full Sample** threshold

Country	OPD/GDP _ Surge Duration	Country	OPD/GDP _ Surge Duration	Country	OPD/GDP _ Surge Duration
Albania	1990-1996	Colombia	1990	Nigeria	1994-1995
Albania	1998-2000	Colombia	1999	Nigeria	1998
Albania	2003-2004	Colombia	2003	Nigeria	2000
Albania	2006-2007	Costa Rica	1990-1991	Nigeria	2003-2004
Albania	2009	Costa Rica	2009-2010	Nigeria	2009
Albania	2012	Dominican Rep	1990-1991	Paraguay	1990
Algeria	1990	Dominican Rep	1993	Paraguay	1994
Algeria	1994-1996	Dominican Rep	2003-2004	Paraguay	1998-1999
Algeria	1998	Dominican Rep	2006	Paraguay	2002-2004
Algeria	2009	Dominican Rep	2008-2013	Philippines	1990-1994
Argentina	1990	Ecuador	1990	Philippines	1998-1999
Argentina	1993	Ecuador	1994-1995	Philippines	2002-2003
Argentina	1995	Ecuador	1999-2000	Philippines	2008
Argentina	2001	Ecuador	2010-2011	Sri Lanka	1990-1995
Argentina	2009	Ecuador	2013	Sri Lanka	1998-1999
Armenia	1993-1999	Ecuador	2015-2016	Sri Lanka	2002-2004
Armenia	2001-2004	India	1992	Sri Lanka	2006-2012
Armenia	2006-2012	India	1994	Thailand	1990
Armenia	2015-2016	India	1999	Thailand	1997-1999
Azerbaijan	1990	Indonesia	1990-1994	Tunisia	1990-1991
Azerbaijan	1995-2000	Indonesia	1998-1999	Tunisia	1993-1995
Azerbaijan	2002-2003	Indonesia	2002-2003	Tunisia	2002-2004
Azerbaijan	2012	Kazakhstan	1990	Tunisia	2007
Azerbaijan	2016	Kazakhstan	1993-1995	Tunisia	2009
Belarus	1993	Kazakhstan	1997-1999	Tunisia	2011-2013
Belarus	1995	Kazakhstan	2003	Ukraine	1993-1996
Belarus	1999	Malaysia	1990	Ukraine	1998-1999
Belarus	2007-2011	Malaysia	1994	Ukraine	2008-2010
Belarus	2016	Mexico	1990	Ukraine	2014-2015
Brazil	1990	Mexico	1995	Vietnam	1990
Brazil	1998	Mexico	2009	Vietnam	1992-1994
Brazil	2002	Morocco	1990	Vietnam	1998-1999
Bulgaria	1991-1995	Morocco	1992	Vietnam	2001-2004
Bulgaria	1998-1999	Morocco	1994-1995	Vietnam	2007-2012
Bulgaria	2003-2004	Morocco	2006-2009	Vietnam	2016
China	1991	Morocco	2011-2013		
China	1993	Nigeria	1990-1991		

Data Source: Author's own calculations

Table 1.8b List of surges of **total public debt/GDP (TPuD/GDP)** using **Full Sample** threshold

Country	TPuD/GDP _ Surge Duration	Country	TPuD/GDP _ Surge Duration	Country	TPuD/GDP _ Surge Duration
Albania	1990-1995	Dominican Rep	1990-1991	Paraguay	1999
Albania	1998-2000	Dominican Rep	2003-2004	Paraguay	2003-2004
Albania	2003-2004	Dominican Rep	2009-2011	Paraguay	2014
Albania	2006-2010	Dominican Rep	2013	Paraguay	2016
Algeria	1990	Ecuador	1990	Philippines	1990-1991
Algeria	1994-1995	Ecuador	1994-1995	Philippines	1993-1994
Argentina	1990	Ecuador	1999	Philippines	1998-1999
Argentina	1994-1996	Ecuador	2010	Philippines	2002-2003
Argentina	1998-1999	Ecuador	2013-2016	Philippines	2009
Argentina	2002-2004	India	1993	South Africa	1994,1997
Argentina	2007, 2016	Indonesia	1990-1991	South Africa	2002, 2010
Armenia	1993-1999	Indonesia	1993-1994	South Africa	2012
Armenia	2002-2004	Indonesia	1998-1999	Sri Lanka	1990-1991
Armenia	2007	Indonesia	2009	Sri Lanka	1993-1995
Armenia	2009-2011	Indonesia	2012	Sri Lanka	1998-1999
Armenia	2015-2016	Indonesia	2015	Sri Lanka	2002-2004
Azerbaijan	1990	Kazakhstan	1990	Sri Lanka	2007
Azerbaijan	1994-2000	Kazakhstan	1993-1995	Sri Lanka	2009-2013
Azerbaijan	2002-2003	Kazakhstan	1997-1999	Sri Lanka	2016
Azerbaijan	2014, 2016	Kazakhstan	2013	Thailand	1990
Belarus	1993, 1995	Kazakhstan	2015	Thailand	1997-1999
Belarus	1999	Malaysia	1990	Tunisia	1990-1991
Belarus	2007-2012	Malaysia	2001-2004	Tunisia	1994-1995
Belarus	2016	Malaysia	2006	Tunisia	2002-2004
Brazil	1990 ,2002	Malaysia	2008-2010	Tunisia	2007
Bulgaria	1991	Malaysia	2012	Tunisia	2012
Bulgaria	1998-1999	Mexico	1990, 1995	Tunisia	2015-2016
Bulgaria	2003, 2012	Mexico	2010, 2012	Ukraine	1993-1995
Bulgaria	2015-2016	Mexico	2014	Ukraine	1998-1999
China	1990	Morocco	1990,1994	Ukraine	2004
China	1992-1994	Morocco	2007, 2009	Ukraine	2007-2010
Colombia	1990, 1999	Morocco	2012-2013	Ukraine	2015
Colombia	2003, 2009	Nigeria	1990-1991	Vietnam	1990,1992
Colombia	2014-2015	Nigeria	1994	Vietnam	1994
Costa Rica	1990-1991	Nigeria	1998	Vietnam	1998-1999
Costa Rica	2000	Nigeria	2000	Vietnam	2002-2004
Costa Rica	2003	Nigeria	2003	Vietnam	2007-2012
Costa Rica	2012-2015	Paraguay	1990		

Data Source: Author's own calculation

Table 1.8c. List of surges of **private non-guaranteed debt/ GDP (PNGD/GDP)** using **Full Sample** threshold

Country	(PNGD/ GDP) _ Surge Duration	Country	(PNGD/ GDP)_ Surge Duration	Country	(PNGD/ GDP)_ Surge Duration
Albania	1990	Colombia	2016	Morocco	2003
Albania	2005	Costa Rica	1990	Morocco	2015
Albania	2008-2013	Costa Rica	2004-2005	Nigeria	1990
Argentina	1990	Costa Rica	2009	Nigeria	2000-2001
Argentina	1993-1998	Costa Rica	2011-2016	Nigeria	2005
Argentina	2001	Dominican Rep.	1990	Paraguay	1990
Argentina	2005	Dominican Rep.	2006	Paraguay	1994-1995
Argentina	2007-2008	Dominican Rep.	2012	Paraguay	2002-2010
Armenia	2001	Ecuador	1999	Philippines	1993-1998
Armenia	2005	Ecuador	2002-2004	Philippines	2001
Armenia	2007-2008	India	1994	Philippines	1993-1998
Armenia	2010-2014	India	2000	Philippines	2001
Armenia	2016	India	2003	Philippines	2014-2015
Azerbaijan	1990	India	2006-2007	South Africa	1994
Azerbaijan	1998	India	2013	South Africa	1999
Azerbaijan	2004	Indonesia	1990-1992	South Africa	2001-2002
Azerbaijan	2010	Indonesia	1994-1998	South Africa	2006-2007
Azerbaijan	2015	Indonesia	2004-2005	South Africa	2009-2012
Belarus	2001-2002	Indonesia	2009	Sri Lanka	1990
Belarus	2009-2011	Indonesia	2011	Sri Lanka	2012-2014
Belarus	2013-2014	Indonesia	2013-2014	Thailand	1990-1996
Brazil	1992-1993	Kazakhstan	1990	Thailand	2002-2004
Brazil	1996-1998	Kazakhstan	1997-1998	Thailand	2006
Brazil	2006-2008	Kazakhstan	2000-2014	Thailand	2012
Brazil	2010-2011	Kazakhstan	2016	Thailand	2014
Bulgaria	1995	Malaysia	1990-1997	Tunisia	1990
Bulgaria	2002-2009	Malaysia	1999-2000	Tunisia	1999
Bulgaria	2012-2013	Malaysia	2004-2005	Tunisia	2001-2002
China	1990	Malaysia	2012-2014	Tunisia	2008
China	1998	Malaysia	2016	Ukraine	1999
China	2014	Mexico	1990	Ukraine	2001-2008
Colombia	1990	Mexico	1997-1999	Ukraine	2010-2011
Colombia	1993-1997	Mexico	2011	Ukraine	2013
Colombia	2003, 2007	Mexico	2013	Vietnam	1990
Colombia	2010-2011	Morocco	1990, 1997	Vietnam	2010
Colombia	2013	Morocco	1999	Vietnam	2014-2016

Data Source: Author's own calculations

Table 1.8d. List of surges of total private debt/GDP (TPvD/GDP) using **Full Sample** threshold

Country	(TPvD/ GDP) Surge Duration	Country	(TPvD/GDP) _ Surge Duration	Country	(TPvD/GDP) _ Surge Duration
Albania	1990-1993	Colombia	1990	Nigeria	2002-2004
Albania	2005	Colombia	1992-1997	Paraguay	1990
Albania	2008	Colombia	2010-2011	Paraguay	1994-1995
Albania	2010-2013	Costa Rica	2005	Paraguay	1998
Argentina	1990	Costa Rica	2007-2008	Paraguay	2002-2010
Argentina	1995	Costa Rica	2011-2012	Paraguay	2012
Argentina	1997	Costa Rica	2014-2015	Philippines	1994
Argentina	2003	Dominican Rep.	1990	Philippines	1996-1997
Argentina	2005	Dominican Rep.	2002	Philippines	2001
Argentina	2011	Dominican Rep.	2006-2007	Philippines	2010
Argentina	2016	Ecuador	1993	South Africa	1994
Armenia	2001-2003	Ecuador	2001-2002	South Africa	2004
Armenia	2007-2008	Ecuador	2004	South Africa	2006-2007
Armenia	2010-2011	India	2003	South Africa	2010
Armenia	2013	India	2006-2007	Sri Lanka	1990
Armenia	2016	Indonesia	1990-1992	Sri Lanka	1994
Azerbaijan	1990	Indonesia	1994-1997	Sri Lanka	1999
Azerbaijan	2000	Indonesia	2004	Sri Lanka	2007-2009
Azerbaijan	2004	Kazakhstan	1990	Sri Lanka	2011-2012
Azerbaijan	2010	Kazakhstan	1997-1998	Sri Lanka	2014
Azerbaijan	2012	Kazakhstan	2000-2008	Thailand	1990-1996
Belarus	1996	Kazakhstan	2010-2014	Thailand	2006
Belarus	2002-2007	Kazakhstan	2016	Thailand	2009-2010
Belarus	2009-2011	Malaysia	1990	Thailand	2012
Belarus	2013	Malaysia	1992-1997	Tunisia	1990
Brazil	1990	Malaysia	2004-2005	Tunisia	1999
Brazil	1992	Malaysia	2007-2012	Tunisia	2001-2002
Brazil	1996-1998	Malaysia	2014	Tunisia	2012
Brazil	2007	Malaysia	2016	Ukraine	1997
Brazil	2010	Mexico	1990-1991	Ukraine	2001-2008
Bulgaria	1991	Mexico	1993	Ukraine	2010-2011
Bulgaria	1993	Mexico	2010-2013	Ukraine	2013
Bulgaria	1995-1997	Morocco	1990	Vietnam	1990
Bulgaria	2002-2009	Morocco	1996-1997	Vietnam	1992
Bulgaria	2012-2013	Morocco	1999, 2016	Vietnam	1995
China	1990,2001	Nigeria	1990	Vietnam	2007
China	2010-2011	Nigeria	1992-1995	Vietnam	2010-2012
China	2013-2014	Nigeria	1998	Vietnam	2014,2016

Data Source: Author's own calculation

Table 1.9a. List of surges of **official public debt/GDP (OPD/GDP)** using **Country Sample**

Country	OPD/GDP _ Surge Duration	Country	OPD/GDP _ Surge Duration	Country	OPD/GDP _ Surge Duration
Albania	1990	Colombia	2012, 2016	Morocco	2013
Albania	1992-1994	Costa Rica	1990-1991	Nigeria	1990-1991
Albania	1998-2000	Costa Rica	2003	Nigeria	1994-1995
Albania	2003	Costa Rica	2009-2010	Nigeria	1998, 2000
Algeria	1990-1991	Costa Rica	2014-2016	Nigeria	2003, 2009
Algeria	1994-1996	Dominican Rep	1990-1991	Paraguay	1990, 1994
Algeria	1998, 2002	Dominican Rep	2004	Paraguay	1998-1999
Algeria	2002	Dominican Rep	2008-2012	Paraguay	2002-2004
Argentina	1990	Ecuador	1990, 1994	Paraguay	2009
Argentina	1993-1995	Ecuador	1999-2000	Philippines	1990-1994
Argentina	2001,2009	Ecuador	2010-2011	Philippines	1998-1999
Argentina	2014	Ecuador	2013, 2016	Philippines	2003
Armenia	1993-1999	India	1991-1994	South Africa	1993, 1999
Armenia	2009	India	1999	South Africa	2009-2010
Azerbaijan	1990	India	2009	South Africa	2012-2014
Azerbaijan	1995-1996	Indonesia	1990-1991	South Africa	2016
Azerbaijan	1998-1999	Indonesia	1993-1994	Sri Lanka	1990-1991
Azerbaijan	2002-2003	Indonesia	1998-1999	Sri Lanka	1993-1994
Azerbaijan	2016	Indonesia	2002-2003	Sri Lanka	1998
Belarus	1993,1995	Kazakhstan	1990	Sri Lanka	2002-2003
Belarus	1999	Kazakhstan	1993-1995	Sri Lanka	2009
Belarus	2007-2011	Kazakhstan	1997-1999	Thailand	1990-1991
Brazil	1990	Kazakhstan	2003	Thailand	1997-1999
Brazil	1998-1999	Malaysia	1990-1991	Tunisia	1990-1991
Brazil	2001-2003	Malaysia	1994	Tunisia	1993-1995
Brazil	2009-2010	Malaysia	1998-1999	Tunisia	2002-2004
Bulgaria	1991-1995	Malaysia	2001	Tunisia	2012
Bulgaria	1998-1999	Malaysia	2004	Ukraine	1993-1995
Bulgaria	2003	Malaysia	2009	Ukraine	1999
China	1990-1995	Mexico	1990-1991	Ukraine	2008-2010
China	1998-1999	Mexico	1995	Ukraine	2015
Colombia	1990,1999	Mexico	2008-2012	Vietnam	1990,01992
Colombia	2001	Morocco	1990, 1992	Vietnam	1998-1999
Colombia	2003	Morocco	1994	Vietnam	2002-2003
Colombia	2008-2009	Morocco	2006-2009	Vietnam	2008-2009

Data Source: Author's own calculations

Table 1.9b List of surges of **total public debt/GDP (TPuD/GDP)** using **Country Sample**

Country	TPuD/GDP Surge Duration	Country	TPuD/GDP _ Surge Duration	Country	TPuD/GDP _ Surge Duration
Albania	1990-1994	Costa Rica	1990-1991	Nigeria	1994
Albania	1999-2000	Costa Rica	2000	Nigeria	1998
Albania	2009	Costa Rica	2003	Nigeria	2000
Algeria	1990	Costa Rica	2012-2015	Nigeria	2003-2004
Algeria	1994-1996	Dominican Rep	1990-1991	Nigeria	2009
Algeria	2002-2003	Dominican Rep	2003-2004	Paraguay	1990
Algeria	2009	Dominican Rep	2009-2011	Paraguay	1998-1999
Algeria	2016	Dominican Rep	2013	Paraguay	2003-2004
Argentina	1990	Ecuador	1990	Paraguay	2013-2014
Argentina	1998-1999	Ecuador	1994-1995	Paraguay	2016
Argentina	2002-2004	Ecuador	2010	Philippines	1990-1991
Argentina	2007	Ecuador	2013-2016	Philippines	1993-1994
Argentina	2016	India	1991-1993	Philippines	1998-1999
Armenia	1993-1999	India	1998	Philippines	2002-2003
Armenia	2009	India	2009-2010	South Africa	1994
Azerbaijan	1990	India	2012	South Africa	1997
Azerbaijan	1995-1996	India	2014	South Africa	2002-2003
Azerbaijan	1999-2000	Indonesia	1990-1991	South Africa	2009-2010
Azerbaijan	2002-2003	Indonesia	1993-1994	South Africa	2012, 2016
Azerbaijan	2016	Indonesia	1998-1999	Sri Lanka	1990-1991
Belarus	1993, 1999	Indonesia	2009	Sri Lanka	1994,1998
Belarus	2007-2011	Indonesia	2012	Sri Lanka	2002
Belarus	2016	Kazakhstan	1990	Sri Lanka	2009-2010
Brazil	1990,1992	Kazakhstan	1993-1995	Sri Lanka	2012
Brazil	1998	Kazakhstan	1997-1999	Thailand	1990, 1993
Brazil	2001-2003	Kazakhstan	2015	Thailand	1997-1999
Brazil	2012	Malaysia	1990	Thailand	2010-2012
Brazil	2014	Malaysia	2001	Tunisia	1990-1991
Bulgaria	1991	Malaysia	2003-2004	Tunisia	1994-1995
Bulgaria	1998-1999	Malaysia	2006	Tunisia	2002-2004
Bulgaria	2003	Malaysia	2008-2010	Tunisia	2012
Bulgaria	2012	Mexico	1990, 1995	Ukraine	1993-1995
Bulgaria	2014-2016	Mexico	2001-2014	Ukraine	1998-1999
China	1990-1997	Morocco	1990	Ukraine	2009-2010
Colombia	1990,1999	Morocco	1994-1995	Ukraine	2015
Colombia	2003	Morocco	2007	Vietnam	1990, 1998
Colombia	2009	Morocco	2012-2013	Vietnam	2003
Colombia	2013-2016	Nigeria	1990-1991	Vietnam	2007-2011

Data Source: Author's own calculation

Table 1.9c. List of surges of **private non-guaranteed debt/ GDP (PNGD/GDP)** using **Country Sample** threshold

Country	PNGD/ GDP) Surge Duration	Country	(PNGD/ GDP) Surge Duration	Country	(PNGD/GDP) Surge Duration
Albania	1990, 2005	Colombia	2003,2010	Morocco	1990, 1997
Albania	2008-2013	Colombia	2016	Morocco	1999
Algeria	2002-2006	Costa Rica	1990	Morocco	2003
Algeria	2008	Costa Rica	2004-2005	Morocco	2012-2013
Algeria	2012, 2014	Costa Rica	2011-2012	Morocco	2015-2016
Argentina	1990	Costa Rica	2014-2016	Nigeria	1990
Argentina	1993-1994	Dominican Rep.	1990	Nigeria	2000-2005
Argentina	1997-1998	Dominican Rep.	2002	Nigeria	2007
Argentina	2001, 2005	Dominican Rep.	2006-2007	Paraguay	1990
Argentina	2008	Dominican Rep.	2011-2012	Paraguay	2002
Armenia	2001	Dominican Rep.	2014	Paraguay	2005-2010
Armenia	2007-2008	Dominican Rep.	2016	Philippines	1993-1998
Armenia	2010-2011	Ecuador	1995	Philippines	2001
Armenia	2016	Ecuador	1999	Philippines	2014
Azerbaijan	1990	Ecuador	2001-2004	South Africa	1994
Azerbaijan	1998-1999	Ecuador	2009-2010	South Africa	1999
Azerbaijan	2004, 2008	India	1994,2000	South Africa	2002
Azerbaijan	2010-2011	India	2003	South Africa	2006-2007
Azerbaijan	2015	India	2006-2007	South Africa	2009-2010
Belarus	2001-2002	India	2009	South Africa	2012
Belarus	2006	India	2012-2013	Sri Lanka	1990
Belarus	2009-2011	Indonesia	1990-1992	Sri Lanka	2000
Belarus	2013-2014	Indonesia	1994-1995	Sri Lanka	2007
Brazil	1993	Indonesia	1997-1998	Sri Lanka	2012-2014
Brazil	1996-1998	Indonesia	2005	Sri Lanka	2016
Brazil	2006-2008	Kazakhstan	1990,2000	Thailand	1990-1992
Brazil	2011	Kazakhstan	2002-2007	Thailand	1994-1996
Bulgaria	2003-2009	Malaysia	1990	Thailand	2006
Bulgaria	2013	Malaysia	1992-1994	Thailand	2012
China	1990	Malaysia	1997,2004	Tunisia	1990, 1999
China	1998-1999	Malaysia	2012,2014	Tunisia	2001-2004
China	2007	Mexico	1990	Tunisia	2006, 2008
China	2011-2012	Mexico	1993	Ukraine	2003-2008
China	2014, 2016	Mexico	1997-1999	Ukraine	2011, 2013
Colombia	1990, 1993	Mexico	2004	Vietnam	1990
Colombia	1995-1997	Mexico	2011,2013	Vietnam	2011-2016

Data Source: Author's own calculations

Table 1.9d. List of surges of total private debt/GDP (TPvD/GDP) using C**ountry Sample** threshold

Country	(TPvD/GDP) _ Surge Duration	Country	(TPvD/ GDP) Surge Duration	Country	(TPvD/ GDP) Surge Duration
Albania	1990-1993	China	2013-2014	Morocco	2013-2014
Albania	2008, 2011, 2013	Colombia	1990	Morocco	2016
Albania		Colombia	1992-1997	Nigeria	1990
Algeria	1991	Colombia	2010	Nigeria	1992-1995
Algeria	2003-2006	Costa Rica	1990,2005	Nigeria	1998
Algeria	2010, 2014	Costa Rica	2007-2008	Nigeria	2002-2003
Argentina	1990, 1995	Costa Rica	2011-2012	Paraguay	1990,2003
Argentina	1997, 2003,	Costa Rica	2014-2015	Paraguay	2005-2010
Argentina	20052008,	Dominican Rep.	1990,1993	Philippines	1993-1994
Argentina	2011, 2015	Dominican Rep.	1995,2002	Philippines	2001,2010
Armenia	2001-2003	Dominican Rep.	2006-2007	Philippines	2012,2014
Armenia	2007	Dominican Rep.	2012,2014	South Africa	1994
Armenia	2010-2011	Dominican Rep.	2014	South Africa	1999
Armenia	2013	Ecuador	1991,1993	South Africa	2004
Armenia	2016	Ecuador	1997	South Africa	2006-2007
Azerbaijan	1990, 1998	Ecuador	2001-2002	South Africa	2010
Azerbaijan	2000, 2004	Ecuador	2004	South Africa	2012
Azerbaijan	2007	India	1994,2000	Sri Lanka	1990
Azerbaijan	2010	India	2003	Sri Lanka	1994
Azerbaijan	2015	India	2006-2007	Sri Lanka	1999
Belarus	1996	India	2011-2013	Sri Lanka	2007-2009
Belarus	2002	Indonesia	1990-1992	Sri Lanka	2012, 2014
Belarus	2004	Indonesia	1994-1997	Thailand	1990-1991
Belarus	2007	Indonesia	2004	Thailand	1993-1996
Belarus	2009-2011	Kazakhstan	1990,2000	Thailand	2010,2012
Belarus	2013	Kazakhstan	2002-2007	Tunisia	1990,1994,
Brazil	1990	Malaysia	1990	Tunisia	1999
Brazil	1993	Malaysia	1992-1993	Tunisia	2001-2002
Brazil	1996-1998	Malaysia	1996-1997	Tunisia	2007-2008
Brazil	2007	Malaysia	2007-2008	Tunisia	2012
Brazil	2010-2011	Malaysia	2012	Ukraine	2001,2004
Bulgaria	1996-1997	Mexico	1990-1991	Ukraine	2006-2008
Bulgaria	2003-2008	Mexico	1993, 1999	Ukraine	2011,2013
China	1990	Mexico	2010-2013	Vietnam	1990,1992
China	2001	Morocco	1991	Vietnam	1995
China	2004-2005	Morocco	1996-1997	Vietnam	2010-2012

China	2010-2011	Morocco	1999, 2005	Vietnam	2014,2016

Data Source: Author's own calculation

CHAPTER 2

FINANCIAL INTEGRATION AND MACROECONOMIC VOLATILITY: THE ROLE OF INTERNATIONAL PRIVATE AND PUBLIC SECTOR BORROWING IN EMERGING MARKETS

I. Introduction

One of the benefits of international financial integration, according to economic theory, is that it provides a better opportunity for countries to diversify their risk and smooth consumption growth amidst fluctuations in a country's output growth. For individuals, firms, or countries to achieve risk diversification and improve their welfare gains, they need to protect their income (output) against various shocks in the economy or insure their consumption against shocks to their income (output). Insuring against country-wide shocks requires openness to financial flows that allows agents in different countries to pool their risks efficiently.

Empirical studies centered on financial integration and its impacts on international risk sharing suggest that while equity may promote risk sharing, particularly among industrialized countries, debt increases economic volatility among emerging markets economies (EMEs) even during periods of increased globalization (O'Donnell (2001), Bekaert, Harvey and Lundblad (2006), Kose, Prasad, and Terrones (2009)). Kose, Prasad, and Terrones (2009) argue that EMEs are less likely to benefit from international risk sharing since these economies rely largely on debt, which is more procyclical (increases in good times and decreases in bad times), than FDI and equity, which are comparatively more stable. Although earlier literature on the cyclicality of

international borrowing/fiscal policy among most developing and emerging market economics tend to support the procyclicality of international government borrowing (Gavin and Perotti (1997), Catao and Sutton (2002) and Talvi and Vegh (2005)), the cyclical behavior of external debt differs depending on whether the borrower or lender is a public or private entity (Yeyati (2009), Araujo, David, Hombeeck and Papageorgiou (2015) and Galindo and Panizza (2018)). Yeyati (2009), Araujo, David, Hombeeck and Papageorgiou (2015) and Galindo and Panizza (2018) show that debt inflows to private borrowers (whether from a public or private lender) in emerging economies tend to be procyclical while debt inflows to public borrowers, particularly from public lenders, tends to be countercyclical. These authors argue both private international borrowing and private international lending to the public sector in EMEs exhibit procyclical behavior because i) these countries lack access to international private credit especially during economic downturns or in periods of limited global capital flows ii) during bad times international private financiers are less likely to lend to countries that are not doing well are more likely to default during recessions. By contrast, they contend that public borrowing from international government lenders is countercyclical and does not depend on domestic or global conditions. This is because even in bad times, the public borrower (government) in emerging economy is still able to access credit from other sovereign nations or international organizations like the IMF or the World Bank. International public lenders may also be more willing to assist a public borrower (sovereign nation) than a private investor in these same countries because public borrowers are seen as less risky than private borrowers. According to Galindo and Panizza (2018), the countercyclicality of official (public) lending is mostly driven by the behavior of the World Bank and IMF.

This paper contributes to the literature by examining the behavior of public and private international debt inflows (delineated by both the borrower and lender) on international risk sharing in EMEs. This contribution is twofold. First, I focus on the borrower (debtor) and examine how international debt flows by public versus private borrowers affects output and consumption growth volatility. Second, I focus on the lender (creditor) and examine how international debt flows from public versus private lenders affects output and consumption growth volatility. By focusing on both borrower and lender heterogeneity I am able to investigate the differing cyclicalities in the different types of international debt. Examining financial integration, measured by international debt flows, uniquely on output and consumption volatility helps to unmasks effects that are averaged out by an aggregate approach. I focus on emerging economies as these economies provide the ideal setting to study how financial integration affects risk sharing

The remainder of the paper is structured as followed: In section II, I discuss the theoretical and empirical literature on how international capital flows (both equity and debt) affect consumption and output growth volatility. In section III, I discuss the decomposition of the types of external debt flows used in the study, examining both the borrower and lender. Section IV provides the methodology and data used in the study. Section V presents the results from the dynamic panel analysis. Section VI presents a decomposition of debt surges (extreme large debt increases) by the type of borrower and lender to see if larger episodes of debt flows behave differently than the flows examined in previous sections. I discuss the conclusion of the study in Section VI.

II a. Theoretical Consideration

In theory, an economy with a perfect set of state-contingent markets (a full set of Arrow-Debreu securities) should be able to diversity against its country-specific risk to the extent that

domestic consumption need not depend on domestic income shocks. That is, if international capital markets are perfect, the volatility of consumption growth across countries should be less than their corresponding volatility output growth as individuals are able to smooth consumption in the face of income shocks. In contrast to theory, however, in actual data the volatility of consumption growth is higher than output growth volatility (Backus, Kehoe and Kydland (1992)). The literature refers to this as the consumption correlation puzzle in that consumption is more highly correlated across countries than is output, indicating that risk sharing is not occurring to the extent expected.

There have been several theoretical attempts to explain why in the face of increasing international capital flows (financial integration) the relative volatility of consumption growth among EMEs continues to be high. Predictions proposed from theoretical models that focused on credit constraints and quality of the domestic financial market or domestic financial friction (Levchenko (2005), Leblebicioglu (2006), Evans and Hnatkovska (2007) and Zheng (2015)) suggest that financial integration increases consumption volatility relative to output volatility among developing and emerging economies. Levchenko (2005) for instance, adopted a Dynamic stochastic generalized equilibrium (DSGE) model subject to limited commitment and shows that countries with domestic frictions and uneven access to international markets reduce the amount of risk sharing and increase the volatility of consumption when they open up to international markets. Using a two-country real business cycle (RBC) model, Leblebicioglu (2006) showed how a borrowing constraint in the non-traded sector can lead to greater consumption volatility. Evans and Hnatkovska (2007) developed an RBC model that shows a hump-shaped relationship between consumption volatility and integration. The relationship, however, is stronger at lower levels of financial integration or among less financially integrated countries. Zheng (2015) developed a small open economy RBC model with financial frictions and argued that financial integration

raises business cycle and consumption volatility for countries with less developed financial markets. Generally, equity is associated with ex-ante risk sharing or diversification while debt is associated with ex-post consumption smoothing. A country that lends, whether in debt or equity, expects an interest payment and this certainty or reliability in returns gives an advantage for diversification and risk sharing. On the other hand, when a country borrows internationally, the country is not only exposed to interest rate risk from foreign countries, but may also face exchange rate risk that changes the value of the debt over time if the debt is in a foreign currency (Blankenau, Kose and Yi (2001) and Fan, Mohtadi, and Neumann (2016)).

II. b. Empirical Literature

While the theoretical literature tends to focus on the level of integration or domestic financial frictions on explaining the puzzle, existing empirical literature focusing on the impact of financial integration on macroeconomic volatility provides no clear link between financial openness and macroeconomic volatility, although it is suggestive that the type of economy matters. O'Donnell (2001) used data for 93 OECD and non-OECD countries to examine the impact of financial integration on output volatility. The result suggests a decrease in output volatility among OECD countries with a high degree of financial integration but an increase in output volatility among non-OECD countries with a high degree of financial integration. Bekaert, Harvey and Lundblad (2006) examine the effect of stock market liberalization and capital account openness on the volatility of output and consumption growth across a large cross-section of liberalized and segmented markets (mostly EMEs) from 1980-2000. Their investigation showed a significant decline in both output and consumption growth volatility following equity liberalization. Using a dataset for OECD countries over a 40year period, Buch, Doepke and Pierdzioch (2005) did not find any significant link between financial openness and output volatility. This result is consistent

with an earlier study by Razin and Rose (1994), who find no consistent link between financial openness and consumption, investment and output volatility. Kose, Prasad, and Terrones (2003) suggest that increasing financial openness is associated with rising consumption volatility (relative to output volatility), particularly for lower income countries. However, countries that are more financially integrated tend to experience a reduction in consumption volatility (relative to output volatility) in the face of financial integration. This is particularly true for advanced countries. [does this indicate a threshold of integration or income?]

Kose, Prasad, and Terrones (2009) examine directly how financial integration affects risk sharing. They argued that the direction and types of capital flows (that is FDI, equity portfolio and debt) may have different effects on international risk sharing. In examining this, they regressed the gap between domestic consumption and world consumption on the gap between domestic output and world output. Their results show that FDI and equity may promote risk sharing, particularly for the industrialized countries during the globalization period, which suggests that the level of integration is positively related to the potential for risk sharing. They find that debt does not promote risk sharing among EMEs because of EMEs overdependence on debt. Debt also tends to be more procyclical compared to equity, which has been considered by Fan, Mohtadi, and Neumann (2016) in a study that focuses on the risk sharing potential for different types of capital flows, delineated by both the direction and form of external financial capital flows.

Earlier studies by Yeyati (2009) and Galindo and Panizza (2018) show that international government borrowing from multilateral banks and other official lenders is countercyclical while government borrowing from private lenders is procyclical among developing and emerging countries. Thus, not only does the type of capital flow matter, but also the type of debt flow may matter. In particular, the provider of such debt flows appears to be related to the use of that debt in

smoothing or exacerbating cycles. Consequently, I focus on which type of international borrowing may promote international risk sharing. Importantly, I consider both the type of debtor and the type of creditor, allowing me to examine external debt taken on by official and private debtors and external debt provided by official and private creditors. To answer this question, I decompose country-level external debt into private and public debt flows by debtors. I further disaggregate public external debt flows into those provided by public or private sector lenders. While I am unable to further subdivide private debt into that provided by public versus private creditors due to limited data, I am able to subdivide public debt into that provided by public versus private creditors. I then examine how each debt flow affects consumption and output growth volatility. I expect external debt by a private borrower not to reduce economic volatility because of these two main reasons. First, private borrowers in EMEs lack access to international credit (credit constraint) during recession because credits (financial assistance) from international bodies like World Banks and IMF are reserved for sovereign nations. Secondly, private borrowers are less reluctant to even borrow from private lenders because of the high-stakes; private lenders do have their own interests and their own conditions, which might complicate any effort to negotiate easier terms for the borrowers, such as stretched-out payment schedules, lower interest rates or reduced principal. However, I expect external debt with a public component; public borrower from a public lender to reduce volatility and thus promote risk sharing. This is because even in bad times, the public borrower (compared to private borrower) in emerging economies is still able to access credit from other sovereign nations or international organizations like the IMF or World Banks with less complicated terms like stretched-out payment schedules, lower interest rate or reduced principal. International public lenders are more willing to assist a public borrower (sovereign nation).

III. Decomposition of external debt flows

In this section, I discuss in detail how to decompose external debt into private and public debt flows by both debtors and creditors.

III.a. Decomposition of external debt flows by private and public debtors

To decompose total external debt flows into its private and public components. I follow Alfaro et al (2014), who define an appropriate measure of net private and public capital flows. They examined the correlation between net capital flows and growth and showed that such correlation can have different signs when capital flows are divided into public versus private components. Depending on which one dominates the other in a data sample determines the overall correlation sign between capital flows and growth. Figure 1 shows how the long-term external debt is decomposed into private non-guaranteed debt (PNGD) and public and publicly guaranteed long-term debt (PPG) by a private and public borrower (debtor) respectively. IMF credits are considered public debt by a public borrower as they are only given to the government. Hence, I define external debt by a public borrower (debtor) as the sum of IMF credit and PPG debt and denote it as Total Public Debt (TPuD). One challenge with the decomposition of external debt I use is the difficulty to separate short-term debt into private an[7]d public components. Alfaro et al. (2014) assign short term flows to private flows. However, I consider them separately in this study and measure private borrowing in two ways. First, I define private borrowing as the Private Non-guaranteed Debt (PNGD). Second, I define private borrowing as the sum of the Private Non-guaranteed Debt and the short-term external debt (similar to Alfaro et al.'s (2014) definition of private debt in their study) and denote this as Total Private Debt (TPvD)[8]. In each case, I compare the responses to PNGD or TPvD flows to that of TPuD flows.

[7] External debt by a public debtor is any international debt borrowed or owed by the government or any government agencies within the domestic country (TPuD).
[8] External debt by a private debtor is any internal debt borrowed or owed by a private individual (PNGD and TPvD).

III.b. Decomposing external debt flows by private and public creditors

Decomposing total external debt into those provided by private and public lenders is crucial in addressing the second question in this study, whether external public debt from public or private creditors reduces volatility.

Figure 1 from Alfaro, et al (2014) shows how the long-term external debt is decomposed into private non-guaranteed debt (PNGD) and public and publicly guaranteed long-term debt (PPG). The PPG debt is further grouped into those provided by official and private status lenders. Credits from the IMF are considered official public debt as they are provided by a quasi-government body, but the creditor of PPG debt could be either a public or private entity. I define external or foreign public debt by official creditors (OPD) as the sum of IMF credit and PPG debt from official creditors. I define external public debt by private creditors (PPD) as the PPG debt from private creditors. In this study I refer to OPD as "Public" because they are provided by the public lenders and PPD as "Private" because they are provided by private lenders. PNDG debt has no information on the debt provider (lender) from the data source (World bank's Global Development Finance database).

IV. a. Empirical Methodology and Data

Using two dynamic panel models, I examine how Public debt flows and Private debt flows affect the volatility of consumption and output growth for 26 emerging market economies (EMEs) within the period of 1997-2016.

To examine how financial integration affects the volatility of both output and consumption growth, I estimate two dynamic panel regression models of the following forms:

$$\sigma Y_{it} = \alpha_1 + \gamma_1 \sigma Y_{i,t-1} + \beta_1 DF_{it} + \delta_1 Z_{it} + \mu_{1i} + \varepsilon_{1,it} \quad (1)$$

$$\sigma C_{it} = \alpha_2 + \gamma_2 \sigma C_{i,t-1} + \beta_2 DF_{it} + \delta_2 Z_{it} + \mu_{2i} + \varepsilon_{2,it} \quad (2)$$

Where σY_{it} and σC_{it} represent the output growth volatility and consumption growth volatility respectively, to country i at time t. DF_{it} denote the different types of debt variables, which can be considered as part of a set of financial integration variables. Z_{it} denotes the control variables, that consist of the natural logarithm of the population, Years of Schooling, Terms of trade, Trade Openness (percentage of GDP), KAOPEN (de jure measure of financial integration) and real GDP per capital growth. μ_i is the country-specific fixed effects and ε_{it} denotes the error (idiosyncratic) term. Output (σY_{it})and consumption (σC_{it}) growth volatilities are measured by the 5-year overlapping rolling window standard deviation of the growth rate of real GDP per capita and the growth rate of real consumption per capita respectively.

There is the potential issue of endogeneity when modelling equations 1 and 2. The lagged dependent variables may be correlated with error terms in both equations. Second, the other independent variables are likely to be correlated with the errors (country fixed effects) or could themselves be explained by the dependent variable (output or consumption volatility). To address these issues, I estimate equations 1 and 2 using the system Generalized Methods of Moment (GMM) estimator developed by Blundell and Bond (1998), which helps to mitigate the potential endogeneity of a regressor by using lagged values of the independent variables as instruments.

The debt flow measures as used in the model are the primary explanatory variables of interest and these can be considered de facto measures of financial integration. Before I decompose the external debt into public and private components, I first use the net total external debt (NTED) as a measure of financial integration to examine if the result is consistent with previous literature that finds that increases in consumption (output) volatility is primarily driven

by accumulated external debt liabilities. I then examine the different decompositions of debt, focusing first on the measures of external debt liabilities from public and private borrowers (Total Public Debt (TPuD) and Total Private Debt (TPvD)) and by public and private lenders (Official Public Debt (OPD) and Public Debt from Private Lenders (PPD)) . I also control for Financial integration (FI_{it}) using other de jure and de facto measures. For the measure of de jure financial openness, I use the KAOPEN index by Chinn and Ito (2008), which is based on the IMF's Annual Report on Exchange Arrangement and Exchange Restrictions (AREAER). This index is normalized between zero and one where higher values of this index indicate that a country is more open to cross-border capital transactions. I include KAOPEN in all regressions as a control variable. The correlation between KAOPEN and the total external debt measure (NTED) is 0.151. Not including KAOPEN in the regressions does not change the qualitative results presented here. However, I prefer to keep that control variable in order to consider both the de jure and de facto aspects of international financial integration and their impacts on macroeconomic volatility (similar to Fan et al., (2016)).

Following the recent empirical literature on the drivers of macroeconomic volatility (Kose, et al. (2003), Bekaert, et al. (2006) and Fan, et al (2016)), I identify relevant control variables. The set of control variables used in this study includes the natural logarithm of the population (which is a measure of economic size), Years of schooling (as a measure of the level of human capital) and the Terms of trade (expressed as the ratio of price of exportable good to price of importable good). Data for these variables are taken from the Penn World Table 9 (see Feenstra et al, (2015)). I also include the growth of real GDP per capita (which measures the level of economic performance or growth) and the ratio of Trade openness to GDP (sum of exports and imports divided by GDP). I obtain these data from the World Bank Development Indicators. The list of

possible control variables is long and ultimately, the inclusion of variables in the regressions is largely influenced by the existing literature and its relevance to this study, along with data availability for the countries in this study. All variable definitions and sources are given in Table 2.11.

IV. b. Descriptive Statistics

Table 2.1a provides descriptive statistics on the data used in this analysis for 26 countries from 1997 to 2016. The mean output growth volatility (σY) is 4.12%, the average consumption growth volatility (σC) is 3.72%, showing that consumption on average is less volatile than output in this sample. Consumption growth volatility, however, shows greater variation than output growth volatility. The de jure measure of financial integration, the KAOPEN index, has a mean value of 0.412 which implies that on average the financial markets of the countries considered in this study are modestly deregulated. Table 2.1b shows the descriptive statistics of the inflows and outflows for the various debt flow measures considered in this study, where the debt inflow (outflow) values are the positive (negative) net changes of external liabilities minus assets. The minimum and mean values of all four types of debt are positive indicating debt inflows on average for this set of countries.

Table 2.1c provides a correlation analysis among the different types of debt flows measured by debtors and creditors as well as KAOPEN. The correlation table shows that in the case of debt flows by debtors, TPuD is negatively correlated to PNGD (-2.4%) and TPvD (-3.2%) while the correlation between the two measures of private debt flows (TPvD and PNGD) is strongly positive, about 83%. Also, for public debt flows by creditors, the correlation shows that OPD is negatively correlated to PPD (-5.3%). Generally, the correlation matrix shows that private and public debts

are negatively correlated regardless of whether the debt flows are measured by the debtor or creditor. KAOPEN shows a positive relationship with each of the debt flows, meaning higher financial integration (KAOPEN) is associated with higher debt inflows.

V. Results

This section provides regression estimates detailing how public and private debt flows by the debtor and from the creditor (financial integration) affect both output and consumption growth volatility.

V.a. By Debtor (Borrower)

Table 2.2 reports the estimated results for output and consumption volatility growth using a dynamic panel estimation of external debt liabilities by public and private borrowers. I discuss output and consumption growth volatility results separately in this section.

V.a.1 Output Growth Volatility

Table 2.2 (cols. I-III) shows the results from Equation (1) using a system-GMM estimation of external debt liabilities by public and private borrowers on the volatility of output growth. In both cases, the result shows that the de jure measure of financial integration (KAOPEN) is insignificant.

In the case of de facto measures of financial integration, I first consider the net external debt inflow (NTED)[9], I find that the coefficient on the NTED measure is positive and significant, which is consistent with previous studies by Buch, Doepke, and Pierdzioch (2005) and Fan,

[9] I considered both inflows and outflows NTED but found insignificant results for the outflows. Hence I focus on the inflows of NTED in this studies.

Mohtadi, and Neumann (2016) that external debt is associated with greater output volatility. To examine this result further, it is necessary to decompose the measure of financial integration (NTED) into public and private debt (both by the debtors and creditors) and examine the effects on volatility.

First, I decompose the financial integration (NTED) into public external debt inflow (TPUD) and private external debt inflows (PNGD and TPvD) by the debtor. The result in Table 2.2 shows that increases in external debt by the government (TPuD) is associated with lower output volatility growth while external debt by the private sector (measured as PNGD or TPvD) show an insignificant result. This result is consistent with intuition and previous studies by Araujo, David, Hombeeck and Papageorgiou (2015) that external debt by public and private debtors have different cyclical behaviors and as such behave differently during good and bad times.

V.a.2 Consumption Growth Volatility

Table 2.2 (cols [IV-VI]) shows that the coefficient of de jure financial integration, KAOPEN index, has no significant effect on consumption volatility growth among emerging markets.

The coefficient on aggregate external debt inflows (NTED) is positive and significant for consumption volatility, which implies aggregate debt inflows into EME's do not allow for consumption risk sharing. This finding is consistent with previous studies (Kose, Prasad, and Terrones(2003), Kose, Prasad, and Terrones (2009) and Fan, Mohtadi, and Neumann (2016)) that higher external debt flows into emerging economies inhibits these countries from attaining the presumed risk sharing benefits of financial integration (thus, lower consumption volatility). Also, higher external debt liabilities may suggest that a country is unable to borrow in the face of adverse

interest rate shocks as it continue to pay on its external debt or is exposed to interest rate risk from foreign countries via external borrowing, thus leading to higher consumption volatility (Blankenau, Kose and Yi (2001) and Fan, Mohtadi, and Neumann (2016)).

To examine the different cyclical behaviors of the types of debt, I disaggregate external debt liabilities into public and private debt flows by debtors. The coefficient on TPuD is negative and significant implying that higher international government borrowing lowers consumption volatility. The coefficients on PNGD and TPvD are insignificant, indicating little evidence of risk sharing on consumption. This finding is consistent with earlier argument discussed in section I, that international risk diversification can be driven by external government borrowing, which lowers consumption volatility because of the countercyclical nature of government borrowing (increases in bad times and decreases in good times). However, private borrowing does not reduce risk sharing because it tends to be more procyclical and increasing private external debts to emerging markets can prevent EMEs from utilizing these debts to smooth consumption volatilities.

The outcomes of both output volatility and consumption volatility show a common pattern. International public borrowing is associated with lower consumption and output volatility among EME's. International private borrowing is not associated with lower consumption and output volatility, but it is also not associated with higher output or consumption volatility.

V.b. By Creditor (Lender)

I also consider creditors of external debt flows. My data allows me to decompose total public debt (TPuD) into debt from public creditors (OPD) and from private creditors (PPD). Table 2.3 shows the dynamic panel estimation by the creditors of external government borrowing on both output and consumption growth volatility.

V.b.1 Output Growth Volatility

I find that OPD has a negative and significant effect on output growth volatility, implying that increases in official public borrowing (sovereign to sovereign debt) lowers output volatility (risk) in EMEs (Table 2.3 col[I-III]). Galindo and Panizza (2018) argue that optimal official government borrowing should be countercyclical (increase in bad times and decrease in good times). My result shows a decrease in output volatility with greater official borrowing, indicating government borrowing can reduce output volatility. Access to sovereign debt particularly during economic downturns helps EMEs to smooth their output or expenditure across good and bad times hence lowering the volatility (risk) in output growth. In the case of public debt from private creditors (PPD), the estimator for PPD is positive and significant. This implies that public debt from private lenders increases output volatility.

V.b.2 Consumption Growth Volatility

For consumption volatility, Table 2.3 shows that the coefficient on OPD (debts from public lenders) is negative and significant. This finding indicates that a country's consumption becomes less volatile when a country's government borrows from public lenders, either other countries' governments or government agencies like the IMF and World Bank. Previous studies (e.g., Yeyati (2009) and Galindo and Panizza (2018)) find that public lending to EMEs tends to be more countercyclical because these countries are more likely get access to credit from other sovereign nations or government agencies than from private entities especially during periods of economic downturns. The countercyclical nature of debts from public lenders (sovereign-to-sovereign debt) enables these countries to smooth their consumption across good and bad times (Kose, Prasad, and Terrones (2009)). Conversely, for external public debt from private lenders (PPD), the estimator

is insignificant, indicating that PPD has little to no influence on consumption growth volatility (PPD does not increase nor decrease consumption growth volatility).

VI. Debt Surges

From a policy perspective, it may be more meaningful and important to consider how surges in debt flows affect international risk sharing since these debt surges behave qualitatively different from the normal flows (Ghosh, Qureshi and Zalduendo (2014)). The result from my first chapter (Surges of private and public debt flows in emerging economies) showed that there are indeed differences in the responsiveness of debt flows to various push and pull factors at different points along the debt flow distribution. Surges in debt flows behave qualitatively differently from normal flows and as such merit a separate treatment or analysis. Surges may also matter to policymakers because they bring the potential of sudden reversals of that debt inflow or an increase in interest on accumulated debt.

In this section, I examine how debt surges (large increases) affect the volatility of output growth and consumption growth in EME's, using the same debt delineations as in Section III (debt flows in levels) to characterize the debt surges. My concept of surge is that it should capture instance of an exceptionally large level of debt flows (both private and public) into the country. I define public and private surges following Ghosh, Qureshi and Zalduendo (2014) as the external debt flows that lie within the top 30th percentile of both the country's sample distribution and the entire countries' sample distribution.[10] I define surges in all the debt types discussed above. The reason for identifying debt surges based on the country's sample distribution as well as the entire

[10] Ghosh et al (2014) also consider a surge identification using observations that lie within the top 30th percentile of the country's sample distribution. Results using either definition for the threshold are similar and I only present those using both the country and entire countries' sample distribution here.

countries' sample distribution is to ensure that surges are not only "large" by the country's own experience but also by cross-country standards See Osei-Sarfo (2020) for further discussion of private and public debt surges and thresholds for definitions of such surges.

I have 156 observations of surges for each of the debt surge measures (TPvD surge, PNVD surge, TPuD surge, OPD surge and PPD surge). About 364 observations in the estimated samples are zero. Though it is surprising or striking that the different debt surges seem to have the same number of observations, the surges occur in different year periods for different debt types.

Tables 2.6, 2.7 and 2.8 list the countries defined as having a surge in private (TPvD and PNGD) and public (TPuD) debt by the debtors. Tables 2.9 and 2.10 list the countries defined as having a public debt surge from private (PPD) and public (OPD) lenders. As an example, focusing on Albania in Table 2.6, there is a surge in 2003 and 2005 for total private debt for Albania. This means that a surge occurred (S=1) in year 2003 and 2005 for Albania for total private debt but no surge occurred (S=0) in 2004.

VII. a. Debt Surges by Public vs Private Debtors

To examine the effect of debt inflow surges on economic volatility by the type of borrower, I decompose the debt surge into public and private borrower and examine whether the results differ across the type of borrowers. I also consider whether surges in these debts affect economic volatility differently from debt in levels.

VII. a.1 Results: Output Growth Volatility vs Consumption Growth Volatility

Table 2.4 reports the results of public and private debt surges by the borrower on output growth volatility. The de jure measure of financial integration, KAOPEN, is insignificant for both output growth volatility and consumption growth volatility.

Turning to the de facto measure of financial integration as measured by debt surges, I consider surges in total public debt (TPuD), private debt (excluding short-term debt, PNDG) and total private debt (including the short-term debt, TPvD); these are all debts by the debtor. The results show that the estimators for PNDG and TPvD surges are insignificant for output volatility while the estimator for TPuD surges is negative and significant for output volatility. Overall, the results imply that debt by private debtors has little influence on output volatility but increases consumption volatility when debt surges include short term debt. TPvD levels did not increase consumption volatility but surges in TPvD flows do, indicating that surges in short-term private debt may be particularly associated with increased volatility. In the case of total public debt (TPuD), although the size of the coefficient on TPuD surges is smaller than TPuD levels, the coefficient is still negative and significant for both output and consumption growth volatility. This negative and significant result on the coefficient of TPuD is not surprising because an increase in international government borrowing is expected to be associated with lower economic volatility (both output and consumption volatility). The findings support the empirical evidence that the benefit of international risk diversification and risk sharing is determined by international government borrowing that helps to stabilize output volatility and consumption volatility (Yeyati (2009), Araujo and Galindo and Panizza (2018)).

TPvD surges are positive and significant for consumption volatility while PNDG is insignificant for consumption volatility. This implies that higher level of private debt surge when the private debt measure includes short-term debt is associated with higher consumption volatility

VII. b: Public Debt Surges by Public vs Private Creditors.

I also examine how public debt inflow surges by both public and private creditor distinctively affect the output and consumption volatility. I begin by decomposing the public debt surge into public and private creditors and examine each on both output and consumption volatility.

VII. b.1. Results: Output and Consumption Growth Volatility

Results reported in Table 2.5 show that surges in international government borrowing from official lenders (OPD) lowers both consumption and output volatility, hence promoting international sharing risking among EME's. However, in the case of surges in international government borrowing from private lenders (PPD) the result is different. I find a strong positive association between surges in external public debt from private lenders (PPD) and output volatility but an insignificant association between surges in PPD and consumption volatility. That is, higher inflows of public debt surges from private lenders increases output volatility among EME's. In the case of consumption volatility, the result shows that surges in external public debts from private lenders (PPD) has little to no influence on consumption volatility. The result for OPD levels and OPD surges shows a similar pattern– both reduced output volatility and consumption volatility. Also, PPD levels and PPD surges result are similar– both increased output volatility but have no effect on consumption volatility.

VIII Conclusion

In this paper, I examine how different types of international debt affect international risk sharing, with emphasis on how external debt delineated by the type of debtor and by the type of creditor distinctively affect output and consumption growth volatility among EMEs. Previous empirical studies show that equity promotes risk sharing in emerging economies, but that debt does not because these countries rely on debts that tend to be more procyclical. The evidence in this study reveals that external debt (both in levels and surges) with a public component – external debt from either public borrowers or public lenders – reduces both output and consumption volatility among EMEs. This is particularly true because of the countercyclical nature of this debt which helps emerging economies to smooth their output in both good and bad times by saving during booms and borrowing during economic downturns. However, external debt by a private borrower tends to have insignificant effects on economic volatility. By contrast, public debt from private lenders tends to increase output volatility significantly but have no effect on consumption volatility. The latter result is not surprising as both public and private borrowers in EME's especially, are mostly unable to access international credit during recessions from private lenders. This is because the stakes are high with borrowing from private lenders; private lenders do have their own interests and their own conditions, which might complicate any effort to negotiate easier terms for the borrowers, such as stretched-out payment schedules, lower interest rates or reduced principal. For private borrowers, they mostly face a tougher situation as international private financiers are sometimes reluctant to extend credit to private investors in EMEs during recession and they cannot access credit from international public lenders like the IMF and World Bank. All these challenges and more in accessing international credit inhibit EME's from smoothing their output (consumption) volatility or fully benefiting from international risk sharing. This implies

that to promote risk sharing via debt flows among EME's, policymakers in these countries should focus on sovereign-to-sovereign debt flows (government debt from official creditors) as the result shows such debts reduce economic volatility, perhaps due to its countercyclical nature.

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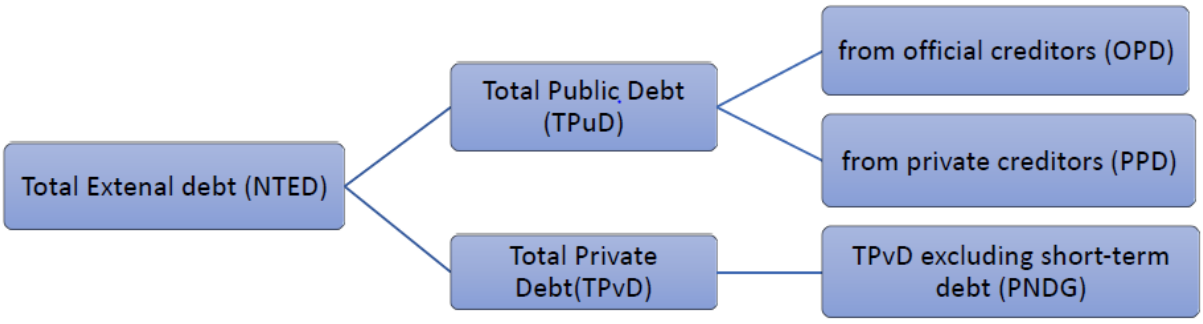
FIGURE 2. Decomposition of Private and Public Debt



Note: OPD and TPuD include IMF Credits

Table 2.1a Summary statistics calculated across all countries and time

	Observation	**Mean**	**Standard deviation**	**Min**	**Max**
Output growth volatility (in %)	520	4.122	3.216	0.124	19.466
Consumption growth volatility (in %)	520	3.720	4.046	0.098	32.993
LnPop	520	3.624	1.662	0.143	7.247
Years of School (YoS)	520	2.385	0.406	1.384	3.214
Trade Openness	520	72.353	37.856	16.439	220.407
KAOPEN	520	0.412	0.273	0	1
Terms of Trade (ToT)	512	1.084	0.126	0.735	1.585
Real GDP per capita Growth	520	0.030	0.036	-0.155	0.265
NETD/GDP	520	1.491	5.374	-21.560	57.599

Note: NETD is net external total debt (sum of short-term debt, long-term debt and IMF credit)

Table 2.1b. Summary statistics for the different external debt flows into inflows and outflows

	Observation	**Mean**	**Standard deviation**	**Min**	**Max**
Inflows					
NTED/GDP	343	3.194	5.616	0.005	57.599
PNGD/GDP	333	2.060	4.185	0.002	55.608
TPvD/GDP	348	3.021	1.473	0.117	57.603
TPuD/GDP	340	2.111	2.092	0.002	18.479
PPD/GDP	281	1.394	1.445	0	12.138
OPD/GDP	321	1.403	5.348	0.001	21.366
Outflows					
NTED/GDP	177	-1.811	2.691	-21.564	0
PNGD/GDP	187	-0.972	1.650	-14.371	0
TPvD/GDP	172	-1.841	2.678	-21.484	0
TPuD/GDP	180	-1.952	3.462	-28.668	0
PPD/GDP	239	-0.887	1.875	-21.380	0
OPD/GDP	199	-1.337	2.842	-26.233	0

Note: NETD is net external total debt (sum of short-term debt, long-term debt and IMF credit),PNGD is private non-guaranteed debt, TPvD is total private debt (sum of private non-guaranteed debt and short-term debt), OPD is official public debt, PPD is public debt from private creditors and TPuD is total public debt (sum of official public debt and public debt from private creditors)

Table2.1c

Correlation Matrix among Public and Private debt flow measures and KAOPEN

	TPuD/GDP	TPvD/GDP	PNGD/GDP	OPD/GDP	PPD/GDP	KAOPEN
TPuD/GDP	1.000					
TPvD/GDP	-0.032	1.000				
PNGD/GDP	-0.024	0.828	1.000			
OPD/GDP	0.791	0.022	0.051	1.00		
PPD/GDP	0.568	-0.082	-0.076	-0.53	1.00	
KAOPEN	0.074	0.153	0.162	0.036	0.072	1.00

Note: TPuD is total public debt (sum of official public debt and public debt from private creditors), TPvD is total private debt (sum of private non-guaranteed debt and short-term debt), PNGD is private non-guaranteed debt, OPD is official public debt (sum of IMF Credits and Public and Publicly guaranteed debt from public creditors) , PPD is Public and Publicly guaranteed debt from private creditors and KAOPEN (Chin and Ito measure of financial integration)

Table 2. 2. Effect of external debt by Private and Public borrowers on Output and Consumption Volatility

Dependent Variable	Output Volatility Growth **(σY_{it})**			Consumption Volatility Growth **(σC_{it})**		
Models	**I**	**II**	**III**	**IV**	**V**	**VI**
Lagged Dependent Variable	**0.888*** (0.063)**	**0.688*** (0.131)**	**0.743*** (0.078)**	**0.920*** (0.058)**	**0.745*** (0.246)**	**0.844*** (0.114)**
Population (log)	**0.109** (0.054)**	0.040 (1.260)	2.173 (2.788)	**0.203* (0.103)**	0.043 (0.182)	0.105 (0.097)
Years of Schooling	-0.285 (0.417)	**-3.907* (2.321)**	-1.138 (2.215)	-0.133 (0.350)	0.181 (0.507)	-0.033 (0.474)
Terms of Trade	-0.174 (0.631)	0.745 (2.821)	-0.396 (1.772)	-0.983 (0.895)	1.479 (1.702)	0.517 (1.036)
Trade Openness to GDP	0.001 (0.002)	0.008 (0.027)	-0.017 (0.015)	-0.001 (0.002)	0.003 (0.004)	0.004 (0.003)
Real GDP per capita Growth	**-8.338*** (2.494)**	**-10.468* (6.336)**	**-9.538** (3.972)**	**-10.987*** (3.618)**	**-14.308* (7.701)**	**-13.041*** (4.840)**
KAOPEN	0.007 (0.407)	0.910 (1.483)	1.451 (2.043)	-0.533 (0.525)	-0.168 (0.790)	0.006 (0.627)
NTED/GDP	**0.194** (0.079)**			**0.318** (0.130)**		
TPuD/GDP		**-0.378*** (0.101)**	**-0.310*** (0.117)**		**-0.494* (0.292)**	**-0.259*** (0.087)**
PNGD/GDP		0.061 (0.142)			0.112 (0.248)	
TPvD/GDP			-0.004 (0.085)			0.108 (0.108)
Observation	487	425	425	487	425	425
AR (2) test P-value	0.120	0.924	0.889	0.129	0.242	0.989
Hansen test P-value	0.414	0.245	0.531	0.322	0.847	0.235

Note: Statistics reported in parentheses are robust standard errors. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. NETD is net external total debt (sum of short-term debt, long-term debt and IMF credit), TPuD is total public debt (sum of official public debt and public debt from private creditors), PNGD is private non-guaranteed debt and TPvD is total private debt (sum of private non-guaranteed debt and short-term debt). All these debts are net inflows (net debt liabilities)

Table 2.3. Effect of public external debt from Private and Public sources on Output and Consumption Volatility

Dependent Variable	Output Volatility Growth (σY_{it})			Consumption Volatility Growth (σC_{it})		
Models	**I**	**II**	**III**	**IV**	**V**	**VI**
Lagged Dependent Variable	**0.845*** (0.035)**	**0.708*** (0.106)**	**0.925*** (0.174)**	**0.990*** (0.203)**	**0.751*** (0.272)**	**0.668*** (0.229)**
Population (log)	-0.711 (0.437)	10.678 (30.912)	**0.148** (0.057)**	-0.317 (3.254)	0.870 (0.980)	0.043 (0.225)
Years of Schooling	-0.156 (0.774)	-0.521 (13.321)	**-0.425* (0.218)**	-0.550 (3.508)	-5.895 (3.867)	-0.219 (0.654)
Terms of Trade	0.201 (1.322)	5.755 (5.375)	0.569 (0.518)	0.894 (4.496)	-1.264 (5.410)	**-2.968** (1.301)**
Trade Openness to GDP	0.008 (0.009)	-0.003 (0.034)	**0.004*** (0.001)**	0.079 (0.049)	0.017 (0.021)	-0.001 (0.003)
Real GDP per capita Growth	**-8.483*** (1.501)**	**-11.708* (0.060)**	**-5.910** (2.632)**	**-13.504** (6.638)**	**-72.299** (33.103)**	**36.619*** (15.196)**
KAOPEN	1.053 (0.690)	-0.823 (3.561)	0.419 (0.327)	-2.706 (3.437)	19.483 (12.674)	0.062 (0.564)
OPD/GDP	**-0.190** (0.078)**	**-0.372* (0.211)**		**-0.469* (0.271)**	**-0.471* (0.242)**	
PPD/GDP	**0.333*** (0.077)**		**0.323** (0.147)**	0.799 (0.736)		-0.129 (0.113)
Observation	390	310	258	390	310	258
AR (2) test P-value	0.523	0.900	0.201	0.889	0.974	0.166
Hansen test P-value	0.222	0.451	0.273	0.106	0.710	0.343

Note: Statistics reported in parentheses are robust standard errors. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. OPD is official public debt (sum of IMF Credits and Public and Publicly guaranteed debt from public creditors) and PPD is Public and Publicly guaranteed debt from private creditors. All these debts are net inflows (net debt liabilities)

Table 2.4. Effect of debt ***Surges*** to Private and Public debt borrowers on Output and Consumption Volatility

Dependent Variable	Output Volatility Growth **(**σY_{it}**)**		Consumption Volatility Growth **(**σC_{it}**)**	
Models	**I**	**II**	**III**	**IV**
Lagged Dependent Variable	**0.628*** (0.103)**	**0.612*** (0.123)**	**0.599*** (0.117)**	**0.691*** (0.143)**
Population (log)	2.747 (3.430)	3.118 (2.634)	0.827 (2.631)	0.315 (0.946)
Years of Schooling	4.888 (4.343)	4.795 (4.742)	-4.264 (4.413)	-3.250 (2.854)
Terms of Trade	0.761 (8.386)	-1.337 (1.894)	-3.604 (3.281)	-3.205 (2.973)
Trade Openness to GDP	0.006 (0.021)	0.006 (0.020)	0.036 (0.024)	0.033 (0.027)
Real GDP per capita Growth	**-9.642** (3.621)**	**-9.329** (3.672)**	**-11.284*** (3.743)**	**-13.022*** (3.419)**
KAOPEN	2.965 (2.169)	3.011 (2.193)	2.459 (1.766)	-1.603 (1.515)
TPuD/GDP surges	**-0.227*** (0.065)**	**-0.218*** (0.058)**	**-0.139* (0.082)**	**-0.243** (0.112)**
PNGD/GDP surges	-0.009 (0.095)		0.048 (0.080)	
TPvD/GDP surges		-0.013 (0.098)		**0.146* (0.078)**
Observation	247	247	247	247
AR (2) test P-value	0.810	0.814	0.379	0.989
Hansen test P-value	0.100	0.131	0.299	0.235

Note: Statistics reported in parentheses are robust standard errors. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. TPuD is total public debt (sum of official public debt and public debt from private creditors), PNGD is private non-guaranteed debt and TPvD is total private debt (sum of private non-guaranteed debt and short-term debt). All these debts are net inflows (net debt liabilities). All these debts are net inflows (net debt liabilities)

Table 2.5. Effect of public debt ***Surges*** from Private and Public debt lenders on Output and Consumption Volatility

Dependent Variable	Output Volatility Growth **(**σY_{it})	Consumption Volatility Growth **(**σC_{it})
Models	**I**	**II**
Lagged Dependent Variable	**0.686*** (0.146)**	**0.688** (0.317)**
Population (log)	-0.246 (0.199)	3.710 (4.657)
Years of Schooling	**-1.531* (0.796)**	5.125 (6.522)
Terms of Trade	0.121 (1.456)	-2.082 (11.672)
Trade Openness to GDP	0.0001 (0.004)	0.044 (0.046)
Real GDP per capita Growth	-8.893 (5.647)	**-12.972** (5.997)**
KAOPEN	-0.475 (1.080)	0.890 (1.513)
OPD/GDP surges	**-0.391*** (0.137)**	**-0.488* (0.290)**
PPD/GDP surges	**0.394* (0.218)**	0.015 (0.244)
Observation	250	250
AR (2) test P-value	0.694	0.611
Hansen test P-value	0.423	0.192

Note: Statistics reported in parentheses are robust standard errors. ***, ** and * indicate significance at 1, 5, and 10% levels, respectively. OPD is official public debt (sum of IMF Credits and Public and Publicly guaranteed debt from public creditors) and PPD is Public and Publicly guaranteed debt from private creditors. All these debts are net inflows (net debt liabilities)

Table 2.6. List of surges of **Total Private Debt/GDP (TPvD/GDP)**

Country	**TPvD/GDP** _ Surge Duration	Country	**TPvD/GDP**_ Surge Duration
Albania	2003	Malaysia	2007-2012
Albania	2005	Malaysia	2014,2016
Albania	2007-2008	Mauritius	2009-2014
Albania	2010-2013	Mauritius	2016
Argentina	1997	Mexico	2010-2013
Argentina	2003, 2005, 2008	Morocco	1997
Argentina	2011, 20132015	Morocco	1999
Brazil	1997-1998	Morocco	2013-2014
Brazil	2007	Morocco	2016
Brazil	2010-2011	Nigeria	1998
Bulgaria	1997	Nigeria	2002-2004
Bulgaria	2000	Pakistan	2010
Bulgaria	2002-2009	Paraguay	1998
Bulgaria	2012-2013	Paraguay	2002-2010
China	2001	Paraguay	2012
China	2010-2011	Philippines	1997
Colombia	1997	Philippines	2001
Colombia	2010-2011	Philippines	2010
Colombia	2016	Philippines	2012
Costa Rica	2002	Philippines	2014
Costa Rica	2004-2005	Romania	2000-2008
Costa Rica	2007-2008	South Africa	2002
Costa Rica	2011-2012	South Africa	2004
Costa Rica	2014-2016	South Africa	2006-2007
Dominican Rep.	2002	South Africa	2010
Dominican Rep.	2006-2007	South Africa	2012
Dominican Rep.	2012	Sri Lanka	1999
Dominican Rep.	2014	Sri Lanka	2007-2009
Ecuador	2001-2002	Sri Lanka	2011-2014
Ecuador	2004	Thailand	2006
India	2003	Thailand	2009-2010
India	2006-2007	Thailand	2012
India	2011	Tunisia	1999
India	2013	Tunisia	2001-2002
Indonesia	1997	Tunisia	2007-2008
Indonesia	2004	Tunisia	2012
Indonesia	2007	Vietnam	2004, 2007
Malaysia	1997	Vietnam	2010-2011
Malaysia	2004-2005	Vietnam	2014-2016

Data Source: Author's own calculation

Table 2.7. List of surges of **Private Non-Guaranteed Debt/GDP (PNGD/GDP)**

Country	**PNGD/GDP** _ Surge Duration	Country	**PNGD/GDP_** Surge Duration
Albania	2005	Malaysia	2012-2014
Albania	2008-2013	Malaysia	2016
Argentina	1997-1998	Mauritius	2011
Argentina	2001	Mauritius	2013-2014
Argentina	2005	Mauritius	2016
Argentina	2007-2008	Mexico	1997-1999
Brazil	1997	Mexico	2011
Brazil	2006-2008	Mexico	2013
Brazil	2010-2012	Morocco	1999
Bulgaria	1999	Morocco	2003
Bulgaria	2002-2009	Morocco	2013
Bulgaria	2012-2013	Morocco	2015
China	1998	Nigeria	2000-2001
China	2014	Nigeria	2005
Colombia	1997	Nigeria	2007
Colombia	2003	Pakistan	2008
Colombia	2007	Paraguay	2002-2010
Colombia	2010-2011	Paraguay	2012
Colombia	2013	Philippines	1997-1998
Colombia	2016	Philippines	2001
Costa Rica	2004-2005	Philippines	2014-2016
Costa Rica	2009	Romania	1997-1998
Costa Rica	2011-2016	Romania	2000-2009
Dominican Rep.	2006-2007	Romania	2012-2013
Dominican Rep.	2012	South Africa	1999
Ecuador	1999	South Africa	2001-2002
Ecuador	2002-2004	South Africa	2006-2007
India	2000	South Africa	2009-2012
India	2003	South Africa	2016
India	2006-2007	Sri Lanka	2012-2014
India	2013	Thailand	2002-2004
Indonesia	1997-1998	Thailand	2006
Indonesia	2004-2005	Thailand	2012
Indonesia	2009	Thailand	2014
Indonesia	2011	Tunisia	1999
Indonesia	2013-2014	Tunisia	2001-2002
Malaysia	1997	Tunisia	2010
Malaysia	1999-2000	Vietnam	2012
Malaysia	2004-2005	Vietnam	2014-2016

Data Source: Author's own calculation

Table 2.8. List of surges of **Total Public Debt/GDP (TPuD/GDP)**

Country	**TPuD/GDP** _ Surge Duration	Country	**TPuD/GDP** _ Surge Duration
Albania	1998-2000	Mexico	2010
Albania	2003-2004	Mexico	2012-2014
Albania	2006-2010	Morocco	2007
Argentina	1998-1999	Morocco	2009-2010
Argentina	2001-2004	Morocco	2012-2013
Argentina	2007	Nigeria	1998
Argentina	2009	Nigeria	2000
Argentina	2016	Nigeria	2003
Brazil	1998	Pakistan	1998-1999
Brazil	2002	Pakistan	2002-2003
Bulgaria	1998-1999	Pakistan	2006-2009
Bulgaria	2003	Paraguay	1999
Bulgaria	2012	Paraguay	2003-2004
Bulgaria	2014-2016	Paraguay	2014
Colombia	1999	Paraguay	2016
Colombia	2003	Philippines	1998-1999
Colombia	2009	Philippines	2002-2003
Colombia	2013-2015	Philippines	2009
Costa Rica	1998	Romania	1997
Costa Rica	2000	Romania	2000
Costa Rica	2003	Romania	2002-2004
Costa Rica	2012-2015	Romania	2009-2011
Dominican Rep.	2001-2004	South Africa	1997
Dominican Rep.	2009-2013	South Africa	2002
Dominican Rep.	2016	South Africa	2009-2010
Ecuador	1999	South Africa	2012
Ecuador	2010	Sri Lanka	1998-1999
Ecuador	2013-2016	Sri Lanka	2002-2004
Indonesia	1998-1999	Sri Lanka	2006-2007
Indonesia	2003, 2009	Sri Lanka	2009-2013
Indonesia	2012	Sri Lanka	2016
Indonesia	2015-2016	Thailand	1997-1999
Malaysia	1998	Tunisia	2002-2004
Malaysia	2001-2004	Tunisia	2007, 2009
Malaysia	2006	Tunisia	2012
Malaysia	2008-2010	Tunisia	2015-2016
Malaysia	2012	Vietnam	1998-1999
Mauritius	2009-2010	Vietnam	2002-2004
Mauritius	2013	Vietnam	2007-2013

Data Source: Author's own calculation

Table 2.9. List of surges of **Public Debt/GDP by Private Lenders (PPD/GDP)**

Country	PPD/GDP _ Surge Duration	Country	PPD/GDP _ Surge Duration
Albania	2008-2010	Mexico	2003
Argentina	1997-1999	Mexico	2007
Argentina	2002-2004	Mexico	2010-2015
Argentina	2006-2007	Morocco	2010
Argentina	2009	Morocco	2012-2014
Argentina	2016	Pakistan	1997
Brazil	2012-2014	Pakistan	2014
Bulgaria	2012	Pakistan	2016
Bulgaria	2014-2016	Paraguay	1999
China	1997	Paraguay	2013-2016
Colombia	1997-1999	Philippines	1997-2000
Colombia	2007	Philippines	2002-2003
Colombia	2009	Philippines	2005-2006
Colombia	2013-2015	Philippines	2009-2010
Costa Rica	1998-2001	Romania	1997
Costa Rica	2003	Romania	2000-2004
Costa Rica	2007	Romania	2011-2014
Costa Rica	2012-2015	South Africa	1997
Dominican Republic	2001-2004	South Africa	2002-2003
Dominican Republic	2011	South Africa	2005
Dominican Republic	2013-2016	South Africa	2009-2012
Ecuador	1997	South Africa	2016
Ecuador	2005	Sri Lanka	1997-1998
Ecuador	2014-2016	Sri Lanka	2007
India	1997-1998	Sri Lanka	2009-2013
India	2012	Sri Lanka	2015-2016
India	2014	Thailand	1998
Indonesia	1998	Thailand	2010-2012
Indonesia	2005	Tunisia	1997
Indonesia	2009	Tunisia	1999
Indonesia	2012	Tunisia	2002-2004
Indonesia	2014-2016	Tunisia	2012
Malaysia	1997-1998	Tunisia	2015-2016
Malaysia	2001-2010	Vietnam	1997
Malaysia	2012	Vietnam	2005
Mauritius	1997	Vietnam	2010
Mauritius	1999	Vietnam	2013
Mauritius	2003		
Mexico	2001		

Data Source: Author's own calculations

Table 2.10. List of surges of **Public Debt/GDP from Public (Official) Lenders (OPD/GDP)**

Country	OPD/GDP _ Surge Duration	Country	OPD/GDP _ Surge Duration
Albania	1998-2001	Mexico	2009
Albania	2003-2004	Morocco	2006-2009
Albania	2006-2009	Morocco	2011-2013
Albania	2011-2014	Nigeria	1998
Albania	2016	Nigeria	2000
Algeria	1998	Nigeria	2003-2004
Algeria	2009	Nigeria	2009
Argentina	2001	Pakistan	1998-1999
Argentina	2003	Pakistan	2002-2003
Argentina	2009	Pakistan	2006-2010
Argentina	2014	Paraguay	1998-1999
Brazil	1998-1999	Paraguay	2002-2004
Brazil	2001-2003	Paraguay	2009
Bulgaria	1998-1999	Paraguay	2016
Bulgaria	2002-2004	Philippines	1998-1999
Colombia	1999	Philippines	2002-2003
Colombia	2001	Philippines	2008-2009
Colombia	2003	Romania	2000
Colombia	2009	Romania	2002-2003
Colombia	2012	Romania	2009-2011
Costa Rica	2003	South Africa	2009
Costa Rica	2009-2010	Sri Lanka	1998-1999
Costa Rica	2016	Sri Lanka	2002-2004
Dominican Rep.	2003-2006	Sri Lanka	2006-2012
Dominican Rep.	2009-2013	Thailand	1997-1999
Ecuador	1998-2000	Tunisia	2002-2004
Ecuador	2002-2003	Tunisia	2006-2007
Ecuador	2007	Tunisia	2009
Ecuador	2010-2011	Tunisia	2011-2013
Ecuador	2013	Tunisia	2016
Ecuador	2015-2016	Vietnam	1998-1999
India	1999	Vietnam	2001-2004
Indonesia	1998-1999	Vietnam	2007-2013
Indonesia	2002-2003	Vietnam	2015-2016
Indonesia	2008		
Malaysia	2001		
Mauritius	2002		
Mauritius	2009-2013		

Data Source: Author's own calculations

Table 2.11
Data sources

Variables	**Source**
KAOPEN	The Chinn-Ito Index (2008 updated version) (Chinn and Ito, 2008)
Private Non-Guaranteed Debt (PNGD) Total Private Debt (TPvD) Total Public Debt (TPuD), Official Public Debt (OPD) Public Debt from Private Creditor (PPD)	International Debt Statistics (IDS) of the World Bank's Global Development Finance (GDF)
Real GDP per capita; Real Consumption per capita; Population; Year of schooling; Terms of Trade	Penn World Table 9.1 Feenstra, Inklaar and Timmer (2015)
Trade Openness to GDP, Real GDP per capita Growth	World Bank Development Indicators

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