

CONTAGION OF FINANCIAL CRISES ACROSS NEIGHBORS AND TRADE  
PARTNERS

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## **Resumo**

Nesta dissertação construímos diferentes modelos com o intuito de investigar o contágio das crises monetária, bancária e de dívida soberana entre países vizinhos e parceiros comerciais, usando modelos logísticos binários para dados em painel. A nossa análise cobre os períodos 1970 – 2018 e 1800 – 2018 para mais de 60 países do mundo e variáveis de controlo específicas, que são escolhidas de acordo com a natureza da crise. Concluímos que durante o período de 1970 – 2018 o contágio em crises monetárias teve o menor impacto (média de 63,5%) na probabilidade de ocorrer num país, enquanto que em crises de dívida soberana teve o maior impacto (média de 187,5%) na probabilidade de ocorrer, ambos considerando países vizinhos ou parceiros comerciais. A nível regional, os resultados mostram que os países em Africa são apenas afectados pelo contágio em crises monetárias de países vizinhos; na Europa pelo contágio das crises monetárias e bancárias entre países vizinhos ou parceiros comerciais; e na America pelo contágio das três crises entre países vizinhos, mas não são pelo contágio das crises bancárias entre países parceiros comerciais. Relativamente a diferentes níveis de rendimento, os resultados mostram que países de baixo rendimento não são afectados pelo contágio de qualquer crise, enquanto que os de médio rendimento são afectados pelo contágio de todas as crises financeiras.

***Palavras-Chave:*** Contágio, países vizinhos e países parceiros comerciais, modelo logístico binário para dados em painel.

***JEL Codes:*** C33, F42, G15.

## **Abstract**

In this dissertation, we build different models to investigate contagion of currency, banking and sovereign debt crises across neighbor countries and trade partners by using Binary Logit Panel Data. Our analyses cover the periods 1970 – 2018 and 1800 – 2018 for more than 60 countries all around the world and specific control variables that are chosen according to the nature of each crisis. We have found that during the period of 1970 – 2018 contagion of currency crises has the lowest impact (average 63.5%) on the probability of currency crises happening in a country, while contagion of sovereign debt crises has the highest impact (average 187.5%) on the probability of sovereign debt crises happening in a country considering both results regarding neighbors and trade partners. On a regional basis, our results have shown that countries in Africa are only affected by the contagion of currency crises from their neighbor countries; in Europe, countries are affected by the contagion of currency and banking crises across both neighbors and trade partners; and in America, countries are also affected by the contagion of all 3 crises across their neighbors but they are not affected by the contagion of banking crises across their trade partners. Regarding different income levels our results have shown that low income level countries are not affected by contagion of any type of crises; while lower-middle income level countries are affected by all types of contagion of financial crises.

**Keywords:** Contagion, neighbour and trade partner countries, binary logit panel data.

**JEL Codes:** C33, F42, G15.

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## **List of Abbreviations**

BC – Banking Crises

BMA – Bayesian Model Averaging

CC – Currency Crises

CPIA - Country Policy and Institutional Assessment

DC – Sovereign Debt Crises

DCC - Dynamic Conditional Correlation

EU – European Union

FYR - Former Yugoslav Republic

GARCH – Generalized Autoregressive Conditional Heteroskedasticity

GDP – Gross Domestic Product

GJR - Glosten-Jagannathan-Runkle

IMF – International Monetary Fund

M2 – Monetary aggregate of level 2

OECD - The Organization for Economic Co-operation and Development

PPP - Purchasing Power Parity

US – United States

USA – United States of America

USD – United States Dollar

VAR – Vector Autoregression

WITS – World Integrated Trade Solutions

## **1. Introduction**

Financial crises have been of a great interest for many researchers throughout the years. It is important to understand the nature of financial crises so that better policy responses can be created, and changes can be applied in every area that is crucial to an economy. Financial crises can hit any country in the world, independent of its development level or geography or political power. They can come in different sizes and different types, can change forms through time and can quickly spread across other countries.

According to Kaminsky and Reinhart (2000), only few studies have investigated the contagion of financial crises across countries and those were not deeply looking into which exact channels the contagion has been transmitted. They have shown that contagion is regional not global; the number of countries with the same crises is an important predictor of a probability of a crisis happening in another country; and countries that are linked in trade are also financially linked which makes the contagion even stronger. Their work has opened many doors and created motivation for many researches during 21<sup>st</sup> century, as well as influenced this dissertation on this interesting and important topic.

This dissertation aims to analyse the probability of contagion of three types of crises (currency, banking, and sovereign debt) across neighbor countries and trade partners, as well as to investigate possible determinants of each type of crises between the years of 1970 – 2018. We build different models for each crisis and all models are based on Binary Logit Panel Data with specific-country effects (random effects). Our models include a crisis dummy variable as an independent variable, plus a different number of control variables. Control variables are chosen by taking into consideration the nature of a specific crisis and most related variables with it. The list of countries differs across crisis so that we could build our models with countries that have most data available for all years and for all variables. Our econometric analyses also include robustness check applied on regions, different income levels and a longer time period between 1800 – 2018.

The results suggest that the estimated coefficients of contagion for each crisis are different than each other; contagion of currency crises has an impact on the odds ratio of a currency crises happening between 60% to 65%, contagion of banking crises has an impact between 100% to 150% and sovereign debt crises has an impact between 130% to 250%.

On the regional and income level basis; we have seen that not only coefficients, but overall results are different than each other. For example, we have only found proof of contagion of currency crises across neighbor countries in Africa; in Europe, currency and banking crises across both neighbors and trade partners have shown significant results; and in America, we have seen that countries are not affected by the contagion of banking crises across their trade partners. Low income level countries are not affected by contagion of any type of crises; while lower-middle income level countries are affected by all types of contagion of financial crises.

The dissertation is structured as following: in the next section we review the literature on definition and determinants of three types of financial crises, contagion across countries, and the probability of contagion and we also give an historical overview of financial crises. In Section 3, we describe the data and methodology applied to our models. In Section 4, we present the empirical results of our models. In Section 5, we present the robustness analysis and Section 6 concludes our work.

## **2. Literature Review**

We divide the literature review in the following sub-sections. First, we present a review of studies on financial crises by mainly focusing on three types: banking, currency, and sovereign debt. Second, in Section 2.1., we define three types of financial crises – Banking, Currency, and Sovereign Debt. In Section 2.2., we point out the most important determinants of the three types of financial crises. Third, in Section 2.3., a world historical overview of the three types of financial crises is presented. And lastly, we discuss, in sub-section 2.4, the literature about international contagion of financial crises, which is the topic of our work. An overview of the literature discussed in this section can also be found in table A1, in the Appendix.

### **2.1. Definitions of Several Types of Financial Crises**

Before going deep into the definition of financial crises, it is crucial to understand the term *crisis* itself. “Crisis” is one of the most difficult concepts to be explained with a single definition due to its wide range of usage in different social sciences (e.g., economics, management, political science, psychology, etc.). Within the concept of

equilibrium, crisis occurs when there is an imbalance between a serious problem and the resources available to deal with it (Eastham *et al.*, 1970). In terms of economics, a financial crisis can be defined as an event where a broad number of financial institutions collapse and financial sectors face significant disturbances. These disturbances can include; decrease in asset values, bankruptcy, or foreign market breakdowns (Allen and Snyder, 2009). Financial crisis can have internal or external origins and may arise from private or public sectors. It is known that crises come in different shapes and sizes, might evolve and get worse over time and can spread across other countries (Claessens and Kose, 2013). A single definition for a financial crisis is not enough to explain all forms of financial crises; therefore, a distinction is needed to understand the mechanism. At the national level, a financial crisis - with falling asset prices and insolvency among debtors and intermediaries - disrupts the market's capacity to allocate capital within the economy and at the international level, and a financial crisis initiated in a country generates disturbances that spill over to other countries, mostly to neighbor countries, and markets become incapable of allocating capital internationally. Bank failures and debt defaults are generally accepted as part of the national level of financial crises, while foreign-exchange market disturbances are considered at the international level. There are linkages between bank failures, debt defaults and foreign-exchange markets that may or may not end up by creating a financial crisis (Eichengreen and Portes, 1986).

### **2.1.1. Banking Crises**

Banks' contributions to the real economy are based mostly on the supply of credit to firms and families. In general, banks operate based on the confidence that people have in them. If this confidence goes away and many depositors start to withdraw their deposits at the same time, a liquidity crisis will occur in the banking sector. This crisis will cause banks to sell their assets to compensate withdrawals and asset prices will fall. At the end of this cycle it is most likely that a bank(s) will go bankrupt. In other words, banks will be unable to repay their contracts and will experience a significant number of defaults (De Grauwe, 2010). Reinhart and Rogoff (2008) also explain that frequently banking crises are accompanied by increases in sovereign debt. In a survey of 66 countries around the world between the period of 1873 – 2007, with an extensive dataset, which includes data on housing prices, revenue and domestic debt, the results have shown that public debt has

increased about 86 percent on average during the few following years after a banking crisis.

### **2.1.2. Currency Crises**

A currency crisis can be defined as a speculative attack on the exchange value of a currency that may result in either a significant depreciation of its value or will drive governments to sell reserves or increase interest rates to avoid depreciation (Glick and Hutchison, 2011). Laeven and Valencia (2013) identify currency crises as: a country experiences a currency crisis in a given year if the exchange rate with respect to U.S. dollar falls more than 30 percent and the rate of depreciation is at least 10 percent greater than that of the previous year.

### **2.1.3. Sovereign Debt Crises**

A sovereign debt crisis is usually characterized as an economic and financial hazardous event, which takes place because of a country is not able to pay its public debt. Before a sovereign debt crisis arises, a critically high level of debt (sometimes both internal and external) and low economic growth are common events (Correa and Sapriza, 2014). It has been common to define external debt crises as defaults for centuries but since 1990s this definition has become inadequate. Before the 1990s, sovereign bond markets were not significant and therefore “defaults” mostly captured debt-servicing difficulties. Since the development of international capital bond markets, it became more proper to define sovereign debt crises as events that occur when either a country defaults or its bond spreads are above a threshold (Pescatori and Sy, 2007). Acharya *et al.* (2018) explore the effects of sovereign debt crises in Europe in a period of 2006 – 2012 and the main result shows that European Debt Crises caused countries to have lower employment growth rate, lower level of investment and lower sales growth rate.

## **2.2. Determinants of Financial Crises**

There are several determinants of financial crises. There is a prosperous literature, both theoretical and empirical, dedicated to the explanation and forecasting of crises (Kim *et al.*, 2012).

In a survey, Clarkson (2009) explains that relaxed regulatory constraints on entering and exiting the financial sector, self-regulatory systems, and minimal government interference are the positively correlated factors with the probability of having a financial crisis. The author uses the example of the U.S. recession of December 2007 until June 2009, to show how financial institutions that were led by inexperienced officials, caused the collapse of the financial sector. Additionally, the author strongly states that lack of government control in the financial sector made the recovery process harder than it's supposed to be. Hayford and Malliaris (2010) also support the idea that an increasing level of relaxed financial and monetary regulation policies and unregulated financial markets are the reasons behind the increased probability of financial crises by the evidence they gathered from the 2007 – 2009 financial crisis. In addition to that, they also give more reasons such as increased financial innovations and increased demand for assets as being positively related variables as well. One of the most recent empirical work, Inekwe (2018) gathers data from other previous studies done on this topic so far and estimates the possible determinants of financial crises by using a Probit model. The research contains 68 countries from all regions in the world and the period of analysis ranges between 1950 and 2000. This work finds that market capitalization, money supply, and foreign direct investments are the positively related determinants of financial crises; while institutional quality, government consumption, level of trade, and domestic direct investments are being negatively related. Research on this subject has not yet come to a specific conclusion and hence it will continue to be studied in the future.

### **2.2.1. Banking Crises**

Several papers have examined the drivers of banking crises over time, reaching different conclusions, depending on their different approaches to understand the causes. In this section some of the most relevant studies are reviewed and the most common factors of banking crises are presented. An early work from Gavin and Hausmann (1996) mostly gives us an overview on this topic. The authors analyze Latin American countries, by comparing the countries' GDP and terms of trade before and after crises. The authors show that there are a large number of factors that can determine banking crises, such as: an increasing level of bank liquidity, banking competition and capital asset ratio as being the variables that decrease the probability of banking crises; while increasing level of weakly regulated interest rates, highly unstable monetary policy and macroeconomic

volatility increase the probability of banking crises. Demirguc-kunt and Detragiache (1998) in their empirical research used a maximum of 65 and a minimum of 45 countries from all around the world, with data collected in the period between 1980 and 1994. They have estimated the probability of a banking crisis using a multivariate logit model for a large panel of countries. New determinants have been introduced to the literature such as: bank cash and reserves, ratio of credit to the private sector, ratio of M2, real interest rate, and inflation. It has been found that low GDP growth, high rate of inflation, and high and volatile nominal interest rates are highly positively correlated with the probability of having a banking crisis.

Reinhart and Rogoff (2013) carefully explain the determinants of banking crises in their empirical research, analyzing 66 countries, from all over the world, for the period 1800 – 2008. The data included elements such as: exchange rates, GDP, trade, capital inflows, housing prices, debt, and credit ratings. It was concluded that the increased level of credit boom and high level of asset price bubbles are the main positively correlated factors of banking crises.

### **2.2.2. Currency Crises**

Through centuries, currency crises have been affecting the real economy in many negative ways, mostly through a fall in output level, a decrease in employment and a loss of value of domestic currency. As the currency crises that happened in the world had such harsh consequences, they made researchers pay more attention on studying the determinants of currency crises and trying to predict them before they happen. The literature has been growing both on the empirical and on the theoretical aspects of currency crises. Kruger et al., (2000) empirically examine the determinants of currency crises in Latin America, Asia, and Africa, by using pooled annual data for 19 countries between the periods of 1977 – 1996. The authors uncover that high levels of lending booms, real exchange rate misalignment, and the M2 ratio to international reserves are the only significant determinants that increase the probability of having currency crises in a country. Cuaresma and Slacik (2009) examine 24 developing countries from all around the world, by using Bayesian Model Averaging (BMA) with a sample that ranges from 1994 to 2003, to capture the determinants of currency crises. The results suggest that most of the crises were positively correlated with hyperinflation, high interest rates, and high level of current account deficits. Wang and Moore (2007) also investigate the factors that might

cause currency crises in 5 new European Union member countries which includes; Czech Republic, Hungary, Poland, Slovakia and Slovenia, between 1994 and 2006, by applying the Dynamic Factor Model. The results show that the increasing level of movement of stock prices is positively correlated; but a high level of money stock and high credit ratings of countries are negatively correlated significant determinants of currency crises both at the national and at the regional level.

### **2.2.3. Sovereign Debt Crises**

The determinants of sovereign debt crises have been analyzed in several studies. Cohen and Valadier (2010) run Logit Regressions on a sample of 126 countries with the data collected between 1970 and 2007. The results list the significant determinants of sovereign defaults to be the positively related variable high level of total debt over exports; and the negatively related variables are high governance quality (CPIA index), high GDP *per capita* and a high level of World shock (proxied by a treasury bond spread). Bandiera *et al.*, (2010) determine the robust determinants of debt defaults by using BMA with a database collected between the periods of 1980 - 2004 for 46 developing countries. The analysis shows that countries with different levels of indebtedness are likely to have different determinants. Increased level of country openness and high inflation rates are positively correlated with indebtedness; increased level of reserves, quality of policies, and institutions are negatively correlated significant determinants of countries with an external debt of less than 50 percent. For countries with an external debt of more than 50 percent all determinants mentioned above show the same sign of significant results except quality of policies and institutions. Quality of policies and institutions become irrelevant to the countries that are above 50 percent of external debt.

## **2.3 Historical Overview**

Financial crisis occurred at different intervals all over the world in different time periods (Radelet and Sachs, 1998). In the Gold Standard era, between the periods of 1875 – 1913, there were 35 sovereign debt crises, mostly in Latin America and Europe (e.g., Greece (1893), Portugal (1890), Russia (1885), and Spain (1882)). From 1919 to 1939, between the inter-war years, in the period of the Great Depression, there were 21 banking crises all over the world, except in Asia, and there were 30 sovereign defaults (Reinhart and



Rogoff, 2011). According to Cull and Martinez (2007), from the middle of the 1990s, 77 systemic banking crises occurred. The most notable crises during this period were the Mexico Crisis of 1995, the East Asia crisis of 1997, the Russia crisis of 1998, the Brazil crisis of 1999, and the Ecuador crisis of 2000 (Aschinger, 2001). Banking crises differ according to whether they coincide with other financial events. When banking crises coincide with currency crises, they are called *twin crises*. Argentina (1890, 2001), Mexico (1995), Thailand (1997), Indonesia (1997), and Korea (1997) are some of the countries that have experienced twin crises (Calomiris, 2016). Reinhart *et al.* (2014) report that France defaulted on its sovereign debt eight times between 1500 and 1800, while Spain defaulted thirteen times between 1500 and 1900. Tomz and Wright (2007) document 250 sovereign defaults by 106 countries between 1820 and 2004. Laeven and Valencia (2013) identify 147 banking crises, 218 currency crises and 66 sovereign debt crises over the period 1970 – 2011. In 2007, the Global financial crisis, also known as the subprime mortgage crisis, began in the U.S. It started to evolve into a global financial crisis and spread across other developed countries in the World. In the last quarter of 2008, when the cross-border financial flows came to a halt, the Eurozone started to show the first signs of Sovereign Debt Crises. The European banks were not able to find credit and the risk in the markets were rising. The mostly affected countries from this crisis were Greece, Ireland, Spain, Italy, and Portugal (Yilmaz, 2016). Another important financial crisis of the 21<sup>st</sup> century has taken place in Russia, starting from mid-December 2014; because of strong declines in oil prices and stock markets and a sharp devaluation of the Russian Ruble (Eberhardt and Menkiszak, 2015). One of the currently ongoing financial crises is taking place in Turkey. By August 2018, the Turkish Lira depreciated almost by 40% against the USD. The current account deficit and gross external debt as a share of GDP have increased enormously since the beginning of the 2000s until the first quarter of 2018. The economic crisis in Turkey is likely to deepen in the next years (Oyvat, 2018). Lastly, the current crisis in Venezuela, which started in 2010, has been noted as being the worst economic crisis in the country's history. According to the latest IMF<sup>1</sup> report, as of 2018, the Venezuelan inflation rate has reached 1'000'000% and it is forecasted to reach 10'000'000% by the end of 2019.

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<sup>1</sup> Please see <https://www.imf.org/external/datamapper/PCPIPCH@WEO/OEMDC/ADVEC/WEOWORLD>.

## 2.4 Contagion of Financial Crises and Its Probability

The literature on financial contagion has been growing since 1990s. Yet, the definition of contagion remains uncertain. Chan-Lau *et al.* (2004) describe contagion as the probability of observing realizations, simultaneously, across different financial markets instead of increases in correlations. Akhtaruzzaman and Shamsuddin (2016) also cite contagion as a cross-country transmission of shocks.

The literature about contagion has been very fruitful. Babecky *et al.* (2015) examine stylized facts and early warning indicators of three crises - banking, currency and debt, in their Panel Vector Autoregression Model (VAR). They use a quarterly database of economic crises, for of 40 OECD and EU countries, for the period of 1970 – 2010. Their results indicate that in developed economies, the chance of a currency crises happening after a banking and debt crises is high. Banking crises appear to be more persistent, while debt and currency crises last for a shorter time. They also find that even though all crises have negative impact on the real economy, banking crises have the costliest impacts, and the recovery period after a banking crisis may reach up to 6 years. Dungey *et al.* (2015) focus their research on the internationalisation of banking and currency crises by using Panel Data for 21 countries from Europe, America, and Asia between 1883 and 2008. Using a multivariate concordance index, the author shows that financial turmoil in currency crises has risen throughout the 20<sup>th</sup> century. The level of financial turmoil in banking crises has been more volatile throughout the years. Between the period of 1880s and 1930s it was highly internationalized. This level has fallen during the 1930s, due to a crisis free period, but during the 2000s it has risen again, as a reflection of the 2008 Global Financial Crisis. Luchtenberg and Vu (2015) investigate the stock market contagion and its determinants by only focusing on the 2008 Global Financial Crisis. They use a sample of countries of North America, Europe, and East Asia Pacific between the period 2003 – 2009, by using a Glosten-Jagannathan-Runkle- generalized autoregressive conditional heteroskedasticity (GJR-GARCH) model. They find that the level of exports, trade dependence, inflation, industrial production, interest, and investor's risk aversion are significantly related with the level of contagion. They also find that during a crisis contagion can happen, no matter the level of development of countries. Akhtaruzzaman and Shamsuddin (2016) analyze international contagion through financial versus non-financial firms. In their study, 49 countries: 24 developed, 19 developing, and 6 non-developed are analyzed, using monthly data from 1990 to 2014

and a dynamic conditional correlation (DCC)-GARCH model. Results show that non-financial firms have more impact in the cross-market transmissions of shocks than financial firms. Financial contagion is positively correlated with the level of equity market development and trade intensity. International contagion seems to be higher during US financial crises, but it also varies between countries. Dua and Tuteja (2016) investigate contagion across currency and stock markets during the 2008 Financial Global crisis and the 2010 Eurozone crisis by using a DCC-GARCH model. Their sample includes 19 countries from the Eurozone, as well as the USA, Japan, India, and China, between 2005 and 2014. Their results indicate that there was a significant contagion both within and across asset classes, financial stress is an important factor that affects correlations across markets, and lastly, international stock markets are more vulnerable to global risks.

#### **2.4.1 Probability of Contagion**

In this section we will analyze the literature about the probability of contagion, which is the literature most related with our work.

Caramazza *et al.* (2004) examine the probability of financial contagion for currency crises, analyzing 41 developing countries during the 1990s, using a panel probit regression. They found that financial linkages such as common creditors and financial weakness such as differences in industrialization, real exchange rate appreciation and current account imbalances between developing and developed countries play a significant role on the spread of the Mexican (1994-95), the Asian (1997), and the Russian (1998) crises to other countries. Chan-Lau *et al.* (2004) focus on the spread of financial crises across equity markets, by using panel regression and applying multivariate extreme value theory. Their analysis on 17 countries between the period of 1987 – 2001, shows that emerging stock markets are the most affected markets by contagion from the United Kingdom and the United States, while Latin America has the strongest contagion from the United States, while Japan almost does not have any contagion effect to other markets. Results also show that: only the 1998 Russian and Brazilian crises had an impact on the global increase of contagion; contagion patterns differ within and across regions. Edwards (2009) investigates the impact of trade and financial openness on the probability of external crises. The author uses a panel probit regression for five regions – Latin America and the Caribbean, Asia, Africa, Middle East, and Eastern Europe, between the 1990s and

the 2000s. His findings indicate that relaxing capital controls increases the probability of a country having a sudden stop, and “financial liberalization first” strategies are also making countries more vulnerable to external crises. Forbes and Warnock (2012) analyze the fluctuations in international capital flows by using a panel of 58 countries for the period of 1980 – 2009. The results suggest that global factors such as global risk, liquidity, interest rates and growth, are significantly associated with extreme capital flow episodes, while domestic factors such as financial market development, integration with global financial markets, fiscal position, have less prominence. Contagion, through all channels such as banking, trade and geography, can be associated with decreases of gross inflows and gross outflows. Sadiku *et al.* (2014) focus on the probability of a spillover effect of sovereign debt crises in Greece on Western Balkan countries. Their study includes seven countries - Albania, Bosnia and Herzegovina, Croatia, FYR Macedonia, Montenegro, Serbia, and Greece, with data between 2000 and 2011, using a binary logit model. Their findings show that variables, such as the ratio of domestic bank loans and current account deficit, have a strong impact in predicting the impact of a financial crisis in Western Balkan countries. In addition, the probability of having a systemic crisis in the upcoming period is high for Balkan countries considering the contagion from Greece.

### **3. Empirical Approach**

#### **3.1. Data**

Throughout this section, all databases and variables used in this work will be explained in detail. The complete list of all variables (divided by datasets) and their acronyms used in the econometrical analysis, specifying countries, periods, neighbor countries and trade partners can be found in the table A2.1 to table A2.15, in the Appendix. Depending on our model for each crisis, we have chosen different variables to use in econometrical analysis due to their possible relationship with corresponding crises. A list of variables used for each model can be found in table A2.15.

**Crises dummies (dummy\_crisis1, 2, 3)** – for all countries that have been added to the database, we distinguish between any of the 3 crises (currency crises (1), banking crises (2), and sovereign debt crises (3)) in a specific year (1 if yes, 0 if no). Crises dummies are used as dependent variables in our models, which will also be explained in the Results

section. Dates for the crises dummies were taken from the databases of Carmen M. Reinhart (available at her homepage)<sup>2</sup>, Duca *et al.* (2017), and Laeven and Valencia (2018).

The next two variables are representing our main covariates used in the econometrical analysis; our main aim is to understand the contagion of financial crises across neighbouring countries and trade partners. Therefore, we constructed variables that help us to investigate contagion.

**Neighbouring Countries** – a total number of 156 countries are gathered for each of the three crises. Only land borders have been taken into consideration while building up the data; except for the countries that are classified as *island countries*, for which sea borders have been used.<sup>3</sup> This data helped us to construct two additional variables for each country and for each crisis, for the period of 1800 – 2018:

- **Number of neighbor countries (cc/bc/dc\_number\_neighbor)** – measures the number of neighbour countries (*per year*) that had the corresponding type of crisis independent of if the reference country had it or not. “cc” corresponds to currency crisis, “bc” to banking crisis, and “dc” to debt crisis.

**Trade Partners** – a total number of 156 countries are gathered for each of the 3 crises. The five most important trade partners of countries (average of imports and exports), taken from the dataset World Integrated Trade Solutions (WITS)<sup>4</sup>, have been used to construct our next two variables:

**Number of trade partners (cc/bc/dc\_number\_partner)** - this variable is the number of trade partner countries (*per year*, out of the 5) that had the same crisis independent of if the reference country had it or not.

Next, we will present the main control variables used in our econometrical analysis to find the determinants of each corresponding crises. We have gathered data from 11 datasets from the International Monetary Fund (IMF), which include fifty three variables

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<sup>2</sup> Please see <http://www.carmenreinhart.com/data/browse-by-topic/>.

<sup>3</sup> Please see <https://atlas.media.mit.edu/en/>

<sup>4</sup> Please see <https://wits.worldbank.org/>

in total for 191 countries, ranging a period between 1800 and 2018. Types of measurement for each variable are presented within parenthesis.

- **Public Debt** – includes three variables for the period of 1950 – 2017; private debt, all instruments (percent of GDP), household debt, all instruments (percent of GDP) and non-financial corporate debt, all instruments (percentage of GDP).
- **Private Debt** – includes two variables between the period of 1950 – 2017; general government debt (percent of GDP) and public sector debt (percentage of GDP).
- **World Economic Outlook** – includes 8 variables where the data is available from 1980 to 2018; GDP, current prices (billions of U.S. dollars), GDP per capita, current prices (U.S. dollars per capita), implied PPP conversion rate (national currency per international dollar), inflation rate, average consumer prices (annual percent change), population (millions of people), unemployment rate (percent), current account balance, percent of GDP (percent of GDP) and general government net lending/borrowing (percentage of GDP).
- **Fiscal Monitor** - consists of two variables for the period of 1990 – 2018; net lending/borrowing (percentage of GDP) and cyclically adjusted balance (percentage of potential GDP).
- **Africa Regional Economic Outlook** - only includes countries that are in the African continent and it has three variables between the years of 2004 and 2018; real GDP growth (annual percent change), government debt (percentage of GDP).
- **Assessing Reserve Adequacy** - consists of one variable for the period of 2000 – 2018; reserve/(Import/12) (unit).
- **Historical Public Debt** - has only one variable, where the data for some countries is available from the year of 1800 and up to 2018; debt (percentage of GDP).
- **Capital Flows in Developing Economies** - includes total number of 10 variables for the period of 1995 – 2014; direct investment abroad (millions of USD), direct investment in country (millions of USD), private inflows excluding direct investment (% of GDP), private outflows excluding direct investment (% of GDP), portfolio investment assets (millions of USD), portfolio investment liabilities (millions of USD), equity securities liabilities (millions of USD), financial derivatives (millions of USD), debt forgiveness (millions of USD) and nominal gdp (millions of USD).

- **Capital Account Openness Index** - has six variables for the years between 2000 and 2013; overall openness index (all asset categories) (units), openness of capital inflows index (1=fully liberalized) (units), openness of capital outflows index (1=fully liberalized) (units), financial market openness index (equity, bond, money market, collective investment, derivatives, 1=fully liberalized) (units), commercial credit openness index (1=fully liberalized) (units) and financial credit openness index (1=fully liberalized) (units).
- **Public Finance in Modern History** – this data set is made up of four variables between the period of 1800 – 2012; government revenue (percent of GDP), government expenditure (percent of GDP), gross public debt (percent of GDP) and real GDP growth rate (percent).
- **Export Diversification and Quality** - includes fourteen variables through the years between 1962 – 2010 and they are all measured as an index; extensive margin, intensive margin, food and live animals, beverages and tobacco, crude materials, inedible (except fuels), mineral fuels, lubricants and related materials, animal and vegetable oils and fats, chemicals, manufactured goods classified chiefly by material, machinery and transport equipment, miscellaneous manufactured articles, commodity & transactions (not classified according to kind), export quality.

Additionally, we have added several variables to the dataset, which we will detail below. The periods and countries for these variables are described in table A2.12 in the Appendix.

**Income level (inc\_level)** – for all countries, it has been calculated by using GDP *per capita* in current prices (USD) from the World Economic Outlook dataset, ranging between 1 to 4 (1 - low level of income, 2 - lower-middle level of income, 3 - upper-middle level of income, 4 - high level of income), using the definition of the World Bank for the period 1980 – 1986, and using the criteria established by the World Bank for the year 1987, the last year available in the Historical data set. After 1986 we use the referred Historical data set that allows us to determine the level of income for countries using a specific criterion, computed by the World Bank, for each year.

**Continent Dummies (dummy\_continent)** – for all countries in the database, we also classify them by Continent. Continent dummies range between 1 to 5 (1 – Africa, 2 – Asia, 3 – Europe, 4 - America, 5 - Oceania).

**Country Risk Level (risk\_level)** – for the 145 countries and period 1999 – 2018, it ranges between 1 - lower risk to 7 – higher risk. According to the Organization for Economic Co-operation and Development (OECD) definition, country risk reflects transfer and convertibility risk and cases of *force majeure* (e.g., war, revolution, earthquakes etc.). The data for risk level comes from the official database (Historical Country Risk Classification) of OECD. Additionally, data does not include very small countries and high-income OECD/Euro Zone countries due to OECD rules.

**Worldwide Governance Indicators** – this database from the World Bank, constructed by (Kaufmann *et al.*, 2010), includes six variables that use percentile rank among all countries (0 – lowest 100 – highest) for the period of 1996 – 2017. Bellow we present the variables, using the definition of the World Bank (in quotations marks).

- **Voice and Accountability (voice\_acc)** – “Reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media”,
- **Political Stability and Absence of Violence/Terrorism (stability)** – “measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism”,
- **Government Effectiveness (govt\_effect)** – “reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies”;
- **Regulatory Quality (regulatory\_qual)** – “reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development”,
- **Rule of Law (rule\_law)** – “reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in



particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence”

- **Control of Corruption (corruption)** – “reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests”.

**Polity2 (polity2)** – this variable is taken from the Polity IV Project (Marshall *et al.*, 2018), from the Center for Systemic Peace, which covers political regime characteristics and transitions of 163 countries between the period of 1800 – 2017. Polity indicator provides a single regime score that ranges from +10 (full democracy) to -10 (full autocracy).

**Capital Control Index (capital\_control)** – when the dummy is 0 it means unified market (no capital control); if 1 it means dual/multiple/parallel rates, hence some form of capital controls. The data were taken from the databases of Carmen Reinhart<sup>5</sup> for 185 countries between 1946 and 2016.

**Type of Exchange Rate Regime (exchange\_type)** – the classification code of countries ranges between 1 to 6: 1 includes no separate legal tender, pre-announced peg or currency board arrangement, pre-announced horizontal band that is narrower than or equal to +/- 2%, de facto peg; 2 includes pre-announced crawling peg, pre-announced crawling band that is narrower than or equal to +/-2%, de facto crawling peg, de facto crawling band that is narrower than or equal to +/-2%; 3 includes de facto crawling band that is narrower than or equal to +/-5%, moving band that is narrower than or equal to +/-2% (i.e., allows for both appreciation and depreciation over time), managed floating; 4 includes freely floating; 5 includes freely falling; and 6 includes dual market in which parallel market data is missing. The data were taken from the databases of Carmen M. Reinhart (available at her homepage)<sup>6</sup> for 187 countries between 1940 and 2016.

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<sup>5</sup> Please see <http://www.carmenreinhart.com/data/browse-by-topic/>

<sup>6</sup> Please see <http://www.carmenreinhart.com/data/browse-by-topic/>

### 3.2. Methodology

Panel (longitudinal) data is made of repeated observations on a subject at different times and this type of data is commonly used in many fields, especially in economics. The advantage of using panel data compared with cross-sectional data is that one can study dynamic relationships and casual effects. Our analyses are based on binary choice models due to the dependent variable taking the form of a binary variable and our probabilistic models have the general form of:

$$\begin{aligned} \text{Prob} (Y = 1|x) &= F (x, \beta) \\ \text{Prob} (Y = 0|x) &= 1 - F (x, \beta) \end{aligned}$$

Where  $x$  is the set of explanatory variables and  $\beta$  is the parameter vector that reflects the changes in  $x$  on the conditional probability of success,  $Y=1$ . Our choice for the function  $F$  mainly depends on the restrictions in using Linear Estimation probabilistic model. In a regular Linear Estimation, the dependent variable is typically not a binary variable; it must be continuous. The drawback of Linear Estimation for binary  $Y$  is that it cannot capture the non-linearity of  $F$  and it may predict probabilities that are outside the  $[0, 1]$  interval. Therefore, we have put our attention where we could use a function  $F$  that takes a binary variable  $Y$  and gives a continuous real-valued  $Y'$  (by producing a probability between 0 and 1): The Probit and Logistic Estimations.

In Probit Regression, the model uses the cumulative normal distribution function ( $\Phi$ ) when the dependent variable is a binary outcome and the binary choice model becomes:

$$\text{Prob} (Y = 1|X) = \Phi (X' \beta).$$

In Logistic Regression, the model is based on the cumulative logistic distribution which can be explained with the odds ratio  $O(p)$ . If some event  $Y=1$  occurs with probability  $p$ , then the odds of it happening are:

$$O(p) = \frac{p}{1 - p}$$

and in natural log of the odds

$$\log \left( \frac{p}{1 - p} \right) = X' \beta$$

it is (log)linear so that it gives us the general logit model of:

$$Prob (Y = 1|X) = \frac{\exp(X'\beta)}{1 + \exp(X'\beta)} = \frac{1}{1 + \exp(-X'\beta)}$$

After giving a brief information on our chosen general model as above, the next step is to discuss (country) Individual-Specific Effects analysis and the bottom-up maximum likelihood-type estimation strategy for determining the final list of significant covariates.

Individual-Specific Effects refer to the unobserved effects that may be correlated with an observed explanatory variable in a Panel Data, which can be shown in a linear model as:

$$Y_{it} = \alpha_i + X'_{it}\beta + \epsilon_{it}, i = 1, \dots, n \text{ and } t = 1, \dots, T$$

where  $\alpha_i$  is the unobserved individual level effect that is fixed or random over time and  $\epsilon_{it}$  is the standard error term. That is, the composite error is given by  $u_{it} = \alpha_i + \epsilon_{it}$ . Here, n is the number of cross-sections (countries) and T the time periods (years of observations). In our Panel Logit Model,

$$Prob (Y_{it} = 1|X_{it}) = \frac{1}{1 + \exp(-\alpha_i - X'_{it}\beta)}$$

In the fixed effects model;  $\alpha_i$  is constant over time and the model allows individual-specific to be correlated with independent variable. On the other hand, in the random effects model;  $\alpha_i$  is no longer constant over time and it is not correlated with independent variable,  $\alpha_i$  is i.i.d.  $N(0, \sigma_\alpha^2)$ . In panel data analysis, the Hausman test helps us to choose between random and fixed effects. The test looks into the correlation between the errors and covariates. If there is no correlation between the two, the preferred model is the random effects and vice versa.

Lastly, we have applied bottom-up estimating technique to our covariates in order to choose most effective covariates. Bottom-up estimating is a widely used method in fields such as accounting, project management and economics. This technique is based on breaking down the whole work into smaller components (covariates) and aggregating them one by one. It gives us a possibility to have more accurate results and choosing the best covariates that suits our model.

For more details about Panel Data methods see, for example, Arellano (2003).

## 4. Results

Our main aim is to understand the probability of contagion across neighbouring countries and trade partner countries, as well as finding the determinants of each crisis. Therefore, we have constructed 3 different models: for Currency, Banking, and Sovereign Debt Crises. Each model includes a different list of variables; due to their own nature, each crisis has variables that are more related with them in economical sense. So, instead of using all variables for all crises, we have chosen the most accurate variables that can be a possible determinant, with the help of the literature mentioned above. Also, each model has different number of countries; that are chosen according to our database. In order to avoid problems in our analysis, we have ignored countries that do not have data available for the chosen variables, and years, and only focused on countries that have more data available. All models are based on Binary Logit Panel Data and include individual effects analysis. Our choice of the logit regression is due to limitation of Stata. By default, Stata does not apply fixed effects analysis to probit regression and therefore we have excluded probit regression and only focus on logit regression.

### 4.1. Currency Crises Model

In currency crises model our sample includes 62 countries between the years of 1970 – 2018. The list of countries can be found in table A3 in the Appendix. Our response variable “dummy\_crises1” takes one of the two values: 1 if a country in period t had a crisis; 0 otherwise. Our main covariates (cc\_number\_neighbor and cc\_number\_trade) are used to build two different estimated models for the contagion across neighbouring countries (Model 1.1) and trade partner countries (Model 1.2) analysis. Both estimations include five other statistically relevant variables: real GDP growth rate (in %), general government debt (in %), polity2, exchange type and capital control. These covariates are chosen according to bottom-up estimation analysis that is applied to 48 variables. The covariates’ correlation matrices for Model 1.1 and Model 1.2 can be found in the tables 1 and 2.

Table 1. Model 1.1: Currency Crises - Neighbor Countries

Variables	cc_number_neighbor	real_gdp3	D.govt_debt2	polity2	exchange_type	capital_control
cc_number_neighbor	1					
real_gdp3	-0.148462666	1				

D.govt_debt2	0.107913781	-0.222272875	1			
polity2	-0.017086847	-0.177955964	-0.024625914	1		
exchange_type	0.124058432	-0.00878638	0.066698564	-0.152172469	1	
capital_control	0.042819755	0.013250807	0.022950952	-0.396477443	0.234956237	1

Table 2. Model 1.2: Currency Crises - Trade Partners

Variables	cc_number_trade	real_gdp3	D.govt_debt2	polity2	exchange_type	capital_control
cc_number_trade	1					
real_gdp3	-0.088500397	1				
D.govt_debt2	0.120340691	-0.222272875	1			
polity2	0.023038112	-0.177955964	-0.024625914	1		
exchange_type	0.092707096	-0.00878638	0.066698564	-0.152172469	1	
capital_control	0.068120229	0.013250807	0.022950952	-0.396477443	0.234956237	1

After choosing most accurate covariates to be used for neighbor countries and trade partner countries estimations, we have started our analysis with the basic Logit Model. Details of each models will be discussed in the following sub-sections.

#### 4.1.1. Contagion Across Neighbor Countries

As it is shown in table 3, our results for the Logit Regression without individual effects regarding neighbor countries analysis, indicate that all variables are statistically significant at the .01 significance level. According to the results, our main covariate that helps us to understand the contagion across neighbor countries (cc\_number\_neighbor) is positively related with the dependent variable which suggests that when the number of neighbor countries that have currency crises in a given year increases, the probability of a country having a currency crisis also increases.

The other variables that we have used as possible determinants of currency crises show expected signs in relation with currency crises. We can say that higher rates of real GDP growth lower the probability of having a currency crisis. In other terms as an economy gets richer it brings stability to financial markets and decreases the probability of having a currency crisis. On the other hand, higher government debt increases the probability of having a currency crisis due to investors losing their confidence in internal markets of a country. Our analysis also show that polity2 is positively related with the probability of having a currency crisis, which indicates that democracies are more susceptible to currency crisis due to being economically open, it increases the risk in financial markets, and therefore the probability of currency crisis occurring increases as the country reaches full democracy. Our last possible determinants - exchange type regime and capital

controls - are also showing a positive relation with currency crises. Countries with free exchange rate regime are more open to have currency crises as well as countries with any type of capital control applied by the government. Our finding regarding government debt, real GDP growth and exchange type are supporting the results provided by Cuaresma and Slacík (2009) that is discussed in the literature review.

Table 3. Model 1.1: Currency Crises – Neighbor Countries – Logit Regression

VARIABLES	(1) Logit
cc_number_neighbor	0.464*** (0.0949)
real_gdp3	-0.0758*** (0.0204)
D.govt_debt2	0.0271*** (0.00938)
polity2	0.0698*** (0.0192)
exchange_type	0.190*** (0.0723)
capital_control	0.852*** (0.262)
Constant	-3.289*** (0.283)
Observations	1,540

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As it is discussed in the Methodology, we have the choice of estimating Logit model with random or fixed effects. In order to decide which model to use, we have applied the Hausman test to our Logit regression. The results of the Hausman test can be found in table 4. The result of the Hausman test suggests that random effects is preferred against fixed effects because the p-value of the test is greater than 10%. Therefore, our final regression for neighbor countries analysis is based on Logit model with random effects.

Table 4. Model 1.1: Currency Crises – Neighbor Countries – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
cc_number~r	.7322353	.6222254	.1100099	.0455293
real_gdp3	-.0941122	-.0859364	-.0081758	.0092482
govt_debt2				
D1.	.0288082	.02994	-.0011318	.0021232
polity2	.0435915	.0625006	-.0189091	.0335155
exchange_t~e	.0740087	.193015	-.1190063	.0647525
capital_co~l	.8831943	.9005371	-.0173427	.1499756

b = consistent under Ho and Ha; obtained from xtlogit  
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2(6)} &= (b-B)' [(V_b-V_B)^{-1}] (b-B) \\ &= 9.48 \\ \text{Prob>chi2} &= 0.1481 \end{aligned}$$

Considering our results for the Logit model with random effects in table 3.5, we can say that our model is valid by looking at the likelihood-ratio test for rho (p-value = 0.0000). The null hypothesis is a random effects with variance equal to zero, i.e., the inexistence of individual effects. Since the p-value is zero, we do not accept this assumption and conclude that there are indeed specific country-effects in the model. From the previous Hausman test, we find these effects as of random type.

While 4 of the covariates (cc\_number\_neighbor, real\_gdp3, govt\_debt2 and capital\_control) are still statistically significant at .01 significance level, the remaining 2 covariates (polity2 and exchange\_type) are now significant at only .05 significance level. Further, all covariates have the same signs as in the Logit model without individual effects. We can see that the marginal effects of covariates have slightly changed compared with the Logit Model without individual effects. The results of random effects are represented in table 5.

Table 5. Model 1.1: Currency Crises – Neighbor Countries – Random Effects

VARIABLES	(1) random Effects
cc_number_neighbor	0.622*** (0.114)
real_gdp3	-0.0859*** (0.0229)
D.govt_debt2	0.0299*** (0.0101)
polity2	0.0625** (0.0261)
exchange_type	0.193** (0.0980)

capital_control	0.901*** (0.315)
Constant	-3.566*** (0.374)
Observations	1,540
Number of entry	62

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Prob > chi2 = 0.0000

As mentioned before, the main covariate of interest to explain the contagion of currency crisis across neighbor countries is “cc\_number\_neighbor”. Earlier, we claimed that, all the rest remaining constant, more neighbors facing a currency crisis imply a higher probability of the country of reference also having that same crisis. Because the Logit model is nonlinear, the impact on the probability depends on the value of X. But at the same time, because we have a Logit model, we know that 0.62 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “cc\_number\_neighbor”. That is, if one more neighbor country has a currency crisis then the odds ratio of a crisis at the country of reference increases by 62%. Say, for example, there is a 50% chance of a country having a currency crisis ( $p=1-p=0.5$  so that  $O(p)=1$ ). In the scenario of one more neighbor country having a crisis, the country’s odds change to approximately 1.62 and the probability of a crisis to 61.8%.

#### 4.1.2. Contagion Across Trade Partner Countries

Our next model under currency crises include the analysis regarding contagion across trade partner countries. Therefore, we have started with Logit Model without individual effects. The results of Logit Model can be found in the table 6.

Table 6. Model 1.2: Currency Crises – Trade Partners – Logit Regression

VARIABLES	(1) Logit
cc_number_trade	0.581*** (0.0845)
real_gdp3	-0.0837*** (0.0205)
D.govt_debt2	0.0246** (0.00980)
polity2	0.0597*** (0.0191)
exchange_type	0.197*** (0.0725)
capital_control	0.711*** (0.267)
Constant	-3.402*** (0.285)



Observations	1,540
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

According to the results, all variables in our model are significant at .01 significance level, except government debt, which is significant at .05 significance level. Regarding our main covariate that helps us to understand the contagion across trade partners (cc\_number\_trade) is positively related with the dependent variable, which suggests that when the number of trade partners having currency crises in a given year increases, the probability of a country having a currency crisis also increases. All other variables are showing the same results as in our neighbor countries model, which is discussed above (Model 1.1).

Next, we have applied the Hausman test to find the most suitable model to use between random and fixed effects. Our result indicates that the Logit model with fixed effects is more suitable than random effects; but fixed effects are dropping 12 countries. This is because fixed effects regression only uses information from changes within a country and it does not look for information that could be obtained from comparing countries. So, countries that do not change over time are removed. Therefore, we have decided to use the random effects model, which includes more countries into the regression. The results of the Hausman test can be found in table 7.

Table 7. Model 1.2: Currency Crises – Trade Partners – Hausman Test

	Coefficients			
	(b) fixed2	(B) random2	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
cc_number~e	.6827492	.6579412	.024808	.0238819
real_gdp3	-.1019933	-.096636	-.0053573	.0082946
govt_debt2				
D1.	.0258872	.0270235	-.0011362	.0016617
polity2	.0456484	.0568202	-.0111718	.0332139
exchange_t~e	.0617453	.1890608	-.1273155	.0666339
capital_co~1	.8009659	.7825617	.0184042	.1583139

b = consistent under Ho and Ha; obtained from xtlogit  
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
 = 17.22  
 Prob>chi2 = 0.0085

According to our results for the Logit model with random effects, we can say that our model is valid (p-value = 0.0000). The first 2 covariates (cc\_number\_trade and real\_gdp3)

are still significant at .01 significance level, while 3 of them (govt\_debt, polity2, and capital\_control) are now only significant at .05 significance level and last covariate (exchange\_type) is now only significant at .1 significance level down from .01. All variables still have the same signs as the Logit model presented above. We know that 0.65 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “cc\_number\_trade”. That is, if one more trade partner has a currency crisis then the odds ratio of a crisis at the country of reference increases by 65%.

Table 8. Model 1.2: Currency Crises – Trade Partners – Random Effects

VARIABLES	(1) random Effects
cc_number_trade	0.658*** (0.0947)
real_gdp3	-0.0966*** (0.0231)
D.govt_debt2	0.0270** (0.0105)
polity2	0.0568** (0.0257)
exchange_type	0.189* (0.0976)
capital_control	0.783** (0.320)
Constant	-3.628*** (0.373)
Observations	1,540
Number of centry	62

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
 Prob > chi2 = 0.0000

## 4.2. Banking Crises Model

In the banking crises model our sample includes 67 countries between the years 1970 and 2018. The list of countries can be found in table A3, in the Appendix. Our response variable “dummy\_crises2” is a binary variable that takes one of the two values; 1 if a country had a crisis; 0 otherwise. Our main covariates (bc\_number\_neighbor and bc\_number\_trade) are used to build 2 different estimations for contagion across neighbouring countries (Model 2.1) and trade partner countries (Model 2.2) analysis. Both estimations include 5 variables; real GDP growth rate (in %), general government debt (in %), equity securities liabilities (millions of US Dollars), overall openness index (units) and current account balance (% of GDP). Covariates are chosen according to

bottom-up estimation analysis that is applied to 39 variables. Correlation matrix for Model 2.1 and Model 2.2 can be found in the tables 9 and 10.

Table 9. Model 2.1: Banking Crises – Neighbor Countries

Variables	bc_number_neighbor	real_gdp3	D.govt_debt2	equity_securities	openness_index	ca2
bc_number_neighbor	1					
real_gdp3	-0.318907417	1				
D.govt_debt2	0.203676555	-0.474043769	1			
equity_securities	-0.09275836	-0.057977393	0.094639085	1		
openness_index	0.09506659	-0.291117752	0.092511226	0.107891864	1	
ca2	0.038729478	-0.134008402	-0.058174163	0.018184378	-0.002019602	1

Table 10. Model 2.2: Banking Crises – Trade Partners

Variables	bc_number_trade	real_gdp3	D.govt_debt2	equity_securities	openness_index	ca2
bc_number_trade	1					
real_gdp3	-0.344396894	1				
D.govt_debt2	0.295947645	-0.474043769	1			
equity_securities	-0.015689785	-0.057977393	0.094639085	1		
openness_index	0.034564154	-0.291117752	0.092511226	0.107891864	1	
ca2	-0.10037446	-0.134008402	-0.058174163	0.018184378	-0.002019602	1

After choosing the most accurate covariates to be used for neighbor countries and trade partner countries estimations, we have started our analysis with basic Logit Model. Details of each models will be discussed in the following sub-sections.

#### 4.2.1. Contagion Across Neighbor Countries

According to our results regarding Logit model without individual effects; we can say that all variables are statistically significant at .01 significance level except for the openness index and the current account balance where they are also significant at .05 and .1 significance level. The main covariate helps us to understand that contagion across neighbor countries (bc\_number\_neighbor) is positively related with the dependent variable, which suggests that when the number of neighbor countries have banking crises in a given year increases, the probability of a country having a banking crisis also increases. Our next covariates, real GDP growth and current account balance are negatively related with the dependent variable. Both variables are important indicators of an economy's health; where positive current account balance indicates that the country is a net lender to the rest of the world and real GDP growth rate measures economic growth

as in GDP from one period to another. We can clearly say that when an economy gets richer the probability of banking crises occurring decreases in a chosen country. On the other hand, the last two covariates - equity securities liabilities and overall openness index are showing positive correlation. Equity securities liabilities in basic terms is a part of government debt and it can be also referred as debt securities. It represents money that is borrowed and must be repaid. Therefore, when a country's debt securities increase it makes the country more vulnerable to the banking crises. Overall openness index adds imports and exports in goods and services and divides this sum by the GDP of a country; the larger the ratio, the more the country is exposed to international trade. Our result regarding the overall openness index shows that countries that are more open to international trade have more probability to face against banking crises. It is important to note that, our findings regarding real GDP growth rate, government debt and equity securities liabilities are supporting the findings of Demirguc-kunt and Detragiache (1998) and Reinhart and Rogoff (2013). Results of the Logit model are also represented in table 11.

Table 11. Model 2.1: Banking Crises – Neighbor Countries – Logit Regression

VARIABLES	(1) Logit
bc_number_neighbor	1.285*** (0.153)
real_gdp3	-0.128*** (0.0445)
D.govt_debt2	0.0723*** (0.0251)
equity_securities	1.52e-05*** (3.61e-06)
openness_index	1.727** (0.737)
ca2	-0.0452* (0.0253)
Constant	-4.603*** (0.671)
Observations	716

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Next, in order to decide between fixed or random effects we have applied Hausman test to our regression. The results of Hausman test can be found in table 12.

Table 12. Model 2.1: Banking Crises – Neighbor Countries – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
bc_number_~r	1.751932	1.503723	.2482093	.1813935
real_gdp3	-.1068926	-.1343056	.027413	.0398483
govt_debt2				
D1.	.0733424	.07259	.0007524	.0243362
equity_sec~s	.0000149	.000017	-2.14e-06	3.62e-06
openness_i~x	-.6283496	1.914617	-2.542966	1.615986
ca2	-.1220523	-.0531325	-.0689198	.0475632

b = consistent under Ho and Ha; obtained from xtlogit  
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)' [(V\_b-V\_B)^(-1)] (b-B)  
 = 14.90  
 Prob>chi2 = 0.0108

Our result indicates that Logit model with fixed effects is more suitable than random effects; but fixed effects are dropping 35 countries. As we have discussed before, this is due to the nature of the fixed effects regression; it does not include countries that stay constant over the period of the regression. Therefore, we have decided to use the random effects model instead so we could work with maximum possible countries available and, as we can clearly say that at 1% level, we accept the null hypothesis of random effects are more suitable than fixed effects.

According to the results of Logit model with random effects, our model is valid (p-value = 0.0000). All variables included in the sample are still significant at .05 and 0.1 significance level and have the same signs as Logit model, which is discussed above. We know that 1.50 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “bc\_number\_neighbor”. That is, if one more neighbor country has a currency crisis then the odds ratio of a crisis at the country of reference increases by 150%. The results can also be found in table 13.

Table 13. Model 2.1: Banking Crises – Neighbor Countries – Random Effects

VARIABLES	(1) random Effects
bc_number_neighbor	1.504*** (0.216)
real_gdp3	-0.134*** (0.0494)
D.govt_debt2	0.0726** (0.0283)
equity_securities	1.70e-05*** (4.79e-06)
openness_index	1.915** (0.914)

ca2	-0.0531*
	(0.0309)
Constant	-5.248***
	(0.882)
Observations	716
Number of entry	67

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Prob > chi2 = 0.0000

#### 4.2.2. Contagion Across Trade Partner Countries

Our next model under banking crises include the analysis regarding contagion across trade partner countries. Therefore, we have started with the Logit model without individual effects. The results of the Logit model can be found in the table 14.

Table 14. Model 2.2: Banking Crises – Trade Partners – Logit Model

VARIABLES	(1) Logit
bc_number_trade	0.965*** (0.110)
real_gdp3	-0.0923** (0.0436)
D.govt_debt2	0.0561** (0.0280)
equity_securities	1.28e-05*** (3.99e-06)
openness_index	2.109*** (0.699)
ca2	0.00789 (0.0245)
Constant	-5.483*** (0.674)
Observations	716

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The results are showing that all variables are significant at .05 significance level, except the current account balance. While the current account balance covariate was significant in Model 2.1, we can see that it became non-significant in the analysis of contagion across trade partners and therefore it has no effect on explaining contagion here in this Model 2.2. Our main covariate that helps us to understand the contagion across trade partners (bc\_number\_trade) is positively related with the dependent variable, which suggests that when the number of trade partners have currency crises in a given year increases, the probability of a country having a banking crisis also increases. Remaining variables are showing the same relationship as in Model 2.1.

Next, we have applied the Hausman test to decide between fixed and random effects. The results of the Hausman test can be found in table 15.

Table 15. Model 2.2: Banking Crises – Trade Partners – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed2	(B) random2		
bc_number_~e	1.175035	1.157502	.0175336	.0731252
real_gdp3	-.0679283	-.0915453	.023617	.0314559
govt_debt2				
D1.	.0559305	.0562028	-.0002723	.0194184
equity_sec~s	.0000136	.000015	-1.39e-06	5.74e-06
openness_i~x	3.038864	2.489597	.5492665	2.64316
ca2	-.0663071	-.0037081	-.062599	.0487834

b = consistent under Ho and Ha; obtained from xtlogit  
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)' [(V\_b-V\_B)^(-1)] (b-B)  
= 13.65  
Prob>chi2 = 0.0180

According to the Hausman test, the Logit model with fixed effects is more suitable than the random effects; but fixed effects are dropping 35 countries from the regression. We face the same situation here as in neighbor countries analysis and we accept the random effects model at 1% level, which at the end gives us more countries available in the regression. The results of the Logit model with random effects can be found in table 16.

Table 16. Model 2.2: Banking Crises – Trade Partners – Random Effects

VARIABLES	(1) random Effects
bc_number_trade	1.158*** (0.155)
real_gdp3	-0.0915* (0.0503)
D.govt_debt2	0.0562* (0.0321)
equity_securities	1.50e-05*** (5.57e-06)
openness_index	2.490*** (0.960)
ca2	-0.00371 (0.0326)
Constant	-6.611*** (1.013)
Observations	716
Number of centry	67

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Prob > chi2 = 0.0000

The results are showing that our model is valid (p-value = 0.0000). Current account balance is still not significant enough to be a determinant of banking crisis. Our 2 covariates (bc\_number\_trade and equity\_securities) are still significant at .01 significance level; while the remaining covariates are now significant at .05 and .1 significance level. We know that 1.15 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “bc\_number\_trade”. That is, if one more neighbor country has a banking crisis then the odds ratio of a crisis at the country of reference increases by 115%. The sign of the remaining variables is still the same as in the Logit model.

### 4.3. Sovereign Debt Crises Model

In the sovereign debt crises model our sample includes 75 countries between the years of 1970 – 2018. The list of countries can be found in table A3. Our response variable “dummy\_crises3” is a binary variable that takes one of the two values; 1 if a country had a crisis; 0 otherwise. Our main covariates (dc\_number\_neighbor and dc\_number\_trade) are used to build 2 different estimations for contagion across neighbouring countries (Model 3.1) and trade partner countries (Model 3.2) analysis. Both estimations include 5 variables; capital control index, country risk level, polity2, inflation rate (average consumer prices, annual % change) and net lending/borrowing (also referred as overall balance, % of GDP). Covariates are chosen according to bottom-up estimation analysis that is applied to 35 variables. Correlation matrix for Model 3.1 and Model 3.2 can be found in the tables 17 and 18.

Table 17. Model 3.1: Sovereign Debt Crises – Neighbor Countries

Variables	dc_number_neighbor	capital_control	risk_level	polity2	inflation1	lending_borrowing1
dc_number_neighbor	1					
capital_control	-0.084014208	1				
risk_level	0.134700667	0.226716407	1			
polity2	0.041728097	-0.230514848	-0.274612788	1		
inflation1	0.101025649	0.12649404	0.143632091	-0.066355469	1	
lending_borrowing1	0.021060378	-0.097412114	-0.088221395	-0.172435633	-0.053689257	1

Table 18. Model 3.2: Sovereign Debt Crises – Trade Partners

Variables	dc_number_trade	capital_control	risk_level	polity2	inflation1	lending_borrowing1
dc_number_trade	1					
capital_control	-0.009113966	1				
risk_level	0.133082944	0.226716407	1			
polity2	0.011454991	-0.230514848	-0.274612788	1		



inflation1	0.057582923	0.12649404	0.143632091	-0.066355469	1
lending_borrowing1	0.013299053	-0.097412114	-0.088221395	-0.172435633	-0.053689257

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After choosing the most accurate covariates to be used for neighbor countries and trade partner countries estimations, we have started our analysis with the basic Logit model. Details of each models will be discussed in the following sub-sections.

#### 4.3.1. Contagion Across Neighbor Countries

According to our results that are also represented in table 19, our main covariate (dc\_number\_neighbor) is not statistically significant, so it does not explain the dependent variable. So, occurrence of sovereign debt crises in a country is not related with the number of its neighbor countries that has the same crises as well; no contagion across neighbor countries. Same applies for the net lending/borrowing variable; it is not statistically significant therefore we can say that it has no marginal effect on the dependent variable. Remaining covariates are statistically significant at .01 and .05 significance level. All of the variables are showing positive correlation with the dependent variable. For example, the results regarding polity2 and capital controls indicate that the probability of sovereign debt crisis occurring increases, as the country reaches full democracy, and countries with any type of capital controls that is applied by the government are more likely to face against sovereign debt crises, as it is also discussed in currency crises models. The results regarding risk level of a country indicate that countries with a high level of risk in terms of investment or lending are more open to have sovereign debt crises. The higher the risk, less investors in the market and therefore a countries' probability of having a sovereign debt crisis is higher. Our last variable - inflation - is a form of debt; both in terms of consumer debt and government debt. Our variable is based on average consumer prices, which reflects annual percentage change. When the inflation rate is high, consumers will start to suffer a significant loss of purchasing power, they will run into money shortages and businesses will be no longer able to afford to pay high wages. On the government side; a bond that needs to be paid in a currency that worths less, has a higher probability of defaulting. Therefore, we can clearly say that a country with high inflation rate have more chances of having a sovereign debt crisis. Our findings of capital control and inflation support the results provided by Bandiera *et al.*, (2010).

Table 19. Model 3.1: Sovereign Debt Crises – Neighbor Countries – Logit Model

VARIABLES	(1) Logit
dc_number_neighbor	0.267 (0.212)
capital_control	0.920*** (0.282)
risk_level	0.857*** (0.161)
polity2	0.131*** (0.0272)
inflation1	0.00721** (0.00293)
lending_borrowing1	0.0356 (0.0218)
Constant	-8.806*** (1.087)
Observations	1,247

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Next, we have applied the Hausman test to decide between fixed and random effects. The results of the Hausman test can be found in table 20. According to the Hausman test, the Logit model with fixed effects is more suitable than the random effects.

Table 20. Model 3.1: Sovereign Debt Crises – Neighbor Countries – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed1	(B) random1		
dc_number_~r	2.807184	2.431869	.3753145	.3274133
capital_co~1	2.234362	2.073172	.1611905	.3017771
risk_level	1.84905	1.759086	.0899642	.3077039
polity2	-.290034	-.1606244	-.1294096	.0528289
inflation1	.0278583	.0212596	.0065988	.0051723
lending_bo~1	.2115719	.1243846	.0871873	.0575732

b = consistent under Ho and Ha; obtained from xtlogit  
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)' [(V\_b-V\_B)^(-1)] (b-B)  
 = 9.11  
 Prob>chi2 = 0.1677

The results of the Logit model with random effects are showing that our model is valid (p-value: 0.0000) and all our variables included in the sample are now statistically significant at .05 significance level compared with basic Logit Model. Our main covariate (dc\_number\_neighbor) is showing positive correlation with the dependent variable which

proves that there is a contagion of sovereign debt crises across neighbor countries. We know that 2.43 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “dc\_number\_neighbor”. That is, if one more neighbor country has a sovereign debt crisis then the odds ratio of a crisis at the country of reference increases by 243%. Net lending/borrowing is also showing a positive relationship with the dependent variable; when a country becomes a net borrower the probability of having a sovereign debt crisis increases. While all other variables still have the same sign and the relationship as it is discussed above; polity2 is now negatively related with the dependent variable. This result suggests that the probability of sovereign debt crisis occurring decreases as the country reaches full democracy. We have seen this variable before in currency crises analysis, and polity2 has shown a positive relation with the dependent variable, suggesting that the probability of currency crises happening increases as the country reaches full democracy. To understand better the reason behind this difference, one should consider the possible origins of both crises. Sovereign debt crises are mostly related with wrong government policies that lead into a bad economy and the struggle starts after that. In countries that lack democracy, citizens do not have a voice against government, and they cannot use their right to vote for a change of government. That is why we see that democracy helps countries to reduce their chances of facing against sovereign debt crises. On the other hand, currency crises while it still depends on the policies applied by government, it also depends on international matters as well. Democracies tend to be more open at financial markets and on international trade, therefore they become more sensitive to external shocks and have higher chances of facing against currency crises. The results of the Logit model with random effects can be found in table 21.

Table 21. Model 3.1: Sovereign Debt Crises – Neighbor Countries – Random Effects

VARIABLES	(1) random Effects
dc_number_neighbor	2.432*** (0.606)
capital_control	2.073*** (0.649)
risk_level	1.759*** (0.501)
polity2	-0.161** (0.0767)
inflation1	0.0213*** (0.00683)
lending_borrowing1	0.124** (0.0520)

Constant	-21.76*** (3.671)
Observations	1,247
Number of entry	75

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Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Prob > chi2 = 0.0000

### 4.3.2. Contagion Across Trade Partner Countries

Our next and last model is related with the contagion across trade partner countries in terms of sovereign debt crises. Our results state that our main covariate (dc\_number\_trade) is not statistically significant. So, occurrence of sovereign debt crises in a country is not related with the number of its trade partner countries that has the same crises as well; no contagion across trade partners. The remaining variables are all significant at .05 and .1 significance level. Variables are showing the same relationship as is in Model 3.1. The results of the Logit model can be found in table 22.

Table 22. Model 3.2: Sovereign Debt Crises – Trade Partners – Logit Model

VARIABLES	(1) Logit
dc_number_trade	0.115 (0.303)
capital_control	0.874*** (0.278)
risk_level	0.870*** (0.161)
polity2	0.130*** (0.0271)
inflation1	0.00768*** (0.00283)
lending_borrowing1	0.0363* (0.0217)
Constant	-8.805*** (1.090)
Observations	1,247

---

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Next, we have applied the Hausman test to decide between fixed and random effects. The results of the Hausman test can be found in table 23. According to the Hausman test, the Logit model with random effects is more suitable than the fixed effects.

Table 23. Model 3.2: Sovereign Debt Crises – Trade Partners – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed2	(B) random2		
dc_number~e	1.525687	1.327883	.1978045	.2829539
capital_co~1	1.785331	1.557365	.2279663	.3188298
risk_level	2.071936	1.847499	.2244373	.3398733
polity2	-.2902067	-.1339456	-.156261	.0543829
inflation1	.027653	.019872	.007781	.0051441
lending_bo~1	.227942	.1156844	.112576	.0569377

b = consistent under Ho and Ha; obtained from xtlogit  
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2(6)} &= (\text{b-B})' [(\text{V}_b - \text{V}_B)^{-1}] (\text{b-B}) \\ &= 10.53 \\ \text{Prob} > \text{chi2} &= 0.1039 \end{aligned}$$

The results of the Logit model with random effects are showing that our model is valid (p-value: 0.0000) and all our variables included in the sample are now statistically significant at .05 and 0.1 significance level compared with the basic Logit model. Our main covariate (dc\_number\_neighbor) is showing positive correlation with the dependent variable, which proves that there is a contagion of sovereign debt crises across trade partners. When the number of trade partner countries of a country that has a sovereign debt crisis increases, the probability of having sovereign debt crises is also increasing in the chosen trade partner country. We know that 1.32 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “dc\_number\_trade”. That is, if one more neighbor country has a sovereign debt crisis then the odds ratio of a crisis at the country of reference increases by 132%. While all variables are showing the same signs and relationship as in the Logit model without individual effects; only polity2 is now showing a negative correlation with the dependent variable which indicates that democracies are less susceptible to sovereign debt crises. The results of Logit Model with random Effects are represented in table 24.

Table 24. Model 3.2: Sovereign Debt Crises – Trade Partners – Random Effects

VARIABLES	(1) random Effects
dc_number_trade	1.328** (0.581)
capital_control	1.557*** (0.591)
risk_level	1.847*** (0.440)
polity2	-0.134* (0.0742)

inflation1	0.0199*** (0.00641)
lending_borrowing1	0.116** (0.0494)
Constant	-20.10*** (3.164)
Observations	1,247
Number of centry	75

---

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Prob > chi2 = 0.0000

## 5. Robustness Analyses

Our robustness analyses are based on 4 regions (Africa, Asia, Europe, and America), different income levels (Lower, Lower-Middle, Upper-Middle, and Higher) and for all countries but for a longer time period that is between 1800 – 2018. All our initial analyses are based on the Binary Logit model with random effects; therefore, we are going to test our robustness under the same model (except for the analysis between 1800 – 2018). The details of each models will be discussed in the following sub-sections.

### 5.1. Regional Analyses

As it was already discussed in the Data section, we have constructed a continent dummy variable for all countries in our sample. Our aim is to understand if contagion and all other chosen covariates are still significant across different continents. It is important to note that during our regional robustness check, we have faced some limitations; some countries do not have any data available for a chosen variable, or some years are missing from the data, so it is not complete for all years. Therefore, we will only represent the models that are valid and not problematic in any econometrical sense. Hence, due to lack of a substantial amount of data available for countries in the Oceania continent, we have decided not to include this region in our robustness analysis.

#### 5.1.1. Currency Crises

Our currency crises model is applied to 3 regions; Africa, Europe and America. According to the first analysis regarding contagion across neighbor countries, we have found that our main covariate (cc\_number\_neighbor) is statistically significant in all regions with different significance levels (Africa .01, Europe .01 and America .05). All others remaining constant, more neighbors facing a currency crisis imply a higher probability of

the country of reference also having a currency crisis. It is important to note that the estimated coefficients are different across regions; while in Africa we see much higher impact of contagion on the dependent variable, which is 98% change in the odds ratio of a crisis; in Europe this change is reduced to 72% and in America it is 75%. Next, our control variables also show different outcomes depending on the region. Real GDP growth has become a variable that is not statistically significant in Africa; in Europe and in America, our control variable is still statistically significant, and it has a negative relationship with the probability of currency crises occurring in a country as it is already discussed in our initial analysis of currency crises. Another result that is important to point out is that, our variable that measures the level of democracy in a country, polity2, is no longer statistically significant in any of the regions. We have seen this variable be significant in our initial currency crises analysis that was applied to 62 countries all around the world; but as we can see on a much smaller, regional level it has no impact on the probability of a currency crises occurrence. Our results are also presented in the table 25.

Table 25. Regional Analyses - Neighbor Countries

	Africa	Europe	America
cc_number_neighbor	0.980***	0.721***	0.754**
real_gdp3	-0.012	-0.0877**	-0.188**
d.govt_debt1	0.0270***	0.0315	0.0451
polity2	0.0183	0.0797	0.0498
exchange_type	0.443***	0.334**	0.400
capital_control	0.131	1.064**	1.879**

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Next, our results regarding contagion of currency crises across trade partners in different regions suggest that; our main covariate (cc\_number\_trade) is a statistically significant variable at .01 significance level in Europe and at .05 significance level in America and it is positively related with the dependent variable. We do not see any impact of contagion across trade partners on the probability of currency crises happening in Africa region, as it is not a statistically significant variable. From our remaining control variables; real GDP growth rate is now a statistically significant variable for all regions; while government debt and polity2 does not show any impact on the dependent variable due to not being a statistically significant variable. Our results can also be found in the table 26.

Table 26. Regional Analyses - Trade Partners

	Africa	Europe	America
cc_number_trade	0.211	0.750***	0.754**
real_gdp3	-0.0898**	-0.106***	-0.204***
d.govt_debt1	0.00621	0.0239	0.0367
polity2	-0.00675	0.0747	0.0137
exchange_type	0.920***	0.343**	0.457
capital_control	-0.194	0.884*	1.867**

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

### 5.1.2. Banking Crises

Our banking crises model is applied to 2 regions; Europe and America. According to the first analysis regarding contagion across neighbor countries, we have found that our main covariate (bc\_number\_neighbor) is statistically significant in all regions in different significance levels (Europe .01 and America .05) and it has a positive relation with the dependent variable. When the number of neighbor countries have banking crises in a given year increases, the probability of a country having a banking crisis also increases. As we can see in table 27, our remaining control variables are showing different results between the two regions. In Europe, all variables, except the current account balance, are statistically significant; while in America, only equity securities liabilities and current account balance are significant. Our initial banking crises analysis suggested that all variables in our sample were significant; on the other hand, our regional analysis prove that it depends on the geographical position of a country. We can clearly understand that countries in different regions can and do have different determinants of banking crises.

Table 27. Regional Analyses - Neighbor Countries

	Europe	America
bc_number_neighbor	1.210***	1.822**
real_gdp3	-0.123**	-0.325
d.govt_debt1	0.0788**	0.0855
equity_securities	1.39e-05**	2.72e-05***
openness_index	2.098*	0.561
ca2	-0.036	-0.415***

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Regarding our second analysis, which is contagion of banking crises across trade partners in different regions; we have found that our main covariate (bc\_number\_trade) is a statistically significant variable only in Europe (at .01 significance level) and not in America. We also see some changes on possible determinants of banking crises; real GDP growth is no longer a significant variable in Europe, as well as government debt. By



looking at both neighbor countries and trade partner analysis, a noticeable outcome is that equity securities liabilities variable is statistically significant in both cases. The probability of banking crises happening will increase when the level of borrowed money that must be paid back by the government increases. Results are also presented in table 28.

Table 28. Regional Analyses - Trade Partners

	Europe	America
bc_number_trade	1.321***	0.0647
real_gdp3	-0.0762	-0.341
d.govt_debt1	0.0286	0.0712
equity_securities	1.60e-05*	2.13e-05***
openness_index	2.975**	0.435
ca2	0.0105	-0.321***

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 5.1.3. Sovereign Debt Crises

Our sovereign debt crises model is applied to 2 regions; Asia and America. Only for the analysis in Asia, we have taken out 2 control variables from our sample, due to insufficient amount of data available - risk level and net lending/borrowing. According to our results regarding contagion across neighbor countries, our main covariate (dc\_number\_neighbor) is statistically significant only in America (at .01 significance level) and it is positively related with the dependent variable. Everything else remains constant, more neighbors that have sovereign debt crises will increase the probability of a country having the same crisis as well. Regarding the control variables; only variable that shows statistically significant results for both regions is capital control. Any type of capital controls applied by the government will increase the country's probability of having sovereign debt crises. The results can also be found in the table 29.

Table 29. Regional Analyses - Neighbor Countries

	Asia	America
dc_number_trade	-1.191	2.779***
capital_control	2.866***	2.057**
risk_level	-	1.619***
polity2	-0.0672	0.562
inflation1	-0.00126	0.0213
lending_borrowing	-	0.283**

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Our next and last analysis of regional robustness check is the contagion of sovereign debt crises across trade partners. Our results suggest that, our main covariate (dc\_number\_trade) is only statistically significant in America and not in Asia. According to this outcome, we can say that there is no proof of contagion across trade partners/neighbor countries in Asia; while the probability of sovereign debt crises occurring in a country increases as the number of its trade partners/neighbor countries having the same crises increases. The results regarding the control variables show that; capital control is no longer statistically significant variable for both regions (only in Asia under .01 significance level) and polity2 is now statistically significant under .05 significance level in America. It is interesting to find out that polity2 is now showing positive relationship the dependent variable. In our initial sovereign debt crises analysis, we have discussed that countries' democracy level is negatively related with the dependent variable, which implied that countries with higher democracy had less chances facing against sovereign debt crises. While here, on a regional level, we see that countries in the America ncontinent that are more democratic have higher chances of facing a sovereign debt crisis. Results are also presented in the table 30.

Table 30. Regional Analyses - Neighbor Countries

	Asia	America
dc_number_trade	-0.00804	2.178***
capital_control	2.910***	1.192
risk_level	-	1.786***
polity2	-0.0668	0.640**
inflation1	-0.00155	0.0195
lending_borrowing	-	0.245**

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5.2. Country Income Level Analyses

As it is already discussed in the Data section, we have constructed a country income level dummy variable for all countries in our sample. Our aim is to understand if contagion and all other chosen covariates are still significant across countries with different income levels. It is important to note that during our regional robustness check, we have faced some limitations; some countries do not have any data available for a chosen variable, or some years are missing from the data, so it is not complete for all years. Therefore, we will only represent the models that are valid and not problematic in any econometrical sense.

### 5.2.1. Currency Crises

Our currency crises model is applied to all 4 income level groups; low, lower-middle, upper-middle, and high. According to the results of contagion across neighbor countries, our main covariate (*cc\_number\_neighbor*) is statistically significant variable (lower-middle at .1 significance level, upper-middle and high at .01 significance level) and it is positively related with the dependent variable in all income levels; except low income. All others remaining constant, more neighbors facing a currency crisis imply a higher probability of the country of reference also having currency crisis. It is important to note that the estimated coefficients are different across income levels; while in high income level countries we see much higher impact of contagion on the dependent variable, which is 85% change in the odds ratio of a crisis; in lower-middle this change is reduced to 66% and in upper-middle it is 69%. Regarding our control variables, we see that results are different for each income level. An important outcome is that our democracy level variable, *polity2*, is not a statistically significant variable for any income level. We have seen that this variable has shown a significant result in our initial currency crises analysis that is applied to all available countries in the world. But, on both robustness check under regions and income levels, *polity2* does not have any impact on the probability of a currency crises happening. Our results can be found in table 31.

Table 31. Income Level Analyses - Neighbor Countries

	Low	Lower-Middle	Upper-Middle	High
<i>cc_number_neighbor</i>	-0.347	0.663*	0.697***	0.858***
<i>real_gdp3</i>	-0.0126	-0.137**	-0.0931	-0.198***
<i>d.govt_debt1</i>	0.0232*	0.126***	0.0676*	-0.0334
<i>polity2</i>	0.101	0.0638	0.0835	0.515
<i>exchange_type</i>	0.653**	-0.0794	0.0673	0.00666
<i>capital_control</i>	1.441**	0.953	0.545	0.504

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

According to the results of contagion across trade partners; our main covariate (*cc\_number\_trade*) is statistically significant for all income levels at .01 significance level; except low income. It is interesting to see how estimated coefficients have changed, for example, in lower-middle income level the impact of contagion across neighbor countries on the odds ratio of a crisis was much more smaller (66%); while here, contagion across trade partners have an impact of 105%, which suggest that lower-middle income level countries are highly affected by the contagion across trade partners.

Regarding our control variables; we have the same results as in the neighbor countries analysis presented above. Polity2 is still not a statistically significant variable and all others are showing the same outcome. Results can be found in table 32.

Table 32. Income Level Analyses - Trade Partners

	Low	Lower-Middle	Upper-Middle	High
cc_number_trade	-0.441	1.056***	0.566***	0.882***
real_gdp3	-0.00612	-0.148**	-0.118**	-0.190***
d.govt_debt1	0.0244*	0.115***	0.0555	-0.0375
polity2	0.102	0.0392	0.0628	0.405
exchange_type	0.710**	-0.084	0.0598	0.0858
capital_control	1.371**	0.739	0.28	0.277

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 5.2.2. Banking Crises

Our banking crises model is only applied to high income level countries. According to our results regarding contagion across neighbor countries; the main covariate (bc\_number\_neighbor) is statistically significant at .01 significance level in high income level countries and it has a positive relationship with the probability of a country facing against a currency crisis. From the remaining covariates, three of them are statistically significant (real GDP growth at .05, government debt at .05 and equity securities liabilities at .01 significance level) and their relationship with the dependent variable supports our results from initial analysis of banking crises. We see that higher real GDP growth rate does decrease the probability of high income level country facing against banking crises; while high government debt and high equity securities liabilities increase the probability. Results can be found in the table 33.

Table 33. Income Level Analyses - Neighbor Countries

	High
bc_number_neighbor	1.440***
real_gdp3	-0.177**
d.govt_debt1	0.0860**
equity_securities	1.48e-05***
openness_index	0.211
ca2	-0.0376

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Next, regarding our analysis of contagion across trade partners in high-income level countries we have found that our main covariate is a statistically significant variable under .01 significance level, which suggest that more trade partners facing banking crises,

increase the probability of a country of reference facing against same crisis. As a difference between neighbor countries analysis, real GDP growth rate is no longer statistically significant variable. Equity securities liabilities variable is still significant at .01 level, while government debt is now only significant at .1 significance level. Results are also presented in the table 34

Table 34. Income Level Analyses – Trade Partners

	High
bc_number_trade	1.176***
real_gdp3	-0.11
d.govt_debt1	0.0696*
equity_securities	1.36e-05***
openness_index	1.731
ca2	0.00783

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 5.2.3. Sovereign Debt Crises

Our sovereign debt crises model is applied to 3 income level groups; low, lower-middle and upper-middle. Only for the analysis on low-income level, we have taken out two control variables from our sample due to insufficient amount of data available, risk level, and net lending/borrowing. According to our results, the main covariate (dc\_number\_neighbor) is statistically significant variable only in lower-middle income countries at .01 significance level and it is positively related with the dependent variable. Low and upper-middle income countries are not affected by the contagion across their neighbor countries. Regarding the control variables; in low income level countries the only possible determinant of sovereign debt crises is the capital control. Risk level and polity2 is both statistically significant variables for lower-middle and upper-middle income level countries and they are positively related with the dependent variable. The important difference in here with our initial sovereign debt crises analysis is that polity2 was showing negative relationship with the dependent variable before. But, during our robustness check on both regional level and income level, we have found that polity2 is positively related with the probability of sovereign debt crises happening. Results can be found in table 35.

Table 35. Income Level Analyses - Neighbor Countries

	Low	Lower-Middle	Upper-Middle
dc_number_neighbor	-0.181	3.023***	0.862
capital_control	1.464***	2.873**	1.152
risk_level	-	1.646*	1.387***
polity2	-0.035	0.554**	0.697**
inflation1	-0.0000268	0.0929***	0.00251

lending_borrowing	-	0.121	0.177*
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\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Next, we will represent our final analysis under different income levels, which is contagion of sovereign debt crises across trade partners. Our results show that the main covariate (dc\_number\_trade) is statistically significant variable at the .05 significance level only for the lower-middle income level group and it is positively related with the dependent variable. The remaining variables are showing the same results as in neighbor countries analysis shown above. Results can be found in the table 36.

Table 36. Income Level Analyses - Trade Partners

	Low	Lower-Middle	Upper-Middle
dc_number_trade	-0.0871	2.279**	-0.0516
capital_control	1.473***	1.951	0.63
risk_level	-	1.861**	1.523***
polity2	-0.0339	0.511**	0.887***
inflation1	-0.0000302	0.0918***	0.0128
lending_borrowing	-	0.125	0.208**

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**5.3. Longer Time Period: Years between 1800 – 2018**

Our last robustness analysis is applied to contagion of two types of financial crises (currency and banking) within a period of 200 years (1800 – 2018) for all countries around the world. While our response variable, main covariates of contagion and five control variables that were presented in the 1970 – 2018 analysis remain the same, we have introduced 2 control variables to each of the two models. We have decided to exclude sovereign debt crises analysis in this section due to not having a complete database of the relevant control variables for the period before 1970. The details of each models will be discussed in the following sub-sections.

**5.3.1. Currency Crises**

In currency crises model, our sample includes 61 countries between the years of 1800 – 2018. Our response variable “dummy\_crises1” and main covariates (cc\_number\_country and cc\_number\_trade) are used to build 2 different estimated models for the contagion across neighbouring countries (Model 4.1) and trade partner countries (Model 4.2) analysis. Regarding our control variables, five of them are the same as in our initial

analysis: Real GDP growth rate (in %), general government debt (in %), polity2, exchange type, capital control and we have introduced two new variables: current account balance (% of GDP) and commodity-transactions index. These covariates are chosen according to bottom-up estimation analysis that is applied to 48 variables. The covariates' correlation matrices for Model 4.1 and Model 4.2 can be found in the tables 37 and 38.

Table 37. Model 4.1: Currency Crises – Neighbor Countries

Variables	cc_number_neighbor	capital_control	exchange_type	polity2	real_gdp3	D.govt_debt2	ca2	commodity_transactions
cc_number_neighbor	1							
capital_control	0.111	1						
exchange_type	0.138	0.231	1					
polity2	-0.054	-0.493	-0.106	1				
real_gdp3	-0.182	-0.025	-0.083	-0.152	1			
D.govt_debt2	0.107	0.006	0.073	0.016	-0.251	1		
ca2	-0.094	-0.039	-0.005	0.033	-0.072	-0.035	1	
commodity_transactions	0.012	-0.347	-0.148	0.545	-0.185	0.083	0.172	1

Table 38. Model 4.2: Currency Crises – Trade Partners

Variables	cc_number_trade	capital_control	exchange_type	polity2	real_gdp3	D.govt_debt2	ca2	commodity_transactions
cc_number_trade	1							
capital_control	0.084	1						
exchange_type	0.079	0.231	1					
polity2	0.013	-0.492	-0.106	1				
real_gdp3	-0.124	-0.025	-0.083	-0.151	1			
D.govt_debt2	0.118	0.006	0.073	0.015	-0.250	1		
ca2	-0.095	-0.038	-0.004	0.032	-0.071	-0.035	1	
commodity_transactions	0.042	-0.347	-0.148	0.544	-0.184	0.083	0.172	1

### 5.3.1.1. Contagion Across Neighbor Countries

According to our results regarding the Logit regression without individual effects, all variables are statistically significant at .01 significance level; except exchange rate type, polity2, government debt, and commodity index are significant at .05 significance level. Our main covariate (cc\_number\_neighbor) is positively related with the dependent variable, suggesting that when the number of neighbor countries have currency crises in a given year increases, the probability of a country having a currency crisis also increases.

Our five initial covariates that are used in both analysis between 1800 – 2018 and 1970 – 2018 show the same signs in relation with currency crises. Regarding the 2 new variables that are introduced to the sample, we see that current account balance is negatively related with the dependent variable, which suggest that as the country's current account balance reaches higher positive levels, the probability of currency crises happening decreases. On the other hand, higher positive levels of commodity and transactions index increases the probability of currency crises occurrence in a country. Commodity trading focuses on purchasing and trading commodities like gold, oil, and silver rather than company shares as in stocks market. Commodity market is more volatile and more open to external

shocks; therefore, it is riskier. Countries with higher index of commodity and transactions, in this case, are also more susceptible to face a currency crisis. The results can be found in table 39.

Table 39. Model 4.1: Currency Crises – Neighbor Countries

VARIABLES	(1) Logit
cc_number_neighbor	0.446*** (0.102)
capital_control	1.014*** (0.386)
exchange_type	0.175** (0.0850)
polity2	0.0596** (0.0289)
real_gdp3	-0.0955*** (0.0241)
D.govt_debt2	0.0233** (0.0102)
ca2	-0.0625*** (0.0186)
commodity_transactions	1.147** (0.558)
Constant	-4.156*** (0.541)
Observations	1,190

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Next, in order to decide between fixed or random effects we have applied the Hausman test to our regression. The results of the Hausman test can be found in table 40.

Table 40. Model 4.1: Currency Crises – Neighbor Countries – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
cc_number_~r	.7747269	.6352253	.1395016	.0550561
capital_co~l	.871526	.9546048	-.0830788	.2229329
exchange_t~e	.1286222	.2153581	-.0867359	.0952316
polity2	.0077992	.0515175	-.0437183	.0528068
real_gdp3	-.1121093	-.1100456	-.0020637	.0111953
govt_debt2				
D1.	.0315928	.0298101	.0017827	.0031033
ca2	-.0420965	-.0479605	.005864	.0169532
commodity_~s	1.174982	1.297023	-.1220414	.9525961

b = consistent under Ho and Ha; obtained from xtlogit  
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2(8)} &= (b-B)' [(V_b-V_B)^{-1}] (b-B) \\ &= 7.25 \\ \text{Prob}>\text{chi2} &= 0.5103 \end{aligned}$$



The result of the Hausman test suggests that random effects is preferred against fixed effects because the p-value of the test is greater than 10%. Therefore, our final regression for neighbor countries analysis is based on the Logit model with random effects.

Considering our results for the Logit model with random effects in table 4.17, we can say that our model is valid by looking at the likelihood-ratio test for rho (p-value = 0.0000). While three of the covariates (cc\_number\_neighbor, real\_gdp3 and govt\_debt2) are statistically significant at .01 significance level; capital control and current account balance are statistically significant at .05 and commodity index is now only statistically significant at .1 significance level. We know that 0.63 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “cc\_number\_neighbor”. That is, if one more neighbor country has a currency crisis, then the odds ratio of a crisis at the country of reference increases by 63%. In the analysis of contagion of currency crises across neighbor countries between 1970 – 2018, our estimated coefficient was 0.62 which suggested 62% change in the odds ratio. We only see 1% difference between the two models and considering the time period of each model, it is a small change in the impact of neighbor countries on the probability of currency crises happening. Additionally, another difference with our initial currency crises model, which took place between the period of 1970 – 2018, our variable that shows the level of democracy in a country, polity2, is no longer a statistically significant variable in a longer time period analysis here. Therefore, we cannot find evidence against polity2 having a relationship between the probability of a currency crises happening. Results can be found in table 41.

Table 41. Model 4.1: Currency Crises – Neighbor Countries – random Effects

VARIABLES	(1) random Effects
cc_number_neighbor	0.635*** (0.127)
capital_control	0.955** (0.447)
exchange_type	0.215* (0.122)
polity2	0.0515 (0.0371)
real_gdp3	-0.110*** (0.0276)
D.govt_debt2	0.0298*** (0.0115)
ca2	-0.0480** (0.0233)
commodity_transactions	1.297* (0.767)
Constant	-4.643*** (0.734)

Observations	1,190
Number of cntry	61

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Prob > chi2 = 0.0000

### 5.3.1.2. Contagion Across Trade Partners

Our next model under currency crises include the analysis regarding contagion across trade partner countries. Therefore, we have started with the Logit model without individual effects. The results of the Logit model can be found in table 42.

Table 42. Model 4.2: Currency Crises – Trade Partners

VARIABLES	(1) Logit
cc_number_trade	0.586*** (0.0932)
capital_control	0.866** (0.394)
exchange_type	0.189** (0.0859)
polity2	0.0467 (0.0284)
real_gdp3	-0.103*** (0.0245)
D.govt_debt2	0.0218** (0.0107)
ca2	-0.0575*** (0.0188)
commodity_transactions	1.053* (0.553)
Constant	-4.169*** (0.538)
Observations	1,190

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

According to the results; our main covariate (cc\_number\_trade) is statistically significant under .01 significance level and it is positively related with the dependent variable. More trade partners facing a currency crisis, increases the probability of the same crisis happening in a chosen country. From the remaining control variables; real GDP growth rate and current account balance are statistically significant at .01; capital control, exchange type, and government debt at .05 and commodity index at .1 significance level. An important outcome here is that polity2 is not a statistically significant variable under contagion across trade partner analysis.

Next, we have applied the Hausman test to find the most suitable model to use between random and fixed effects. Our result indicates that the Logit model with random effects is more suitable than the fixed effects. The results of the Hausman Test can be found in table 43.

Table 43. Model 4.2: Currency Crises – Trade Partners – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed2	(B) random2		
cc_number_~e	.7426371	.6946989	.0479382	.0335172
capital_co~1	.751285	.8105259	-.0592409	.2102984
exchange_t~e	.0853882	.2102541	-.1248658	.0950651
polity2	-.0035324	.037576	-.0411083	.0503097
real_gdp3	-.1267961	-.1237567	-.0030394	.0097944
govt_debt2				
D1.	.0281797	.0268854	.0012943	.0028572
ca2	-.0408291	-.0440143	.0031852	.0169475
commodity_~s	1.440352	1.290433	.1499188	.9784814

b = consistent under Ho and Ha; obtained from xtlogit  
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)' [(V\_b-V\_B)^(-1)] (b-B)  
 = 3.57  
 Prob>chi2 = 0.8937

According to our results of the Logit model with random effects, we can say that our model is valid (p-value = 0.0000). The main covariate that helps us to understand the contagion across trade partners (cc\_number\_trade) is statistically significant at .01 significance level and it is positively related with the dependent variable. We know that 0.69 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “cc\_number\_trade”. That is, if one more trade partner has a currency crisis, then the odds ratio of a crisis at the country of reference increases by 69%. As a comparison between the initial analyses of contagion across trade partners, the coefficient of our main covariate was 0.65 suggesting 65% change in the odds ratio. In a longer time period of 200 years, we see 4% difference in the impact of trade partners on the dependent variable. This change is relatively higher than the contagion across neighbor countries analysis, which was calculated as 1%, we can say that the impact of trade partners spreading currency crises is higher than neighbor countries. Our control variables are showing the same expected signs in relation with currency crises, as we have discussed in neighbor countries analysis. Polity2 is still not a statistically significant variable, while in our analysis of 1970 – 2018 under contagion across trade partners, we have seen this variable as a statistically significant variable. Results can be found in table 44.

Table 44. Model 4.2: Currency Crises – Trade Partners – Random Effects

VARIABLES	(1) Random Effects
cc_number_trade	0.695*** (0.107)
capital_control	0.811* (0.456)
exchange_type	0.210* (0.121)
polity2	0.0376 (0.0365)
real_gdp3	-0.124*** (0.0279)
D.govt_debt2	0.0269** (0.0119)
ca2	-0.0440* (0.0234)
commodity_transactions	1.290* (0.758)
Constant	-4.613*** (0.721)
Observations	1,190
Number of entry	61

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
 Prob > chi2 = 0.0000

### 5.3.2. Banking Crises

In the banking crises model, our sample includes 66 countries between the years of 1800 – 2018. Our response variable “dummy\_crises2” and main covariates (bc\_number\_country and bc\_number\_trade) are used to build two different estimated models for the contagion across neighbouring countries (Model 5.1) and trade partner countries (Model 5.2) analysis. Regarding our control variables, 5 of them are the same as in our initial analysis: real GDP growth rate (in %), general government debt (in %), equity securities liabilities (millions of US Dollars), overall openness index (units), and current account balance (% of GDP) and we have introduced 2 new variables: openness of capital inflows openness index (units) and control of corruption (rank). These covariates are chosen according to bottom-up estimation analysis that is applied to 48 variables. The covariates’ correlation matrices for Model 4.1 and Model 4.2 can be found in tables 45 and 46.

Variables	bc_number_neighbor	real_gdp3	D.govt_debt2	equity_securities	openness_index	ca2	inflow_openness	corruption
bc_number_neighbor	1							
real_gdp3	-0.324	1						
D.govt_debt2	0.215	-0.478	1					
equity_securities	-0.098	-0.053	0.099	1				
openness_index	0.107	-0.288	0.097	0.102	1			
ca2	0.049	-0.127	-0.065	0.019	-0.014	1		
inflow_openness	0.104	-0.254	0.085	0.092	0.937	-0.055	1	
corruption	0.140	-0.289	0.220	0.198	0.565	0.140	0.593	1

Table 46. Model 5.2: Banking Crises – Trade Partners

Variables	bc_number_trade	real_gdp3	D.govt_debt2	equity_securities	openness_index	ca2	inflow_openness	corruption
bc_number_trade	1							
real_gdp3	-0.355	1						
D.govt_debt2	0.306	-0.478	1					
equity_securities	-0.024	-0.053	0.099	1				
openness_index	0.043	-0.288	0.097	0.102	1			
ca2	-0.093	-0.127	-0.065	0.019	-0.014	1		
inflow_openness	0.044	-0.254	0.085	0.092	0.937	-0.055	1	
corruption	0.100	-0.289	0.220	0.198	0.565	0.140	0.593	1

### 5.3.2.1. Contagion Across Neighbor Countries

According to our results regarding the Logit model without individual effects; four of the total covariates (bc\_number\_neighbor, govt\_debt, equity\_securities and corruption) are statistically significant at .01; while 3 of them (real\_gdp, openness\_index and ca2) are significant at .05 and 1 of them (inflow\_openness) is statistically significant at .1 significance level. The main covariate helps us to understand that the contagion across neighbor countries (bc\_number\_neighbor) is positively related with the dependent variable, which suggests that when the number of neighbor countries have banking crises in a given year increases, the probability of a country having a banking crisis also increases. Our five covariates that are used in both analysis of 1800 – 2018 and 1970 - 2018 are showing the same expected signs. Regarding the new variables that are introduced to the model, we see that capital inflow openness is negatively related with the probability of banking crises occurrence. Capital inflow is the amount of capital coming into a country, for example it can be in the form of foreign investment. Our variable takes the form between 0 and 1; and 1 represents fully liberalized capital inflow openness. Therefore, our result suggests that countries that are more open in terms of capital inflow are less likely to face against banking crises. Lastly, our variable that measures any kind of corruption that takes place in government has a positive relation with the dependent variable. Countries that have more corrupted governments have higher probability of facing against banking crises. Our results can be found in the table 47.

Table 47. Model 5.1: Banking Crises – Neighbor Countries

VARIABLES	(1) Logit
bc_number_neighbor	1.262*** (0.163)
real_gdp3	-0.116** (0.0473)
D.govt_debt2	0.0775***

	(0.0285)
equity_securities	1.22e-05***
	(3.65e-06)
openness_index	3.423**
	(1.655)
ca2	-0.0606**
	(0.0285)
inflow_openness	-3.026*
	(1.600)
corruption	0.0262***
	(0.00970)
Constant	-5.489***
	(0.863)
Observations	645

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Next, in order to decide between Fixed or Random effects we have applied the Hausman test to our regression. The results of Hausman test can be found in table 48.

Table 48. Model 5.1: Banking Crises – Neighbor Countries – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed3	(B) random3		
bc_number~r	1.731883	1.315026	.4168567	.2164251
real_gdp3	-.086693	-.118255	.031562	.0457855
govt_debt2				
D1.	.0656198	.0767569	-.0111371	.0222816
equity_sec~s	.0000123	.0000127	-4.29e-07	4.58e-06
openness_i~x	3.14978	3.678307	-.5285271	6.112212
ca2	-.0966127	-.0612511	-.0353615	.0536569
inflow_ope~s	-3.805576	-3.230953	-.5746232	5.533476
corruption	-.1591529	.0253061	-.184459	.0682401

b = consistent under Ho and Ha; obtained from xtlogit

B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= 18.22  
Prob>chi2 = 0.0110

Our result indicates that the Logit model with fixed effects is more suitable than the random effects; but fixed effects are dropping 34 countries. This is due to the nature of fixed effects regression, since it does not include countries that stays constant over time to the regression. Therefore, we have decided to use the random effects model instead, so we could work with maximum possible countries available and, at 1% level, we can accept the null hypothesis of the random effects to be more suitable than the fixed effects.

According to the results, our Logit model with random effects is valid (p-value = 0.0000). All variables are showing the same results regarding the significance level and expected signs as in the Logit model without random effects, except corruption that is now only

statistically significant at .05 significance level. Our main covariate (bc\_number\_neighbor) is positively related with the dependent variable. Our estimated coefficient (1.31) shows the impact on the log of the odds ratio given a unit change of “bc\_number\_neighbor”. So, if one more neighbor country has a banking crisis then the odds ratio of a crisis at the country of reference increases by 131%. In our initial banking crises analysis between the period of 1970 – 2018, we have found that this impact was much higher (150%). Results are presented in table 49.

Table 49. Model 5.1: Banking Crises – Neighbor Countries – Random Effects

VARIABLES	(1) Random Effects
bc_number_neighbor	1.315*** (0.205)
real_gdp3	-0.118** (0.0489)
D.govt_debt2	0.0768*** (0.0296)
equity_securities	1.27e-05*** (4.14e-06)
openness_index	3.678** (1.863)
ca2	-0.0613** (0.0299)
inflow_openness	-3.231* (1.776)
corruption	0.0253** (0.0103)
Constant	-5.556*** (0.898)
Observations	645
Number of centry	66

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
 Prob > chi2 = 0.0000

### 5.3.2.2. Contagion Across Trade Partners

Our next model under banking crises analyzes the period between 1800 - 2018 trade partner countries. So, we have started with the Logit model without individual effects. The results of the Logit model can be found in table 50.

Table 50. Model 5.2: Banking Crises – Trade Partners – Logit Model

VARIABLES	(1) Logit
bc_number_trade	1.028*** (0.124)
real_gdp3	-0.0665 (0.0477)

D.govt_debt2	0.0740** (0.0326)
equity_securities	1.17e-05*** (4.24e-06)
openness_index	4.754*** (1.788)
ca2	0.00489 (0.0285)
inflow_openness	-3.336** (1.666)
corruption	0.0122 (0.00902)
Constant	-6.069*** (0.793)
Observations	645

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

According to the results, our main covariate (bc\_number\_trade) is statistically significant at .01 significance level and has a positive relation with the dependent variable. When the number of trade partners having banking crises in a given year increases, the probability of a country having a banking crisis also increases. Regarding our control variables, we see that real GDP growth rate, current account balance, and corruption are no longer statistically significant variables, compared with the results from contagion across neighbor countries. In addition, recalling our initial banking crises analysis of 1970 – 2018, real GDP growth rate was showing significant results in the logit model without individual analysis, while the current account balance was again not a statistically significant variable. Remaining control variables as possible determinants of banking crisis have the same expected signs.

Next, we have applied the Hausman test to find the most suitable model to use between random and fixed effects. Our result indicates that the Logit model with fixed effects is more suitable than the random effects, but fixed effects are dropping 34 countries. As we have already discussed above, this is because fixed effects regression only uses information from changes within a country and it does not look for information that could be obtained from comparing countries. So, countries that do not change over time are removed. Therefore, at 1% level, we accept that the null hypothesis of random effects is more suitable than the fixed effects. The results of the Hausman test can be found in table 51.



Table 51. Model 5.2: Banking Crises – Trade Partners – Hausman Test

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed4	(B) random4		
bc_number_trade	1.145048	1.096344	.0487041	.0864128
real_gdp3	-.0303521	-.066108	.0357559	.0393258
govt_debt2				
D1.	.0688119	.0729327	-.0041208	.0221323
equity_sec~s	8.91e-06	.0000122	-3.33e-06	6.52e-06
openness_i~x	2.965713	4.988439	-2.022726	6.617631
ca2	-.0450598	.0012598	-.0463196	.0554484
inflow_ope~s	-1.326094	-3.396148	2.070055	5.696995
corruption	-.0837198	.0112685	-.0949883	.0690393

b = consistent under Ho and Ha; obtained from xtlogit  
 B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
 = 12.87  
 Prob>chi2 = 0.0753

According to the results of the Logit model with random effects, our model is valid (p-value = 0.0000). The main covariate (bc\_number\_trade) is statistically significant and it is positively related with the dependent variable. We know that 1.09 (the estimated coefficient) is the impact on the log of the odds ratio given a unit change of “bc\_number\_trade”. That is, if one more neighbor country has a banking crisis then the odds ratio of a crisis at the country of reference increases by 109%. This impact is not so different from the initial analysis of banking crises between the years of 1970 – 2018. We have seen that, in a period of 48 years, the impact was 115%. Regarding our possible determinants of banking crises, real GDP growth rate, current account balance and level of corruption are still not statistically significant variables and, therefore, we do not see any evidence of them being a determinant of banking crises under trade partners’ analysis. The remaining variables are showing the same outcome as in the logit model without individual effects. Results are presented in table 52.

Table 52. Model 5.2: Banking Crises – Trade Partners – Random Effects

VARIABLES	(1) Random Effects
bc_number_trade	1.096*** (0.149)
real_gdp3	-0.0661 (0.0505)
D.govt_debt2	0.0729** (0.0344)
equity_securities	1.22e-05** (4.95e-06)
openness_index	4.988** (2.027)
ca2	0.00126

	(0.0318)
inflow_openness	-3.396*
	(1.896)
corruption	0.0113
	(0.0100)
Constant	-6.423***
	(0.941)
Observations	645
Number of cntry	66

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Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Prob > chi2 = 0.0000

## 6. Conclusion

The increasing number of financial crises happening in any country in the world and the severe negative impact of them has become an important topic for policymakers and researchers. The world is changing and becoming more dependent to each other in terms of trade; which makes the contagion of financial crises more affective than ever. It is important to understand how a crisis can be transmitted between countries so that we can reduce the probability of a crisis happening due to contagion from another country.

In this study, we examine the probability of contagion of three types of financial crises (currency, banking, and sovereign debt) across neighbor countries and trade partners, as well as investigate the determinants of each crisis between the years of 1970 – 2018 and 1800 - 2018. Our database includes several control variables for each model constructed for one specific crisis, dummy variables for contagion and dummy variables for robustness analysis (continent and income level). We have used the Binary Logit model with specific-country effects (random effects) for all models.

Our initial analysis, that covers the period of 1970 -2018 and several countries all around the world, have provided a general picture of contagion of financial crises. In all 3 crises, we have found that contagion across neighbor countries and trade partners are statistically significant variables and they are positively related with the dependent variable, suggesting that countries with more neighbors/trade partners having a specific type of crisis, increase the probability of the same type of crisis happening in the country of reference. The estimated coefficients of contagion variables have shown a great difference across each crisis; for example, in currency crises the impact of both types (neighbors/trade partners) of contagion on the odds ratio had a range between 60% to

65% while this impact was much higher in banking (100% to 150%) and sovereign debt (130% to 250%) crises. The low impact of contagion of currency crises can be explained with the most powerful currencies in the world; USD, Euro and Pound. First of all, there are unions that protect those currencies from external shocks; like European Union and the drawbacks of any possible shocks are also minimized by this protection. Therefore, the contagion mostly takes place in countries that have their own national currency different than USD, Euro or Pound and only use them in international trade. On the other hand, sovereign debt crisis is highly contagious. This can be due to money that governments have borrowed from other countries and when they are unable to pay it back this also impacts the lender country. Any country should consider its level of trade openness and understand the risk level of other financial markets before investing. Contagion might hit any country harder than it is supposed to be if precautions are not taken before. Globalization is increasing every day and countries are becoming more interdependent with each other.

We have addressed some important possible determinants of currency, banking and sovereign debt crises and their relationship with the probability of a crisis happening. In most cases, one of the most important economic indicators - real GDP growth rate - has shown a negative relation with all 3 crises. As we might expect that countries with a healthy and rich economy (higher real GDP growth rate) are less likely to face against any of the 3 financial crises but it is still subject to any other internal and external shocks. Considering all the results regarding major elements of a country's economy, such as inflation and current account balance we found the following. Truly, stable inflation rates and sustainable current account balance are important for a country to maintain its economy at optimum levels and reduce the chances of a financial crisis happening.

According to our regional analysis, we have seen that each region has its own characteristics regarding the contagion of financial crises. For example, countries in Africa while they are more sensitive to contagion of currency crises across their neighbor countries, they are not affected by the contagion from their trade partners. Same results apply to countries in America but for contagion of banking crises: we have seen statistically significant results of contagion across neighbor countries, but not across trade partners. If we take United States of America as the main economical power of the American continent and knowing that it is a common trade partner of most countries in

the world, the contagion of banking crises is only one-sided. It is highly possible that if U.S.A. is having a banking crisis, the rest of the world will be also affected by that. We have also found differences not only in contagion but also in the determinants of each crisis. In our initial models where all countries were included, most of the chosen control variables were significant enough to be a possible determinant of a specific crisis. But when we reduce our sample into regional level, covariates have shown different results in each continent. For example, the variable that helps to distinguish the level of democracy in each country, polity2, is no longer statistically significant in any continent under currency crises analysis. Only in sovereign debt crises analysis, in America, polity2 has shown a significant result, but the sign of the relationship with the dependent variable is reversed compared with the initial analysis of 1970 – 2018. While under initial analysis of sovereign debt crises, we have discussed that countries that are more democratic have less chances to face against sovereign debt crises, on a regional level, full democracy increases the probability of sovereign debt crises happening.

As a conclusion, we have seen that in most cases countries are affected by the contagion of financial crises from their neighbor countries and their trade partners. In our work, we have seen in general how contagion of financial crises acts in different occasions, but it is still a topic that is open for more research and it can be investigated in more details in the future. Additionally, through the years, possible determinants of financial crises have been investigated by many researchers to be used as an early warning system. It is important to note that our findings have shown similar results with other literature on this topic. But our main aim was to understand the contagion of financial crises; possible determinants of financial crises as a early warning system is a topic for another research that can be deeply investigated as well.

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## Appendix

Table A1 – Literature Review

Author(s) (Date)	Type of Crises	# of Crises	Period of Analyses	# of Countries	Region/Country Name	Variables Used	Econometric Method	Results
Allen and Sloyder (2009)	Financial Crises (all 3)	multiple	1980 - 2006	Unknown	Several countries like: USA, UK, Canada, Japan, Latin America	Rate of exchange, interest rates, international investment flows, stock market, real estate values, real GDP	Theoretical Research	This paper has characterized the current financial crisis as having a long "boom" phase (early 1980s-2006), followed by a turning point and continuing "bust" phase (2007-) with many patterns in common relative to other financial crises. Financial markets absorbed newly-created money power beyond levels predicted by general equilibrium models, which in turn were used to inflate asset prices and incentivize production or consumption beyond predictions; then, during the bust phase, these variables moved in the opposite direction more than expected including a greater than expected fall in stock and real estate prices and destruction of monetary wealth.
Eichengreen and Pomes (1986)	Financial Crises (all 3)	Unknown	1930s - 1980s	Unknown	All around the world	Lending of countries to other countries in millions of dollars, investment in government and municipal securities, annual growth rate of real GDP, industrial production, exports, debt-equity ratio, net capital outflow, world price level, short-long term debt countries, prices of bank shares and industrial shares, level of real effective exchange rates, the real interest rate, commodity price, external shock	Survey	Financial crises spread most quickly when information is least complete, and they result in major externalities for particular sectors and the macro-economy. On both imperfect information and externality grounds, there is a rationale for government intervention. Financial crises are as much the result of macroeconomic shocks as they are of perturbations originating in financial markets. Perhaps the most important policy to prevent financial crises is therefore to provide a stable macroeconomic environment within which financial markets may function.
De Grauwe (2010)	Banking Crises	Assuming 1: US sub-prime crisis	1928 - 2008 but mostly focused on 2007-2008	1	USA	Bubbles, crashes, expectations about future (specifically optimism), GDP, value of stock, house prices, ratios of total assets to deposits	Survey	Bubbles and crashes are an endemic feature of financial markets. Financial markets are incapable of regulating themselves. Both failures would in the end bring down the new banking model that had been allowed to emerge and that was predicated upon financial markets being efficient. Our finance models are wrong, by assuming that changes in stock prices are normally distributed, these models underestimate risk in a spectacular way. As a result, investors have been misled in a very big way, believing that the risks they were taking were small. The risks were very big.
Reinhart and Rogoff (2008)	Banking Crises	6	1977 - 2007	6	USA, Spain, Norway, Finland, Sweden, Japan	Housing prices, equity prices, default levels, asset prices, real economic growth, public debt	Survey	While each financial crisis has its own characteristics for each country, it is also true that there are striking similarities in the run-up of asset prices, in debt accumulation, in growth patterns and in current account deficits.
Glick and Hutchison (2011)	Currency Crises	Unknown	1970s - 2009	All other surveys mentioned in this paper have different # of countries	All around the world	Money or domestic credit growth, the fiscal deficit, current account deficit, real exchange rate overvaluation, output growth, measures of adequacy of international reserves relative to possible short-run liabilities, foreign financing needs, overall soundness of financial sector, market expectations, investors' risk appetite, trade and financial openness	Literature Review	Currency crises are often associated with other types of financial crises, such as banking crises, sudden stops of foreign capital inflows, sharp rises in capital outflows, and sovereign debt defaults. Trade openness is another determinant that is generally accepted to play a role in the determination of currency crises. A depreciation of the domestic currency that occurs in a successful currency attack may expand the tradable goods sector and spur growth by converting an overvalued currency or by making the exchange rate more competitive. Also, depreciation may be contractionary by increasing the repayment costs of external debts denominated in foreign currencies, particularly in dollars.
Correa and Saptiza (2014)	Sovereign debt crises	Unknown	Several different years	All other surveys mentioned in this paper have different # of countries	All around the world	Political risk, rate of borrowing, interest rates, rate of available resources (output level), level of trade	Literature Review	Empirical evidence indicates that a sovereign tends to default in periods of low available resources. Government resources are low during a cyclical downturn. Defaults may also be triggered by a devaluation of the local currency when a relatively large fraction of the sovereign's debt is denominated in foreign currency.
Pescatori and Sy (2007)	Sovereign debt crises	Unknown	1975 - 2002	31	All around the world	Short-term debt over reserves, short-term debt, debt service due, level of reserves, level of openness, exchange rate overvaluation, interest rate, economic growth, inflation, exchange rate	Panel estimation, non-parametric Hill estimator by using stationary and serially uncorrelated data, Kernel density estimation, Weibull distribution, extreme value theory	Using extreme value theory and kernel density estimation, a threshold of 1,000pp does represent a statistically significant critical threshold. In practice, this threshold is often used by market participants.
Acharya et al. (2018)	Sovereign debt crises	Unknown	2006 - 2012	Unknown	Europe	Firm ratings, banks' loan supply, interest rate, cash flows	Khwaja and Mian (2008) estimator exploits multiple bank-firm relationships to control for loan demand and other observed and unobserved borrower characteristics; firm-level regressions	European firms that had a pre-crisis lending relationship with banks that suffered from the sovereign debt crisis became financially constrained during the crisis. As a result, these firms had, on average, lower employment growth rates, lower levels of investment, and lower sales growth rates. An effective bank recapitalization could significantly contribute to the economic recovery in Europe.
Kim et al. (2012)	Banking + Currency Crises	multiple	2000 - 2009	132	All around the world	Regulation, restrictions on bank activities, entry requirements, diversification, capital regulation, private monitoring, government-owned banks, official supervisory power, financial innovation, interest rate derivatives, venture capital and private equity, M1 growth, M2 growth, growth of commercial bank deposits, growth of GDP per capita, growth of national savings	Poisson model, negative binomial regression model	The empirical results show that the effects of these variables on the crisis are much more nuanced and complex. Regulatory measures such as stronger restrictions on bank activities and strengthened entry requirements have decreased the probability of banking crises. While capital regulation and government ownership of banks have positive effects on the likelihood of currency crises, official supervisory power has a negative effect.
Clarkson (2009)	Financial Crises (all 3)	Unknown	2007 onwards	Unknown	Mostly USA but refers some other countries like UK, Germany	Regulatory system, restrictions on bank activities, entry requirements, government interference	Analytical Research	Relaxed regulatory constraints on entering and exiting the financial sector, self-regulatory systems, and minimal government interference are some of the main determinants of financial crises. He strongly refers to the limitations of human intellect; saying that these new capitalism models are not sufficient and by his actuarial insight he suggests models should be built on the actuarial approach
Hayford and Malliaris (2010)	Financial Crises (all 3)	multiple	Focus on 2007 - 2009 but dates go back until 1980s	1	Mostly USA but refers some other countries	Growth rate real GDP, value added financial sector as % of GDP, asset prices, regulations, political system	Analytical Research	Analysis of financial crises suggests two key initial causal factors: financial liberalization and credit expansion. Easy monetary policy of the Fed during 2004-2006 has fueled higher housing prices. Fed officials began a series of less conventional actions that are not in the current textbook descriptions of monetary policy.
Inekwe (2018)	Financial Crises (all 3)	Unknown	1960 - 2010	68	All around the world	The real gross domestic product per capita, Market capitalization of listed companies, Money and quasi money as % of GDP, Liquid liabilities as % of GDP, Real interest rate, Household final consumption expenditure, etc., General government final consumption expenditure, Military expenditure, Imports of goods and services, Exports of goods and services, Manufacturing, value added, External debt stocks, Total debt service, Stocks traded, total value, Total reserves minus gold (current US\$), Risk premium on lending, Inflation, consumer prices, Gross fixed capital formation, Portfolio investment, bonds, Gross savings, Domestic credit provided by financial sector, Net domestic credit, Quality of government, Regulation of credit, labor and business, Competition, Net income from abroad, Foreign direct investment, net inflows, Business freedom Real effective exchange rate index, Political Institutional quality, Economic institutional quality, Personal remittances received, Volatility of real effective exchange rate, Stock return, Volatility of stock return, Labor force participation rate, total Economic globalization, Deposit interest rate, Tax revenue, Bank capital to assets ratio, Bank liquid reserves to bank assets ratio, Bank nonperforming loans to total gross loans, Real gross domestic product per capita	Variant of extreme bound analysis (EBA), in contrast to a 0-1 dummy the dependent variable takes the value of 0-6, fixed effects	The results revealed that market capitalization, regulation, political institutional quality, remittance, service sector value added, business freedom, government consumption, and export and import of goods and services are robust determinants of financial crises.
Gawin and Hausmann (1996)	Banking Crises	Unknown	1980 - 1994	Unknown	Latin America	Net resource transfer from banks to the private sector, liquidity, terms of trade, asset quality and prices, real GDP, political regime, interest rate, deposit demand, credit booms.	Theoretical Research	Large number of factors that can determine banking crises, such as: bank liquidity, regulation of interest rates, banking competition, capital asset ratio, monetary policy, and macroeconomic volatility
Demiguc-Kunt and Detragiache (1998)	Banking Crises	multiple	1980 - 1994	45 to 65	All around the world	Rate of growth of real GDP, external terms of trade, real short-term interest rate, financial liberalization, inflation, ratio of M2 to foreign exchange reserves, bank cash and reserves, ratio of credit to the private sector	Multivariate Logit Model	Crises tend to arise when the macroeconomic environment is weak, when growth is low, and inflation is high. High real interest rates are also associated with banking crises.

Reinhart and Rogoff (2013)	Banking Crises	multiple	1800-2008	66	All around the world	Income level, consumption, government spending, interest rate, government tax revenue, financial liberalization, the degree of capital mobility, international financial contagion, real equity prices, GDP growth, housing prices	Survey	Frequency and duration of banking crises similar across developed countries and middle-income countries. Credit boom and asset price bubble are the main factors of banking crises.
Kruger et al. (2000)	Currency Crises	Unknown	1977-1993	19 developing countries	Latin America, Asia and Africa	Growth rate of domestic credit, growth rate per capita GDP, the ratio of bank claims on the private sector to GDP, fiscal and current account deficits, measure of leading booms, real exchange rate misalignment and the ratio of M2 to international reserves, CPI inflation rate, real exchange rate	Pooled Regression and Probit Model with Random Effects	Measure of leading booms, real exchange rate misalignment and the ratio of M2 to international reserves are the only variables that can be consistently linked to currency crises. A currency crisis in a neighbor country increases the probability of a speculative attack on the domestic currency.
Cuarella and Slack (2009)	Currency Crises	Unknown	1994-2003	27	All around the world	Exchange rate regime, asset market bubbles, FDI, inflation rate, real exchange rate, external debt, level of reserves	Bayesian Model Averaging	Real exchange rate misalignment and financial market indicators appear as robust determinants of crisis periods.
Wang and Moore (2007)	Currency Crises	Unknown	1994-2006	5	Czech Republic, Hungary, Poland, Slovakia, Slovenia	Market capitalization as % of GDP, exchange rate regime, stock prices	Generalized Autoregressive Conditional Heteroskedasticity (GARCH) Model and Iterated Cumulative Sums of Squares (ICSS) Model	The movement of stock prices, the level of money stock, and credit ratings of countries both at the national and the regional level seem to be the significant determinants of currency crises.
Cohen and Valdes (2010)	Financial Crises (all 3)	179 currency crises + 106 banking crises + 128 debt crises	1970-2007	126	All around the world	Debt/GDP ratio, total debt service(exports), real GDP per capita, Country Policy and Institutional Assessment (CPIA) index, Country risk	Logit Regression	Why the effects of financial crises of 2008-09 were not more severe is that many countries, even among sovereign defaulters, were much better managed than they had been in previous crisis episodes. Civil war, domestic turbulences, being poorly evaluated by standard CPIA method might be the reasons behind the countries that were mostly affected from financial crises in Eastern Europe.
Bandera et al. (2010)	Sovereign debt crises	Unknown	1980-2004	46 developing countries	All around the world	Level of indebtedness with respect to available reserves, current account as % of FDI, current account as % of gross national income, current account as % of reserves, average maturity (years), external debt as % of gross national income, external debt as and of reserves, GDP growth, short-term debt, US Treasury bill rate	Bayesian Model Averaging	Countries with external debt below 50 percent, grow more rapidly and have lower inflation than countries with higher levels of external debt. In countries with external debt above 50 percent, inflation and indebtedness are positively associated with a higher probability of debt default. The importance of the institutional settings and quality of policies fades away for countries with higher levels of debt.
Radelet and Sachs (1998)	Financial Crises (all 3)	1	1997	Unknown	Asia	Scale of foreign capital inflows into financial system, asset prices, short-term debts/short-term assets, exchange rates, interest rates, credit ratings, country risk, political uncertainty	Panel Regression	The East Asian crisis resulted from vulnerability to financial panic that arose from certain emerging weaknesses in these economies (especially growing short-term debt), combined with a series of policy mis-steps and accidents that triggered the panic. There were macroeconomic imbalances, weak financial institutions, widespread corruption, and inadequate legal foundations in each of the affected countries.
Cull and Martinez (2007)	Banking Crises	multiple	1995-2002	Over 100 developing countries	All around the world	Share of banking sector assets held by foreign banks, the degree of foreign bank participation	Panel Regression	Countries that experienced a banking crisis tended to have higher levels of foreign bank participation than those that did not.
Eastham et al. (1970)	All sort of crisis	Unknown	Pre-1970s	Unknown	All around the world	Social Sciences	Literature Review	A revision of concept of crisis in several sciences; psychology, economics, political sciences, health etc.
Aschinger (2001)	Currency Crises	multiple	1995-2000	Unknown	All around the world	Inflation rate, budget deficit, exchange rate policy, globalization and liberalization, foreign direct investments	Survey	Local markets should not be liberalized too quickly without banking measures such as a good supervising system for banks, requirements for capital ratios, risk management and bookkeeping devices. Domestic firms and banks should not be allowed to borrow foreign money without authorization from the government. Better transparency about the links and decision-making of industries and government could enhance investors' confidence in a country.
Calomiris (2016)	Banking Crises	multiple	1920 onwards	Unknown	USA, Canada, Latin America, North Europe	Bank credit supply, asset prices, economic activity (trade), government intervention on banks	Literature Review	As banks respond to losses and increased risk by curtailing the supply of credit, they can aggravate the cyclical downturn, magnifying declines in investment, production, and asset prices, whether bank failures occur or not.
Reinhart and Rogoff (2014)	Sovereign and Banking Crises	multiple	1820-2006	66	Africa, Asia, Europe, Latin America, North America, and Oceania	External and domestic debt, trade (exports and imports), GNP, inflation, exchange rates, interest rates, commodity prices, year of independence, countries share of world real GDP	Survey	A detailed quantitative overview of the history of financial crises dating from the mid-fourteenth century default of Edward III of England to the present subprime crisis in the United States. Global debt crises have often radiated from the center through commodity prices, capital flows, interest rates, and shocks to investor confidence. We also show that the popular notion that today's emerging markets are breaking new ground in their extensive reliance on domestic debt markets.
Tomz and Wright (2007)	Sovereign debt crises	250	1820-2004	106	Common defaulters: Costa Rica, Ecuador, Mexico, Uruguay, Venezuela + countries from all around the world	Output growth, consumption, income, percentage of money owed to private foreign creditors	Theoretical Research	Countries default on loans from private foreign creditors more often in "bad times" than in "good times." Providing the first long-run analysis of the relationship between default and economic performance. A negative but unexpectedly weak relationship between output and default.
Laeven and Valencia (2013)	Financial Crises (all 3)	147 banking crises + 218 currency crises + 66 sovereign debt crises	1970-2011	37	All around the world	Fiscal balance/GDP, public debt/GDP, inflation, net foreign assets, deposits/GDP, GDP growth, current account/GDP, share of government owned banks, credit booms, capitalization, monetary policy index, fiscal policy index, house prices	Database, partial correlations	While traditionally costly banking crises were associated with emerging economies, more recent cases also involve advanced economies and while macroeconomic policies have been used aggressively in recent advanced economies, actual bank restructuring has been relatively slow. The data show that fiscal costs associated with banking crises can be substantial and that output losses are large. First, fiscal tightening may be needed when unsustainable fiscal policies are the trigger of the crises, though crises are typically attacked with expansionary fiscal policies. Second, tight monetary policy could help contain financial market pressures.
Glaesens and Koen (2013)	Financial Crises (all 3)	Unknown	Several different years	Unknown	All around the world	Asset prices, level of credits, monetary policy of a country, level of debt both foreign and domestic	Survey	It is necessary to put together new data series and to design new methodologies to get a better understanding of crises episodes. The review lists several recent studies that put together new data series on financial crises. In spite of these, there is clearly a case for more research to collect additional cross-country data on aspects relevant to financial crises.
Reinhart and Rogoff (2011)	Banking and Sovereign Debt Crises	499	1800-2009	70	Africa, Asia, Europe, Latin America, North America, and Oceania	External and domestic debt, trade, GNP, inflation, exchange rates, interest rates, and commodity prices	Multinomial logit, single lag of a three-year backward-looking moving average	Systemic banking crises, in financial centres help explain domestic banking crises, and domestic banking crises help explain sovereign default. External (public and private) debt for the period over which this data is available (1970-2009) significantly increased the chances of a banking crisis but had no systematic direct impact on the probability of default, which continues to depend significantly on whether there is a banking crisis or not. Banking crises are importantly preceded by rapidly rising private indebtedness. But, analysis suggests that banking crises increase the likelihood of a sovereign default.
Oyvat (2018)	Currency Crises	1	2000-2018	1	Turkey	Current account deficit/GDP ratio, external debt, foreign currency reserves, GDP growth, private investments and savings, FDI	Survey	The economic crisis in Turkey is not merely an outcome of a political crisis instigated by Donald Trump. Turkey is now paying for the years of finance-led growth supported by speculative financial capital inflows, and a construction boom. With existing fragilities, the crisis in Turkey is likely to deepen.
Eberhardt & Menkiszak (2015)	Financial crises (all 3)	1 Russian Crisis	2012-2015	1	Russia	Rate of exchange currency, monetary policy, oil prices, exports and imports, GDP Growth, level of investment, future expectations	Survey	In order to maintain macroeconomic stability, Russia needs to maintain enough currency reserves and have an effective budget policy. Keep the banking sector in good conditions.
Yilmaz (2016)	Banking and Sovereign Debt Crises	1 Global Financial Crises	2007-2011	Unknown	USA and Europe	Credit booms, asset prices, housing prices, public savings, FDI, country risk, rate of sovereign bonds, level of foreign lending	Survey	Global Financial Crisis was started as a subprime mortgage market crisis in the US, but rapidly spread to the entire financial system and then to the world via interconnectedness of financial systems. First banking crises and then defaults. The structural differences of the countries were inclined to diverging competitiveness trends and this led to huge imbalances in the Euro Area.

Table A1. Literature Review on Contagion

Author(s)/Date	Type of Crises	# of Crises	Period of Analysis	# of Countries	Region/Country	Variables Used	Econometric Method	Results
Akbarzaman and Shamsuddin (2016)	Financial Crises (all 3)	Unknown	1990 - 2014	49	All around the world	Level of equity market, trade intensity, type of sector	DCC-GARCH Model	Non-financial firms have more impact in the cross-market transmissions of shocks than financial firms. Contagion is positively related with the level of equity market development and trade intensity. International contagion varies across economies and it is higher during periods of US downturns and financial crises.
Rubocky et al. (2014)	Financial Crises (all 3)	Multiple	1970 - 2010	40	All around the world	Level of domestic private credit, level of output	Panel vector autoregression, Bayesian Model Averaging	In developed economies, currency crises are more likely to happen after banking and debt crises. Banking crises seem to be more persistent, while currency and debt crises last for a shorter period. All three crises have negative effect on real economy, but banking crises are more costly for the countries. After a banking crisis there is no full recovery within 6 years and it may trigger other crises, during the recovery period.
Caruazza et al. (2004)	Financial Crises (all 3)	2	2005 - 2014	23	Europe, China, India, Japan and USA	Exchange rates, share of exports and imports, share of Eurozone and US banks, financial stress index	DCC-GARCH Model	Results indicate that there was significant contagion both within and across asset classes. The results suggest that financial stress is an important factor that governs inter-linkages across the markets. Findings suggest that international stock markets are prone to global risks.
Chan-Lau et al. (2004)	Banking and Currency Crises	Unknown	1883 - 2008	21	All around the world	Dummy variables for crises	Panel Data	The degree of international financial turmoil in currency crises was shown to have broadly risen over the 20th century. Banking crises were highly internationalized at the beginning of the sample, and following the crises of 1914 experienced a relatively crisis free period. The degree of international financial turmoil in banking crises fell until late in the 20th century, however in the late 20th century and first decade of the 21st century, the banking crisis coincidence index has risen again. This reflects the internationalization of recent banking crisis episodes, particularly the global financial crisis of 2007-2008.
Dias and Tamarit (2016)	Financial Crises (all 3)	2	1995 - 2013	41	Euro Area and USA	Demand and supply of loan, aggregate demand, level of credit, real exchange rate, short-term interest rates, government bond yields	Global Vector Autoregressive Model	Credit-related shocks trigger a pronounced domestic reaction of total credit. Domestic credit contractions in the euro area and the USA do not only partially cause significant reductions in international output or total credit. Global negative effects on output are significant for all regions. Effects from USA shocks induce negative spillovers on total credit with a wider global coverage than the respective euro area shocks.
Donney et al. (2015)	Financial Crises (all 3)	Unknown	2003 - 2009	Unknown	North America, Europe and East Asia Pacific	Trade structure, interest rates, inflation rates, industrial production, investors' risk aversion	GJR-GARCH Model	Strong evidence suggesting that during a crisis contagion can be transmitted among nations, regardless of the level of development. US transmits contagion to all countries except China, Japan and Germany. In a unique result, we find that the US also receives contagion, but only from UK and Canada. During the 2008 GFC, the US receives shocks from the whole world, but not from individual regions.
Edwards (2009)	Currency Crises	Multiple	1990s	41	All around the world	Real exchange rate, current account balance, fiscal balance, M2 growth, GDP growth, trade contagion, common creditor	Panel Probit Regression	Financial linkages and weaknesses play a significant role in explaining the spread of emerging market crises, even when controlling for domestic and external fundamentals and trade spillovers. The common creditor variable is the most important, robust, and significant variable. This variable alone has half of the explanatory power of the benchmark regression and, jointly with slow output growth, provides the largest contribution to the probability of a crisis.
Fiodjeva et al. (2017)	Financial Crises (all 3)	5	1987 - 2001	17	All around the world	Equity market returns	Panel Regression	Results suggest that (i) contagion patterns differ significantly within regions and across regions, with Latin America showing a secular increase in contagion not matched by other regions or countries.

									The results indicate that relaxing capital controls increases the likelihood of a country experiencing a sudden stop. Moreover, the results suggest that "financial liberalization first" strategies increase the degree of vulnerability to externalities.
Forbes and Warnock (2012)	Financial Crises (all 3)	Unknown	1990 - 2006	Unknown	5 regions	Financial openness, trade, current account and fiscal imbalances, contagion, international reserves holdings, exchange rate regime		Panel Probit Regression	Global factors, especially global risk, are significantly associated with extreme capital flow episodes. Contagion, whether through trade, banking, or geography, is also associated with stop and retrenchment episodes. Domestic macroeconomic characteristics are generally less important, and we find little association between capital controls and the probability of having surges or stops, driven by foreign capital flows.
Luchtersberg and Va (2015)	Financial Crises (all 3)	Unknown	1980 - 2009	58	All around the world	Gross capital inflows and outflows, capital movements, foreign and domestic invest.		Panel Data	Variables such as the ratio of domestic bank loans and current account deficit give a sense of a strong impact in predicting the incidence of a financial crisis in the Western Balkan countries. Also, the probability that crisis will occur is higher than 0.5; this means that odds are relatively high for a systemic crisis in the upcoming period in the Western Balkan countries. The likelihood is higher that banking and financial sector as well as the external sector as risk transmission channels may be more affected than real economy sector.
Sadiku et al. (2014)	Sovereign Debt Crises	Unknown	2000 - 2011	7	Greece and 6 Western Balkan Countries	Real GDP growth, ratio of domestic bank loans, current account deficit, inflation, budget deficits		Binary Logit Model	

Table A2.1. Dataset 1 - Private Debt

Dataset 1 - Private Debt	Variable 1 - Private debt, loans and debt securities (Percent of GDP)	Variable 2 - Household debt, loans and debt securities (Percent of GDP)	Variable 3 - Nonfinancial corporate debt, loans and debt securities (Percent of GDP)	Variable 4 - Private debt, all instruments (Percent of GDP)	Variable 5 - Household debt, all instruments (Percent of GDP)	Variable 6 - Nonfinancial corporate debt, all instruments (Percent of GDP)
Countries and Regions	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period
Afghanistan	1960 - 2017	2006 - 2017	2006 - 2017			
Albania	2003 - 2017	2003 - 2017	2003 - 2017			
Algeria	1995 - 2017	2001 - 2016	2001 - 2016			
Argentina	1950 - 2017	1994 - 2017	1994 - 2017			
Australia	1953 - 2017	1977 - 2017	1977 - 2017			
Austria	1950 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Azerbaijan	1992 - 2017					
Bahamas, The	1995 - 2017					
Bahrain	1965 - 2015					
Bangladesh	1974 - 2017	2004 - 2017	2001 - 2017			
Belgium	1970 - 2017	1980 - 2017	1980 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Benin	1960 - 2017					
Bhutan	1983 - 2017					
Botswana	1972 - 2017					
Brazil	1993 - 2017	1994 - 2017	1994 - 2017	2009 - 2015	2009 - 2015	2009 - 2015
Bulgaria	1991 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Burkina Faso	1960 - 2017					
Burundi	1964 - 2017					
Cabo Verde	1976 - 2017					
Cambodia	1993 - 2017					
Cameroon	1960 - 2017	2001 - 2017	2001 - 2017			
Canada	1954 - 2017	1969 - 2017	1969 - 2017	1990 - 2017	1990 - 2017	1990 - 2017
Central African	1960 - 2017	2001 - 2017	2001 - 2017			
Chad	1960 - 2017	2001 - 2017	2001 - 2017			
Chile	1983 - 2017	2002 - 2017	2002 - 2017	2003 - 2017	2003 - 2017	2003 - 2017
China, People's	1985 - 2017	2006 - 2017	2006 - 2017			
Colombia	1996 - 2017	1996 - 2017	1996 - 2017	2015 - 2016	2015 - 2016	2015 - 2016
Comoros	1982 - 2017					
Congo, Dem. Rep.	1963 - 2017	2001 - 2017	2001 - 2017			
Congo, Republic	1960 - 2017					
Costa Rica	1996 - 2017	2001 - 2017	2001 - 2017			
Croatia	1994 - 2017	2001 - 2017	2001 - 2017	2001 - 2017	2001 - 2017	2001 - 2017
Cyprus	1960 - 2016	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Czech Republic	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Côte d'Ivoire	1960 - 2017					
Denmark	1951 - 2017	1994 - 2017	1994 - 2017	1994 - 2017	1994 - 2017	1994 - 2017
Djibouti	1984 - 2017					
Dominica	1975 - 2017					
Dominican	1991 - 2017					
Ecuador	1950 - 2017					
Egypt	1950 - 2017					
El Salvador	1950 - 2017	2001 - 2017	2001 - 2017			
Eritrea	1995 - 2014					
Estonia	1992 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Ethiopia	1960 - 2008					
FYR Macedonia	2005 - 2017	2005 - 2017	2005 - 2017			
Finland	1970 - 2017	1970 - 2017	1970 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
France	1969 - 2017	1977 - 2017	1977 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Gambia, The	1964 - 2017					
Georgia	1995 - 2017					
Germany	1951 - 2017	1970 - 2017	1970 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Ghana	1955 - 2017					
Greece	1960 - 2017	1994 - 2017	1994 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Grenada	1970 - 2017					
Guatemala	1950 - 2017					
Guinea	1989 - 2016					
Guinea-Bissau	1990 - 2017					
Guyana	1960 - 2017					
Haiti	1955 - 2017					
Honduras	1951 - 2017	2001 - 2017	2001 - 2017			
Hong Kong SAR	1978 - 2017	1990 - 2017	1990 - 2017			
Hungary	1969 - 2017	1964 - 2017	1969 - 2017	1990 - 2017	1990 - 2017	1990 - 2017
Iceland	1951 - 2017	1970 - 2016	1970 - 2017	2003 - 2016	2003 - 2016	2003 - 2016
India	1951 - 2017	1998 - 2017	1998 - 2017			
Indonesia	1980 - 2017	2001 - 2017	2001 - 2017			
Iran	1955 - 2016					
Iraq	2004 - 2017					
Ireland	1971 - 2017	2002 - 2017	2002 - 2017	2001 - 2017	2001 - 2017	2001 - 2017
Israel	1992 - 2017	1992 - 2017	1992 - 2017	2010 - 2016	2010 - 2016	2010 - 2016
Italy	1951 - 2017	1950 - 2017	1950 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Jamaica	1953 - 2016					
Japan	1964 - 2017	1964 - 2017	1964 - 2017	1994 - 2017	1994 - 2017	1994 - 2017
Jordan	1954 - 2016					
Kazakhstan	1995 - 2017	2003 - 2017	2003 - 2017			
Kenya	1961 - 2017					
Korea, Republic of	1962 - 2017	1962 - 2017	1962 - 2017	2008 - 2017	2008 - 2017	2008 - 2017
Kuwait	1962 - 2017					
Kyrgyz Republic	1995 - 2017					
Lao P.D.R.	1989 - 2010					
Latvia	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Lebanon	1964 - 2017					
Lesotho	1973 - 2017	2001 - 2017	2002 - 2017			
Liberia	1974 - 2015					
Lithuania	1993 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Luxembourg	1999 - 2017	2002 - 2017	2002 - 2017	1999 - 2017	1999 - 2017	1999 - 2017
Madagascar	1962 - 2017					
Malawi	1965 - 2016					
Malaysia	1955 - 2016	2006 - 2016	2006 - 2016			

Maldives	1976 - 2017					
Mali	1960 - 2017					
Malta	1960 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Mauritania	1962 - 2012					
Mauritius	2007 - 2017	2007 - 2017	2007 - 2017	2007 - 2017	2007 - 2017	2007 - 2017
Mexico	1980 - 2017	1994 - 2017	1994 - 2017	2003 - 2016	2003 - 2016	2003 - 2016
Micronesia, Fed.	1995 - 2017					
Moldova	1991 - 2017					
Mongolia	1991 - 2017					
Morocco	1958 - 2017	2001 - 2017	2001 - 2017			
Mozambique	1988 - 2017					
Myanmar	1960 - 2017	2001 - 2017	2001 - 2017			
Nepal	1960 - 2017	2002 - 2017	2002 - 2017			
Netherlands	1961 - 2017	1990 - 2017	1990 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
New Zealand	1960 - 2017	1990 - 2017	1990 - 2017			
Nicaragua	1951 - 2017	2001 - 2017	2001 - 2017			
Niger	1960 - 2017					
Nigeria	1951 - 2017					
Norway	1953 - 2017	1975 - 2017	1975 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Oman	1972 - 2016					
Pakistan	1951 - 2017	2006 - 2017	2006 - 2017			
Papua New	1973 - 2017					
Paraguay	1952 - 2017					
Peru	1951 - 2016	2001 - 2017	2001 - 2017			
Philippines	1951 - 2017					
Poland	1992 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Portugal	1951 - 2017	1979 - 2017	1979 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Qatar	1966 - 2017					
Romania	1996 - 2017	2001 - 2017	2001 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Russian	1993 - 2017	1998 - 2017	1998 - 2017	2011 - 2017	2011 - 2017	2011 - 2017
Rwanda	1964 - 2017					
Saint Lucia	1975 - 2017					
Saint Vincent and	1975 - 2017					
Samoa	1963 - 2017	1995 - 2017	1995 - 2017			
Saudi Arabia	1962 - 2017	1998 - 2017	1998 - 2017			
Senegal	1960 - 2017					
Serbia	1997 - 2017					
Sierra Leone	1960 - 2017	2001 - 2017	2001 - 2017			
Singapore	1963 - 2017	1991 - 2017	1991 - 2017			
Slovak Republic	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Slovenia	1991 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Solomon Islands	1978 - 2017	2001 - 2017	2001 - 2017			
South Africa	1965 - 2017	2008 - 2017	2008 - 2017			
South Sudan,	2011 - 2017					
Spain	1970 - 2017	1980 - 2017	1980 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Sri Lanka	1951 - 2016	2001 - 2016	2001 - 2016			
Sudan	1960 - 2017					
Sweden	1961 - 2017	1950 - 2017	1950 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
Switzerland	1951 - 2017	1999 - 2017	1999 - 2017	1999 - 2016	1999 - 2016	1999 - 2016
São Tomé and	1995 - 2017	2006 - 2017	2006 - 2017			
Tajikistan	1998 - 2017	2001 - 2017	2001 - 2017			
Tanzania	1961 - 2017					
Thailand	1951 - 2017	2003 - 2017	2003 - 2017			
Timor-Leste	2002 - 2017					
Togo	1960 - 2017					
Tonga	1974 - 2017					
Trinidad and	1951 - 2017					
Turkey	1986 - 2017	1986 - 2017	1986 - 2017	2010 - 2017	2010 - 2017	2010 - 2017
Uganda	1960 - 2017					
Ukraine	1995 - 2017	1995 - 2017	1995 - 2017			
United Arab	1973 - 2017	2008 - 2017	2008 - 2017			
United Kingdom	1963 - 2017	1966 - 2017	1966 - 2017	1995 - 2017	1995 - 2017	1995 - 2017
United States	1951 - 2017	1950 - 2017	1950 - 2017	1950 - 2017	1950 - 2017	1950 - 2017
Uruguay	1951 - 2017					
Vanuatu	1976 - 2017	2001 - 2017	2001 - 2017			
Venezuela	1951 - 2015					
Vietnam	1992 - 2017					
Yemen	1990 - 2017					
Zambia	1965 - 2017					
Zimbabwe	1979 - 2005					

Dataset 2 - Public Debt	Variable 1 - Central Government Debt (Percent of GDP)	Variable 2 - General Government Debt (Percent of GDP)	Variable 3 - Nonfinancial Public Sector Debt (Percent of GDP)	Variable 4 - Public Sector Debt (Percent of GDP)
Countries and Regions	Available Time Period	Available Time Period	Available Time Period	Available Time Period
Afghanistan	2002 - 2017			
Albania	1994 - 2017	1994 - 2017		
Algeria	1970 - 2017			
Angola	1995 - 2017			
Antigua and Barbuda	1990 - 2017			
Argentina	1950 - 2017			
Armenia	1996 - 2017			
Australia	1950 - 2017	1989 - 2017		
Austria	1950 - 2017	1970 - 2017		
Azerbaijan	1994 - 2017			
Bahamas, The	1968 - 2017			
Bahrain	1974 - 2017			
Bangladesh	1973 - 2017			
Barbados	1970 - 2017			
Belarus	1994 - 2017	2004 - 2017		
Belgium	1950 - 2017	1970 - 2017		
Belize	1976 - 2017			
Benin	1970 - 2017			

Bhutan	1982 - 2017			
Bolivia	1970 - 2017		1998 - 2017	
Bosnia and Herzegovina	1998 - 2017	1998 - 2017		
Botswana	1972 - 2017			
Brazil	1950 - 2017	2001 - 2017	2000 - 2017	
Brunei Darussalam	2001 - 2017			
Bulgaria	1981 - 2017	1997 - 2017		
Burkina Faso	1970 - 2017			
Burundi	1964 - 2017			
Cabo Verde	1981 - 2017			
Cambodia		1995 - 2017		
Cameroon	1970 - 2017		2015 - 2017	
Canada	1990 - 2017	1950 - 2017		
Central African Republic	1970 - 2017			
Chad	1970 - 2017			
Chile	1950 - 2017	1990 - 2017		
China, People's Republic of		1995 - 2017		
Colombia	1950 - 2017	1996 - 2017		
Comoros	1984 - 2017			
Congo, Dem. Rep. of the		1970 - 2017		
Congo, Republic of	1970 - 2017			
Costa Rica	1950 - 2017	2009 - 2017		
Croatia	1993 - 2017	1997 - 2017		
Cyprus	2000 - 2017	1970 - 2017		
Czech Republic	1993 - 2017	1995 - 2017	2005 - 2016	2005 - 2016
Côte d'Ivoire	1970 - 2017			
Denmark	1950 - 2017	1970 - 2017		
Djibouti	1995 - 2017			
Dominica	1975 - 2017			
Dominican Republic	2000 - 2017		1970 - 2017	
Ecuador	1990 - 2017		1950 - 2017	
Egypt	1954 - 1962	1970 - 2017		
El Salvador	1951 - 2017	1991 - 2017		
Equatorial Guinea	1980 - 2017			
Eritrea	1995 - 2017			
Estonia	2000 - 2017	1995 - 2017		
Eswatini	1970 - 2017			
Ethiopia		1970 - 2017		
FYR Macedonia	1994 - 2017	1994 - 2017		2002 - 2017
Fiji	1970 - 2017			
Finland	1950 - 2017	1960 - 2017		
France	1950 - 2017	1978 - 2017		
Gabon	1970 - 2017			
Gambia, The	1973 - 2017			
Georgia		1995 - 2017		
Germany	1961 - 2017	1950 - 2017		
Ghana	1962 - 2017			
Greece	1950 - 2017	1960 - 2017		
Grenada	1970 - 2017			
Guatemala	1950 - 2017			
Guinea	1990 - 2017			
Guinea-Bissau	1986 - 2017			
Guyana	1963 - 2017			
Haiti	1970 - 2017			
Honduras	1950 - 2016	1990 - 2017	1980 - 2016	1980 - 2016
Hong Kong SAR	2001 - 2016			
Hungary	1989 - 2017	1989 - 2017		
Iceland	1972 - 2017	1950 - 2017		
India	1950 - 2017	1991 - 2017		
Indonesia	1972 - 2017	2000 - 2017		2010 - 2017
Iran	1970 - 2017			
Iraq	2004 - 2017			
Ireland	1950 - 2017	1979 - 2017		
Israel	1983 - 2017	1983 - 2017		
Italy	1950 - 2017	1950 - 2017		
Jamaica	1963 - 2017			
Japan	1969 - 2017	1955 - 2017		
Jordan	1969 - 2017			
Kazakhstan	2000 - 2017	1993 - 2017		
Kenya	1963 - 2017			
Kiribati	1988 - 2017	1988 - 2017		
Korea, Republic of	1960 - 2017	2011 - 2016	2011 - 2016	
Kosovo	2009 - 2017	2009 - 2017		
Kuwait	1987 - 2017			
Kyrgyz Republic	1994 - 2017	1994 - 2017		
Lao P.D.R.	1976 - 2017			
Latvia	1995 - 2017	1995 - 2017		
Lebanon	1970 - 2017			
Lesotho	1970 - 2017			
Liberia	1973 - 2017			
Libya	1973 - 2017			
Lithuania	1995 - 2017	1995 - 2017		
Luxembourg	1970 - 2017	1980 - 2017		
Madagascar	1970 - 2017			
Malawi	1970 - 2017			
Malaysia	1950 - 2017	1990 - 2017	1995 - 2017	
Maldives	1976 - 2017			
Mali	1970 - 2017			
Malta	1965 - 2017	1995 - 2017		
Marshall Islands		1997 - 2017		
Mauritania	1970 - 2017			
Mauritius		1970 - 2017		2003 - 2017
Mexico	1950 - 2017			1950 - 2017
Micronesia, Fed. States of		1995 - 2017		
Moldova	1995 - 2017	1995 - 2017		
Mongolia	1992 - 2017	2013 - 2017		
Montenegro	2002 - 2017	2002 - 2017		



Morocco	1965 - 2017			
Mozambique	1999 - 2017			
Myanmar	1970 - 2017			
Namibia	1989 - 2017			
Nauru		2009 - 2017		
Nepal	1970 - 2017			
Netherlands		1950 - 2017		
New Zealand	1950 - 2017			
Nicaragua	1997 - 2017	1997 - 2017		1970 - 2017
Niger	1970 - 2017			
Nigeria	1968 - 2017	2011 - 2017		
Norway	1950 - 2017	1970 - 2017		
Oman	1972 - 2017			
Pakistan	1951 - 2017			
Panama		1950 - 2017	1950 - 2016	
Papua New Guinea	1970 - 2017			
Paraguay	1970 - 2017			1990 - 2017
Peru	1999 - 2016	1999 - 2017	1999 - 2017	2000 - 2016
Philippines		1950 - 2017		
Poland	1986 - 2017	1990 - 2017		
Portugal	1950 - 2017	1970 - 2017	2007 - 2016	
Qatar	1990 - 2017			
Romania	1995 - 2017	1995 - 2017		
Russian Federation	1992 - 2017	1998 - 2017		
Rwanda	1970 - 2017			
Saint Kitts and Nevis	1984 - 2017	1996 - 2017		
Saint Lucia	1981 - 2017			
Saint Vincent and the Grenadines	1970 - 2017	1990 - 2017		
Samoa	1970 - 2017			
San Marino	2004 - 2017			
Saudi Arabia	1989 - 2017			
Senegal	1970 - 2017			
Serbia	2003 - 2017	2000 - 2017		
Sevchelles	1972 - 2017			
Sierra Leone	1970 - 2017			
Singapore	1963 - 2017			
Slovak Republic	2006 - 2017	1993 - 2017		
Slovenia	1993 - 2017	1995 - 2017		
Solomon Islands	1978 - 2017			
South Africa	1950 - 2017			
South Sudan, Republic of	2012 - 2017			
Spain	1950 - 2017	1980 - 2017		
Sri Lanka	1951 - 2017			
Sudan	1992 - 2017			
Suriname	1971 - 2017			
Sweden	1950 - 2017	1970 - 2017	2006 - 2016	2006 - 2016
Switzerland	1950 - 2017	1983 - 2017		
Syria	1970 - 2017			
São Tomé and Príncipe	1977 - 2017			
Taiwan Province of China	1987 - 2017	1997 - 2017		
Tajikistan		1998 - 2017		
Tanzania		1970 - 2017		
Thailand	1950 - 2017	2005 - 2017	2005 - 2017	1996 - 2017
Timor-Leste	2013 - 2017			
Togo	1970 - 2017			
Tonga	1985 - 2017			
Trinidad and Tobago	1963 - 2017			
Tunisia	1970 - 2017			
Turkey	1950 - 2017	2000 - 2017		2000 - 2017
Turkmenistan	1997 - 2017	1997 - 2017		
Tuvalu	2005 - 2017			
Uganda	1970 - 2017			
Ukraine	1995 - 2017	1995 - 2017		
United Arab Emirates		1973 - 2017		
United Kingdom	1974 - 2017	1950 - 2017		1974 - 2017
United States	1950 - 2017	1950 - 2017		
Uruguay	1970 - 2017			2001 - 2017
Uzbekistan		1998 - 2017		
Vanuatu	1981 - 2017			
Venezuela	1950 - 2015	1998 - 2017		
Vietnam	1991 - 2017	2000 - 2017		
West Bank and Gaza	2000 - 2017			
Yemen	1990 - 2017	1990 - 2017		
Zambia	1970 - 2017			
Zimbabwe	1964 - 2017			

Table A2.3. Dataset 3 – World Economic Outlook

Dataset 3 - World Economic Outlook	Variable 1 - Real GDP growth (Annual percent change)	Variable 2 - GDP, current prices (Billions of U.S. dollars)	Variable 3 - GDP per capita, current prices (U.S. dollars per capita)	Variable 4 - GDP, current prices (Purchasing power parity; billions of international dollars)	Variable 5 - GDP per capita, current prices (Purchasing power parity; international dollars per capita)	Variable 6 - GDP based on PPP, share of world (Percent of World)	Variable 7 - Implied PPP conversion rate (National currency per international dollar)	Variable 8 - Inflation rate, average consumer prices (Annual percent change)	Variable 9 - Inflation rate, end of period consumer prices (Annual percent change)	Variable 10 - Population (Millions of people)	Variable 11 - Unemployment rate (Percent)	Variable 12 - Current account balance U.S. dollars (Billions of U.S. dollars)	Variable 13 - Current account balance, percent of GDP (Percent of GDP)	Variable 14 - General government net lending/borrowing (Percent of GDP)	Variable 15 - General government gross debt (Percent of GDP)
Countries and Regions	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period
Afghanistan	2003 - 2018	2002 - 2018	2002 - 2018	2002 - 2018	2002 - 2018	2002 - 2018	2002 - 2018	2002 - 2018	2002 - 2018	2001 - 2018		2002 - 2018	2002 - 2018	2002 - 2018	2002 - 2018
Albania	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1980 - 2018	1997 - 2018	1997 - 2018











Argentina	1993 - 2018	1993 - 2018	1993 - 2018	1993 - 2018	1993 - 2018	1993 - 2018	1992 - 2018	
Australia	1990 - 2018	1990 - 2018	1991 - 2018	1991 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
Austria	1990 - 2018	1990 - 2018	1995 - 2018	1995 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1995 - 2018
Azerbaijan	1994 - 2018	1994 - 2018			1994 - 2018	1994 - 2018	1995 - 2018	
Bangladesh	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	2003 - 2018	
Belarus	2001 - 2018	2001 - 2018			2001 - 2018	2001 - 2018	2004 - 2018	
Belgium	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
Benin	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1999 - 2018	
Bolivia	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	2000 - 2018	
Brazil	1996 - 2018	1996 - 2018	1996 - 2018	1996 - 2018	1996 - 2018	1996 - 2018	2000 - 2018	1996 - 2018
Burkina Faso	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	2002 - 2018	
Cambodia	1996 - 2018	1996 - 2018			1996 - 2018	1996 - 2018	1996 - 2018	
Cameroon	2000 - 2018	2000 - 2018			2000 - 2018	2000 - 2018	1998 - 2018	
Canada	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
Chad	1995 - 2018	1995 - 2018			1995 - 2018	1995 - 2018	1999 - 2018	
Chile	1990 - 2018	1990 - 2018	2001 - 2018	2001 - 2018	1990 - 2018	1990 - 2018	1991 - 2018	1991 - 2018
China, People's Republic of	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1995 - 2018	1990 - 2018
Colombia	1990 - 2018	1990 - 2018	2000 - 2018	2000 - 2018	1990 - 2018	1990 - 2018	1996 - 2018	2000 - 2018
Congo, Dem. Rep. of the	1996 - 2018	1996 - 2018			1996 - 2018	1996 - 2018	2000 - 2018	
Congo, Republic of	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1991 - 2018	
Croatia	1992 - 2018	1992 - 2018	2002 - 2018	2002 - 2018	1992 - 2018	1992 - 2018	1998 - 2018	2002 - 2018
Cyprus	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018
Czech Republic	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018
Côte d'Ivoire	1997 - 2018	1997 - 2018			1997 - 2018	1997 - 2018	1998 - 2018	
Denmark	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1992 - 2018	1990 - 2018
Dominican Republic	1997 - 2018	1997 - 2018	1997 - 2018	1997 - 2018	1997 - 2018	1997 - 2018	1997 - 2018	1997 - 2018
Ecuador	1995 - 2018	1995 - 2018	2001 - 2018	2001 - 2018	1995 - 2018	1995 - 2018	2001 - 2018	2001 - 2018
Egypt	1999 - 2018	1999 - 2018	2006 - 2018	2006 - 2018	1999 - 2018	1999 - 2018	1998 - 2018	2006 - 2018
Estonia	1995 - 2018	1995 - 2018	2000 - 2018	2000 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	2000 - 2018
Ethiopia	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1992 - 2018	
Finland	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
France	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
Germany	1991 - 2018	1991 - 2018	1990 - 2018	1990 - 2018	1991 - 2018	1991 - 2018	1991 - 2018	1990 - 2018

Ghana	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018	
Greece	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
Guinea	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018	
Haiti	1997 - 2018	1997 - 2018			1997 - 2018	1997 - 2018	1997 - 2018	
Honduras	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018	
Hong Kong SAR	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	2001 - 2018	1990 - 2018
Hungary	1995 - 2018	1995 - 2018	2000 - 2018	2000 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	2000 - 2018
Iceland	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
India	1990 - 2018	1990 - 2018	1996 - 2018	1996 - 2018	1990 - 2018	1990 - 2018	1991 - 2018	1996 - 2018
Indonesia	1993 - 2018	1993 - 2018	2004 - 2018	2004 - 2018	1993 - 2018	1993 - 2018	2000 - 2018	2004 - 2018
Iran	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1996 - 2018	
Ireland	1990 - 2018	1990 - 2018	1997 - 2018	1997 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1997 - 2018
Israel	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Italy	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
Japan	1990 - 2018	1990 - 2018	1994 - 2018	1994 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1994 - 2018
Kazakhstan	2002 - 2018	2002 - 2018			2002 - 2018	2002 - 2018	2002 - 2018	
Kenya	1990 - 2018	1990 - 2018	2002 - 2018	2002 - 2018	1990 - 2018	1990 - 2018	1998 - 2018	2002 - 2018
Korea, Republic of	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1990 - 2018	1995 - 2018
Kuwait	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1991 - 2018	
Kyrgyz Republic	1995 - 2018	1995 - 2018	2014 - 2018	2014 - 2018	1995 - 2018	1995 - 2018	2000 - 2018	2014 - 2018
Lao P.D.R.	2000 - 2018	2000 - 2018			2000 - 2018	2000 - 2018	2001 - 2018	
Latvia	1998 - 2018	1998 - 2018	2003 - 2018	2003 - 2018	1998 - 2018	1998 - 2018	1998 - 2018	2003 - 2018
Libya	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018		
Lithuania	1995 - 2018	1995 - 2018	2005 - 2018	2005 - 2018	1995 - 2018	1995 - 2018	1998 - 2018	2005 - 2018
Luxembourg	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018
Madagascar	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018	
Malaysia	1990 - 2018	1990 - 2018	1991 - 2018	1991 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1991 - 2018
Mali	2000 - 2018	2000 - 2018			2000 - 2018	2000 - 2018	2000 - 2018	
Malta	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	1995 - 2018	2000 - 2018
Mexico	1990 - 2018	1990 - 2018	1997 - 2018	1997 - 2018	1990 - 2018	1990 - 2018	1996 - 2018	1997 - 2018
Moldova	1995 - 2018	1995 - 2018			1995 - 2018	1995 - 2018	1995 - 2018	
Mongolia	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018		
Morocco	1990 - 2018	1990 - 2018	2000 - 2018	2000 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	2000 - 2018



<b>Mozambique</b>	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1999 - 2018	
<b>Myanmar</b>	1997 - 2018	1997 - 2018			1997 - 2018	1997 - 2018	1998 - 2018	
<b>Nepal</b>	2000 - 2018	2000 - 2018			2000 - 2018	2000 - 2018	2000 - 2018	
<b>Netherlands</b>	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
<b>New Zealand</b>	1990 - 2018	1990 - 2018	2005 - 2018	2005 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	2005 - 2018
<b>Nicaragua</b>	2000 - 2018	2000 - 2018			2000 - 2018	2000 - 2018	1997 - 2018	
<b>Niger</b>	1995 - 2018	1995 - 2018			1995 - 2018	1995 - 2018	1995 - 2018	
<b>Nigeria</b>	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018	
<b>Norway</b>	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
<b>Oman</b>	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018	
<b>Pakistan</b>	1993 - 2018	1993 - 2018			1993 - 2018	1993 - 2018	1994 - 2018	
<b>Papua New Guinea</b>	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1994 - 2018	
<b>Peru</b>	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
<b>Philippines</b>	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1993 - 2018	1990 - 2018
<b>Poland</b>	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018
<b>Portugal</b>	1990 - 2018	1990 - 2018	1995 - 2018	1995 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1995 - 2018
<b>Qatar</b>	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018	
<b>Russian Federation</b>	1998 - 2018	1998 - 2018	1999 - 2018	1999 - 2018	1998 - 2018	1998 - 2018	1999 - 2018	1999 - 2018
<b>Rwanda</b>	1992 - 2018	1992 - 2018			1992 - 2018	1992 - 2018	1995 - 2018	
<b>Saudi Arabia</b>	1991 - 2018	1991 - 2018			1991 - 2018	1991 - 2018	1992 - 2018	
<b>Senegal</b>	1994 - 2018	1994 - 2018			1994 - 2018	1994 - 2018	1996 - 2018	
<b>Singapore</b>	1990 - 2018		1995 - 2018		1990 - 2018	1990 - 2018	1990 - 2018	1995 - 2018
<b>Slovak Republic</b>	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018
<b>Slovenia</b>	1995 - 2018	1995 - 2018	1996 - 2018	1996 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1996 - 2018
<b>South Africa</b>	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
<b>Spain</b>	1990 - 2018	1990 - 2018	2000 - 2018	2000 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	2000 - 2018
<b>Sri Lanka</b>	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018	
<b>Sudan</b>	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1992 - 2018	
<b>Sweden</b>	1990 - 2018	1990 - 2018	1993 - 2018	1993 - 2018	1990 - 2018	1990 - 2018	1993 - 2018	1993 - 2018
<b>Switzerland</b>	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018
<b>Tajikistan</b>	1998 - 2018	1998 - 2018			1998 - 2018	1998 - 2018	1998 - 2018	
<b>Tanzania</b>	1991 - 2018	1991 - 2018			1991 - 2018	1991 - 2018	2001 - 2018	
<b>Thailand</b>	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1995 - 2018	1996 - 2018	1995 - 2018

Turkey	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Uganda	1997 - 2018	1997 - 2018			1997 - 2018	1997 - 2018	1998 - 2018		
Ukraine	1995 - 2018	1995 - 2018	2003 - 2018	2003 - 2018	1995 - 2018	1995 - 2018	1998 - 2018	2003 - 2018	
United Arab Emirates	1992 - 2018	1992 - 2018			1992 - 2018	1992 - 2018	1999 - 2018		
United Kingdom	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	
United States	2001 - 2018	2001 - 2018	2001 - 2018	2001 - 2018	2001 - 2018	2001 - 2018	2001 - 2018	2001 - 2018	
Uruguay	1999 - 2018	1999 - 2018	2000 - 2018	2000 - 2018	1999 - 2018	1999 - 2018	2001 - 2018	2000 - 2018	
Uzbekistan	1992 - 2018	1992 - 2018			1992 - 2018	1992 - 2018	1998 - 2018		
Venezuela	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1998 - 2018		
Vietnam	1998 - 2018	1998 - 2018			1998 - 2018	1998 - 2018	2000 - 2018		
Yemen	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1999 - 2018		
Zambia	2000 - 2018	2000 - 2018			2000 - 2018	2000 - 2018	2000 - 2018		
Zimbabwe	2005 - 2018	2005 - 2018			2005 - 2018	2005 - 2018	2005 - 2018		
Advanced G-20	1991 - 2018	1991 - 2018	1990 - 2018	1990 - 2018	1991 - 2018	1991 - 2018	1991 - 2018	1990 - 2018	
Advanced economies	1991 - 2018	1991 - 2018	1990 - 2018	1990 - 2018	1991 - 2018	1991 - 2018	1991 - 2018	1990 - 2018	
Emerging G-20	1993 - 2018	1993 - 2018	1990 - 2018	1990 - 2018	1993 - 2018	1993 - 2018	1999 - 2018	1990 - 2018	
Emerging Market and Middle-Income Economies	1993 - 2018	1993 - 2018	1990 - 2018	1990 - 2018	1993 - 2018	1993 - 2018	1998 - 2018	1990 - 2018	
Emerging and Middle-Income Asia	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1990 - 2018	1995 - 2018	1990 - 2018	
Emerging and Middle-Income Europe	1998 - 2018	1998 - 2018	1995 - 2018	1995 - 2018	1998 - 2018	1998 - 2018	1999 - 2018	1995 - 2018	
Emerging and Middle-Income Latin America	1993 - 2018	1993 - 2018	1994 - 2018	1994 - 2018	1993 - 2018	1993 - 2018	1999 - 2018	1994 - 2018	
Emerging and Middle-Income Middle East and North Africa and Pakistan	1990 - 2018	1990 - 2018	2000 - 2018	2000 - 2018	1990 - 2018	1990 - 2018	1997 - 2018	2000 - 2018	
Euro area	1991 - 2018	1991 - 2018	1995 - 2018	1995 - 2018	1991 - 2018	1991 - 2018	1996 - 2018	1995 - 2018	
Low-Income Developing Asia	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	2003 - 2018		
Low-Income Developing Countries	1990 - 2018	1990 - 2018	2002 - 2018	2002 - 2018	1990 - 2018	1990 - 2018	1997 - 2018	2002 - 2018	
Low-Income Developing Latin America	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1997 - 2018		
Low-Income Developing Oil Producers	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1990 - 2018		
Low-Income Developing Others	1990 - 2018	1990 - 2018			1990 - 2018	1990 - 2018	1998 - 2018		
Low-Income Developing Sub-Saharan Africa	1991 - 2018	1991 - 2018	2002 - 2018	2002 - 2018	1991 - 2018	1991 - 2018	1995 - 2018	2002 - 2018	

Table A2.5. Dataset 5 – Africa Regional Economic Outlook

Data set	Var iabl e1-	Var iabl e2-	Var iabl e3-	Var iabl e4-	Var iabl e5-	Var iabl e6-	Var iabl e7-	Var iabl e8-	Var iabl e9-	Var iabl e10-	Var iabl e11-	Var iabl e12-	Var iabl e13-	Var iabl e14-	Var iabl e15-	Var iabl e16-	Var iabl e17-	Var iabl e18-	Var iabl e19-	Var iabl e20-	Var iabl e21-	Var iabl e22-	Var iabl e23-	Var iabl e24-	Var iabl e25-	Var iabl e26-
AFR Econo mic Outl ook	Rea l GD P Gr owt	Rea l No n-Oil GD	Rea l Ca pita l GD	Tot al Inve stment (%)	Gr oss Nat ional Sav	Over all Fis cal Bal anc e	Over all Fis cal Bal anc e	Govt rnm ent Expe n diture	Govt rnm ent Expe n diture	Govt rnm ent Debt (% of)	Bro ad mon etary base (% of)	Clai ms on Nonf inanc ial	Clai ms on Nonf inanc ial	Bro ad mon etary base (% of)	Ex port of Cu rre ncy	Ext ern al of anc e	Im por t of anc e	Tra de Bal anc e	For eign Dire ct Inve	Res erva	Eff ectiv e exch ange rate	Min imal Eff ectiv e exch ange rate	Ext ern al De bt	Con sum er Price s	Con sum er Price s	Ter ms of Trade

Country and Regions	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Angola	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Benin	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Botsswana	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Burkina Faso	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Burundi	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Caboverde	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Cameroon	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Central African Republic	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Chad	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Comoros	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Congo, Dem. Rep. of the	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Congo, Rep. of	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Côte d'Ivoire	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Equatorial Guinea	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Eritrea	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Eswatini	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Ethiopia	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8



Tanzania	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Togo	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Uganda	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Zambia	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Zimbabwe	2005	2009	2013	2017	2021	2025	2029	2033	2037	2041	2045	2049	2053	2057	2061	2065	2069	2073	2077	2081	2085	2089	2093	2097	2101
CEM AC	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
CFA Franc Zone	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
CO MES A (SSA members)	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Countries in fragile situations	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
East African Community	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Economy Community of West African States	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
LICUs excluding low income countries in fragile situations	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Low-income countries	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
MICS excluding Nigeria and South Africa	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Middle-income countries	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Non-oil	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100
Non-resource-inten	2004	2008	2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100



Dominican	2002 - 2018	2002 - 2018	2003 - 2018	2003 - 2018
Ecuador	2002 - 2018	2002 - 2018	2002 - 2018	2002 - 2018
Egypt	2004 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
El Salvador	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
FYR Macedonia	2003 - 2018	2003 - 2018	2003 - 2018	2003 - 2018
Gabon		2001 - 2018	2001 - 2018	2001 - 2018
Georgia	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Guatemala	2005 - 2018	2004 - 2018	2004 - 2018	2004 - 2018
Honduras		2004 - 2018		
Hungary	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
India	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Indonesia	2001 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Iraq	2007 - 2018	2005 - 2018	2005 - 2018	2005 - 2018
Israel		2000 - 2018	2000	2000 - 2018
Jamaica	2005 - 2018	2005 - 2018	2005 - 2018	2005 - 2018
Jordan	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Kazakhstan	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Korea, Republic of	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Latvia	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Lebanon		2000 - 2018	2000 - 2018	2000 - 2018
Lithuania	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Malaysia	2001 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Maldives		2000	2000 - 2018	2000 - 2018
Mauritius	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Mexico	2001 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Moldova	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Mongolia				
Montenegro				
Morocco	2002 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Pakistan	2006 - 2018	2006 - 2018	2006 - 2018	2006 - 2018
Panama	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Paraguay	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Peru	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Philippines	2001 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Poland	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Romania	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Russian Federation	2003 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Saint Kitts and Nevis	2014 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Serbia	2008 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Sevchelles	2012 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Slovak Republic		2000 - 2018	2000	2000 - 2018
Slovenia		2000 - 2018	2000 - 2018	2000 - 2018
South Africa	2000 - 2018	2000 - 2018	2000	2000 - 2018
Sri Lanka		2000 - 2018	2000 - 2018	2000 - 2018
Syria		2000 - 2010	2000 - 2010	2000 - 2010
Thailand	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Trinidad and Tobago	2011 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Tunisia	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Turkey	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
Ukraine	2000 - 2018	2000 - 2018	2000 - 2018	2000 - 2018
United Arab Emirates		2012 - 2018	2012 - 2018	2012 - 2018
Uruguay	2013 - 2018	2000 - 2018	2013 - 2018	2013 - 2018
Venezuela		2000 - 2018	2000	2000 - 2018
Vietnam			2000 - 2018	2000 - 2018

Table A2.7. Dataset 7 – Historical Public Debt

Dataset 7 – Historical Public Debt	Variable 1 – Debt (% of GDP)
Countries and Regions	Available Time Period
Afghanistan	2002 – 2015
Albania	1994 – 2015
Algeria	1970 – 2015
Angola	1995 – 2015
Anguilla	2000 – 2015
Antigua and Barbuda	1998 – 2015
Argentina	1970 – 2015
Armenia	1993 – 2015
Australia	1901 – 2015
Austria	1880 – 2015
Azerbaijan	1993 – 2015
Bahamas, The	1968 – 2015
Bahrain	1974 – 2015
Bangladesh	1974 – 2015
Barbados	1970 – 2015
Belarus	1994 – 2015
Belgium	1880 – 2015
Belize	1976 – 2015
Benin	1970 – 2015
Bhutan	1982 – 2015
Bolivia	1970 – 2015
Bosnia and Herzegovina	1998 – 2015
Botswana	1972 – 2015

Brazil	1978 – 2015
Brunei Darussalam	2001 – 2015
Bulgaria	1992 – 2015
Burkina Faso	1976 – 2015
Burundi	1964 – 2015
Cabo Verde	1981 – 2015
Cambodia	1996 – 2015
Cameroon	1970 – 2015
Canada	1870 – 2015
Central African Republic	1970 – 2015
Chad	1970 – 2015
Chile	1970 – 2015
China, People's Republic of	1984 – 2015
Colombia	1958 – 2015
Comoros	1982 – 2015
Congo, Dem. Rep. of the	1970 – 2015
Congo, Republic of	1970 – 2015
Costa Rica	1950 – 2015
Croatia	1994 – 2015
Cyprus	1970 – 2015
Czech Republic	1993 – 2015
Côte d'Ivoire	1979 – 2015
Denmark	1880 – 2015
Djibouti	1993 – 2015
Dominica	1975 – 2015
Dominican Republic	1950 – 2015
Ecuador	1939 – 2015
Egypt	1929 – 2015
El Salvador	1939 – 2015
Equatorial Guinea	1980 – 2015
Eritrea	1995 – 2015
Estonia	1995 – 2015
Eswatini	1970 – 2015
Ethiopia	1970 – 2015
FYR Macedonia	1995 – 2015
Fiji	1970 – 2015
Finland	1914 – 2015
France	1880 – 2015
Gabon	1970 – 2015
Gambia, The	1979 – 2015
Georgia	1995 – 2015
Germany	1880 – 2015
Ghana	1962 – 2015
Greece	1884 – 2015
Grenada	1970 – 2015
Guatemala	1923 – 2015
Guinea	1990 – 2015
Guinea-Bissau	1986 – 2015
Guyana	1963 – 2015
Haiti	1953 – 2015
Honduras	1926 – 2015
Hong Kong SAR	2001 – 2015
Hungary	1928 – 2015
Iceland	1951 – 2015
India	1948 – 2015
Indonesia	1976 – 2015
Iran	1970 – 2015
Iraq	2004 – 2015
Ireland	1929 – 2015
Israel	1972 – 2015
Italy	1861 – 2015
Jamaica	1963 – 2015
Japan	1875 – 2015
Jordan	1969 – 2015



Kazakhstan	1993 – 2015
Kenya	1961 – 2015
Kiribati	1988 – 2015
Korea, Republic of	1958 – 2015
Kosovo	2006 – 2015
Kuwait	1971 – 2015
Kyrgyz Republic	1995 – 2015
Lao P.D.R.	1989 – 2015
Latvia	1994 – 2015
Lebanon	1970 – 2015
Lesotho	1973 – 2015
Liberia	1973 – 2015
Libya	1973 – 2015
Lithuania	1994 – 2015
Luxembourg	1974 – 2015
Madagascar	1971 – 2015
Malawi	1970 – 2015
Malaysia	1953 – 2015
Maldives	1978 – 2015
Mali	1970 – 2015
Malta	1965 – 2015
Marshall Islands	1997 – 2015
Mauritania	1977 – 2015
Mauritius	1970 – 2015
Mexico	1914 – 2015
Micronesia, Fed. States of	1995 – 2015
Moldova	1995 – 2015
Mongolia	1992 – 2007
Montenegro	2002 – 2015
Morocco	1965 – 2015
Mozambique	1999 – 2015
Myanmar	1970 – 2015
Namibia	1993 – 2015
Nepal	1970 – 2015
Netherlands	1814 – 2015
New Zealand	1860 – 2015
Nicaragua	1970 – 2015
Niger	1970 – 2015
Nigeria	1968 – 2015
Norway	1880 – 2015
Oman	1973 – 2015
Pakistan	1951 – 2015
Panama	1953 – 2015
Papua New Guinea	1973 – 2015
Paraguay	1970 – 2015
Peru	1918 – 2015
Philippines	1948 – 2015
Poland	1986 – 2015
Portugal	1851 – 2015
Puerto Rico	2006 – 2015
Qatar	1990 – 2015
Romania	1990 – 2015
Russian Federation	1992 – 2015
Rwanda	1970 – 2015
Saint Kitts and Nevis	1984 – 2015
Saint Lucia	1981 – 2015
Saint Vincent and the Grenadines	1975 – 2015
Samoa	1970 – 2015
San Marino	2004 – 2015
Saudi Arabia	1991 – 2015
Senegal	1970 – 2015
Serbia	2000 – 2015
Seychelles	1973 – 2015
Sierra Leone	1970 – 2015

Singapore	1963 – 2015
Slovak Republic	1992 – 2015
Slovenia	1993 – 2015
Solomon Islands	1980 – 2015
South Africa	1914 – 2015
South Sudan, Republic of	2012 – 2015
Spain	1880 – 2015
Sri Lanka	1951 – 2015
Sudan	1992 – 2015
Suriname	1971 – 2015
Sweden	1800 – 2015
Switzerland	1899 – 2015
Syria	1970 – 2015
São Tomé and Príncipe	1995 – 2015
Taiwan Province of China	1997 – 2015
Tajikistan	1998 – 2015
Tanzania	1970 – 2015
Thailand	1954 – 2015
Togo	1975 – 2015
Tonga	1985 – 1993
Trinidad and Tobago	1963 – 2015
Tunisia	1970 – 2015
Turkey	1936 – 2015
Turkmenistan	1997 – 2015
Tuvalu	2005 – 2015
Uganda	1970 – 2015
Ukraine	1992 – 2015
United Arab Emirates	1973 – 2015
United Kingdom	1800 – 2015
United States	1800 – 2015
Uruguay	1970 – 2015
Uzbekistan	1998 – 2015
Vanuatu	1981 – 2015
Venezuela	1920 – 2015
Vietnam	1992 – 2015
Yemen	1992 – 2015
Zambia	1970 – 2015
Zimbabwe	1964 – 2015
Eastern Caribbean Currency Union	1990 – 2015
Euro area	1995 – 2015
G-20 Advanced	1800 – 2015
G-20 Emerging	1880 – 2015
Low Income	1926 – 2015

Table A2.8. Dataset 8 – Capital Flows in Developing Economies

Data set 8 - Capital Flows in Developing Economies	Variable 1 - Direct Investment Abroad (Millions of US Dollars)	Variable 2 - Direct Investment in Count ry (Millions of US Dollars)	Variable 3 - Private Inflows excluding Direct Investment (Millions of US Dollars)	Variable 4 - Private Inflows excluding Direct Investment (% of GDP) (Percentage)	Variable 5 - Private Outflows excluding Direct Investment (Millions of US Dollars)	Variable 6 - Private Outflows excluding Direct Investment (% of GDP) (Percentage)	Variable 7 - Portfolio Investment Assets (Millions of US Dollars)	Variable 8 - Portfolio Investment Liabilities (Millions of US Dollars)	Variable 9 - Portfolio Investment Liabilities (Millions of US Dollars)	Variable 10 - Equity Securities (Millions of US Dollars)	Variable 11 - Debt Securities (Millions of US Dollars)	Variable 12 - Debt Securities (Millions of US Dollars)	Variable 13 - Proxy for Official Investment (Millions of US Dollars)	Variable 14 - Other Investment Assets (Millions of US Dollars)	Variable 15 - Other Investment Liabilities (Millions of US Dollars)	Variable 16 - Financial Derivatives (Millions of US Dollars)	Variable 17 - Debt Forgiveness (Millions of US Dollars)	Variable 18 - Nominal GDP (Millions of US Dollars)
Countries and Regions	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period
Afghanistan	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014	2008 - 2014
Albania	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014	1995 - 2014
Algeria	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014	2005 - 2014























Hig	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lo	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
w-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A2.10. Dataset 10 – Public Finance in Modern History**

Dataset 10 - Public Finance in Modern History	Variable 1 - Government revenue, percent of GDP (% of GDP)		Variable 2 - Government expenditure, percent of GDP (% of GDP)		Variable 3 - Government primary expenditure, percent of GDP (% of GDP)		Variable 4 - Interest paid on public debt, percent of GDP (% of GDP)		Variable 5 - Government primary balance, percent of GDP (% of GDP)		Variable 6 - Gross public debt, percent of GDP (% of GDP)		Variable 7 - Real GDP growth rate, percent		Variable 8 - Real long-term government bond	
	Available Time	Available Time	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time Period	Available Time	Available Time	Available Time	Available Time	Available Time	Available Time	Available Time
Afghanistan	2002-2011	2002-2011	2002-2011	2005-2011	2005-2011	2005-2011							2002-2011			
Albania	1997-2011	1997-2011	1997-2011	1997-2011	1997-2011	1997-2011							1997-2011			
Algeria	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011							1990-2011			
Angola	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011							2000-2011		2004-2009	
Argentina	1864-2011	1864-2011	1864-2011	1865-2011	1865-2011	1865-2011							1865-2011		1993-1996	
Armenia	1996-2011	1996-2011	1996-2011	1996-2011	1996-2011	1996-2011							1996-2011			
Australia	1901-2011	1901-2011	1901-2011	1916-2011	1916-2011	1916-2011							1916-2011		1947-2010	
Austria	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011							1880-2011		1880-2010	
Azerbaijan	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011							2000-2011			
Bahrain	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011							1990-2011			
Bangladesh	1980-2011	1980-2011	1980-2011	1980-2011	1980-2011	1980-2011							1980-2011			
Belarus	1998-2011	1998-2011	1998-2011	1998-2011	1998-2011	1998-2011							1998-2011		2009-2010	
Belgium	1835-2011	1835-2011	1835-2011	1880-2011	1880-2011	1880-2011							1835-2011		1880-2010	
Benin	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011							1990-2011			
Bhutan	1981-2011	1981-2011	1981-2011	1981-2011	1981-2011	1981-2011							1981-2011			
Bolivia	1950-2011	1950-2011	1950-2011	1950-2011	1950-2011	1950-2011							1950-2011			
Bosnia and Herzegovina	1998-2011	1998-2011	1998-2011	1998-2011	1998-2011	1998-2011							1998-2011		1998-2010	
Botswana	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011							2000-2011			
Brazil	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011							1880-2011			
Brunei	1985-2011	1985-2011	1985-2011	1985-2011	1985-2011	1985-2011							1985-2011			
Bulgaria	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011							1995-2011			
Burkina Faso	1985-2011	1985-2011	1985-2011	1985-2011	1985-2011	1985-2011							1985-2011			
Burundi	1992-2011	1992-2011	1992-2011	1992-2011	1992-2011	1992-2011							1992-2011			
Cabo Verde	2002-2011	2002-2011	2002-2011	2002-2011	2002-2011	2002-2011							2002-2011			
Cambodia	1996-2011	1996-2011	1996-2011	1996-2011	1996-2011	1996-2011							1996-2011			
Cameroon	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011							2000-2011			
Canada	1870-2011	1870-2011	1870-2011	1870-2011	1870-2011	1870-2011							1870-2011		1880-2010	
Central African Republic	1988-2011	1988-2011	1988-2011	1988-2011	1988-2011	1988-2011							1988-2011			
Chad	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011							1995-2011			
Chile	1810-2011	1810-2011	1810-2011	1810-2011	1810-2011	1810-2011							1810-2011			
China, People's Republic of	1982-2011	1982-2011	1982-2011	1982-2011	1982-2011	1982-2011							1982-2011			
Colombia	1905-2011	1905-2011	1905-2011	1905-2011	1905-2011	1905-2011							1905-2011			
Comoros	1984-2011	1984-2011	1984-2011	1984-2011	1984-2011	1984-2011							1984-2011			
Congo, Dem. Rep.	1996-2011	1996-2011	1996-2011	1996-2011	1996-2011	1996-2011							1996-2011			
Congo, Republic of	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011							1990-2011			
Costa Rica	1956-2011	1956-2011	1956-2011	1956-2011	1956-2011	1956-2011							1956-2011			
Croatia	2002-2011	2002-2011	2002-2011	2002-2011	2002-2011	2002-2011							2002-2011		2006-2010	
Cyprus	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011							1995-2011		2000-2010	
Czech Republic	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011							1995-2011		1999-2010	
Côte d'Ivoire	1997-2011	1997-2011	1997-2011	1997-2011	1997-2011	1997-2011							1997-2011			
Denmark	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011							1880-2011		1880-2010	
Djibouti	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011							1991-2011			
Dominican Republic	1950-2011	1950-2011	1950-2011	1950-2011	1950-2011	1950-2011							1950-2011			
Egypt	2002-2011	2002-2011	2002-2011	2002-2011	2002-2011	2002-2011							2002-2011			
Equatorial Guinea	1980-2011	1980-2011	1980-2011	1980-2011	1980-2011	1980-2011							1980-2011			
Eritrea	1992-2011	1992-2011	1992-2011	1992-2011	1992-2011	1992-2011							1992-2011			
Estonia	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011	1995-2011							1995-2011			
Eswatini	1981-2011	1981-2011	1981-2011	1981-2011	1981-2011	1981-2011							1981-2011			
Ethiopia	1980-2011	1980-2011	1980-2011	1980-2011	1980-2011	1980-2011							1980-2011			
FYR Macedonia	1998-2011	1998-2011	1998-2011	1998-2011	1998-2011	1998-2011							1998-2011			
Fiji	1992-2011	1992-2011	1992-2011	1992-2011	1992-2011	1992-2011							1992-2011			
Finland	1882-2011	1882-2011	1882-2011	1882-2011	1882-2011	1882-2011							1882-2011		1960-2010	
France	1870-2011	1870-2011	1870-2011	1870-2011	1870-2011	1870-2011							1870-2011		1880-2010	
Gabon	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011							1990-2011			
Gambia, The	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011							2000-2011			
Georgia	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011							2000-2011			
Germany	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011							1880-2011		1880-2010	
Ghana	1962-2011	1962-2011	1962-2011	1962-2011	1962-2011	1962-2011							1962-2011			
Greece	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011	1880-2011							1880-2011		1960-2010	
Guinea	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011	1990-2011							1990-2011			
Guinea-Bissau	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011	2000-2011							2000-2011			
Haiti	1924-2011	1924-2011	1924-2011	1924-2011	1924-2011	1924-2011							1924-2011			
Honduras	1927-2011	1927-2011	1927-2011	1927-2011	1927-2011	1927-2011							1927-2011			
Hong Kong SAR	1961-2011	1961-2011	1961-2011	1961-2011	1961-2011	1961-2011							1961-2011		1991-2010	
Hungary	1927-2011	1927-2011	1927-2011	1927-2011	1927-2011	1927-2011							1927-2011			
Iceland	1909-2011	1909-2011	1909-2011	1909-2011	1909-2011	1909-2011							1909-2011			
India	1861-2011	1861-2011	1861-2011	1861-2011	1861-2011	1861-2011							1861-2011		1990-2010	
Indonesia	1951-2011	1951-2011	1951-2011	1951-2011	1951-2011	1951-2011							1951-2011			
Iran	1962-2011	1962-2011	1962-2011	1962-2011	1962-2011	1962-2011							1962-2011			
Iraq	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011							2004-2011			
Ireland	1926-2011	1926-2011	1926-2011	1926-2011	1926-2011	1926-2011							1926-2011		1963-2010	
Israel	1950-2011	1950-2011	1950-2011	1950-2011	1950-2011	1950-2011							1950-2011		1999-2010	
Italy	1862-2011	1862-2011	1862-2011	1862-2011	1862-2011	1862-2011							1862-2011		1861-2010	
Japan	1875-2011	1875-2011	1875-2011	1875-2011	1875-2011	1875-2011							1875-2011		1965-2010	
Jordan	1985-2011	1985-2011	1985-2011	1985-2011	1985-2011	1985-2011							1985-2011			
Kazakhstan	1994-2011	1994-2011	1994-2011	1994-2011	1994-2011	1994-2011							1994-2011			
Kenya	1982-2011	1982-2011	1982-2011	1982-2011	1982-2011	1982-2011							1982-2011			
Kiribati	1988-2011	1988-2011	1988-2011	1988-201												

Lesotho	1982 - 2011	1982 - 2011	1982 - 2011	1982 - 2011	1982 - 2011	1982 - 2011	1982 - 2011	1982 - 2011
Liberia	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Libya	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Lithuania	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Madagascar	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011
Malawi	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011
Malaysia	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1991 - 2010
Maldives	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Mali	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Mauritania	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Mauritius	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	1995 - 2010
Mexico	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011
Moldova	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011
Mongolia	1981 - 2011	1981 - 2011	1981 - 2011	1981 - 2011	1981 - 2011	1981 - 2011	1981 - 2011	1981 - 2011
Montenegro	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011	2002 - 2011
Morocco	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Mozambique	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011	1980 - 2011
Myanmar	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011
Namibia	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	2004 - 2010
Nepal	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Netherlands	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2010
New Zealand	1876 - 2011	1876 - 2011	1876 - 2011	1876 - 2011	1876 - 2011	1876 - 2011	1876 - 2011	1876 - 2011
Nicaragua	1960 - 2011	1960 - 2011	1960 - 2011	1960 - 2011	1960 - 2011	1960 - 2011	1960 - 2011	1960 - 2011
Niger	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011
Nigeria	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Norway	1881 - 2011	1881 - 2011	1881 - 2011	1881 - 2011	1881 - 2011	1881 - 2011	1881 - 2011	1947 - 2010
Oman	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Pakistan	1950 - 2011	1950 - 2011	1950 - 2011	1950 - 2011	1950 - 2011	1950 - 2011	1950 - 2011	1981 - 2010
Panama	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011
Papua New Guinea	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Paraguay	1967 - 2011	1967 - 2011	1967 - 2011	1967 - 2011	1967 - 2011	1967 - 2011	1967 - 2011	1967 - 2011
Peru	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011	1900 - 2011
Philippines	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011	1946 - 2011
Poland	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011
Portugal	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011
Qatar	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Romania	1962 - 2011	1962 - 2011	1962 - 2011	1962 - 2011	1962 - 2011	1962 - 2011	1962 - 2011	1962 - 2011
Russian Federation	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011	1880 - 2011
Rwanda	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011
Saint Vincent and the Grenadines	1979 - 2011	1979 - 2011	1979 - 2011	1979 - 2011	1979 - 2011	1979 - 2011	1979 - 2011	1979 - 2011
Samoa	1998 - 2011	1998 - 2011						1998 - 2011
Saudi Arabia	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011
Senegal	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Serbia	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Seychelles	1983 - 2011	1983 - 2011	1983 - 2011	1983 - 2011	1983 - 2011	1983 - 2011	1983 - 2011	2003 - 2010
Sierra Leone	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Singapore	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1985 - 2010
Slovak Republic	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1999 - 2010
Slovenia	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011
Solomon Islands	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
South Africa	1913 - 2011	1913 - 2011	1913 - 2011	1913 - 2011	1913 - 2011	1913 - 2011	1913 - 2011	1913 - 2011
South Sudan	2011	2011						
Spain	1850 - 2011	1850 - 2011	1850 - 2011	1850 - 2011	1850 - 2011	1850 - 2011	1850 - 2011	1881 - 2010
Sri Lanka	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Sudan	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Suriname	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
Sweden	1800 - 2011	1800 - 2011	1800 - 2011	1800 - 2011	1800 - 2011	1800 - 2011	1800 - 2011	1867 - 2010
Switzerland	1899 - 2011	1899 - 2011	1899 - 2011	1899 - 2011	1899 - 2011	1899 - 2011	1899 - 2011	1880 - 2010
Syria	1990 - 2010	1990 - 2010	1990 - 2010	1990 - 2010	1990 - 2010	1990 - 2010	1990 - 2010	1990 - 2010
São Tomé and Príncipe	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Taiwan Province of China	1973 - 2011	1973 - 2011					1997 - 2011	1973 - 2011
Tajikistan	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011
Tanzania	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	2004 - 2010
Thailand	1948 - 2011	1948 - 2011	1948 - 2011	1948 - 2011	1948 - 2011	1948 - 2011	1948 - 2011	1948 - 2011
Timor-Leste	2000 - 2011	2000 - 2011						2000 - 2011
Togo	1989 - 2011	1989 - 2011	1989 - 2011	1989 - 2011	1989 - 2011	1989 - 2011	1989 - 2011	1989 - 2011
Tonga	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011
Trinidad and Tobago	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011	1999 - 2011
Tunisia	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011
Turkey	1936 - 2011	1936 - 2011	1936 - 2011	1936 - 2011	1936 - 2011	1936 - 2011	1936 - 2011	1936 - 2011
Turkmenistan	1997 - 2011	1997 - 2011					2001 - 2011	1997 - 2011
Tuvalu	2004 - 2011	2004 - 2011	2004 - 2011	2004 - 2011	2004 - 2011	2004 - 2011	2004 - 2011	2004 - 2011
Uganda	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011
Ukraine	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	1997 - 2011	2006 - 2010
United Arab Emirates	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011	1990 - 2011
United Kingdom	1830 - 2011	1830 - 2011	1830 - 2011	1830 - 2011	1830 - 2011	1830 - 2011	1830 - 2011	1830 - 2011
United States	1800 - 2011	1800 - 2011	1800 - 2011	1800 - 2011	1800 - 2011	1800 - 2011	1800 - 2011	1880 - 2010
Uruguay	1955 - 2011	1955 - 2011	1955 - 2011	1955 - 2011	1955 - 2011	1955 - 2011	1955 - 2011	1955 - 2011
Uzbekistan	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011	1992 - 2011
Vannuatu	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011	1991 - 2011
Venezuela	1920 - 2011	1920 - 2011	1920 - 2011	1920 - 2011	1920 - 2011	1920 - 2011	1920 - 2011	1920 - 2011
Vietnam	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011	1998 - 2011
Yemen	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011	1995 - 2011
Zambia	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011	2000 - 2011
Zimbabwe	2005 - 2011	2005 - 2011	2005 - 2011	2005 - 2011	2005 - 2011	2005 - 2011	2005 - 2011	2005 - 2011

Dataset 11 - Export Diversification and Quality	Variable 1 - Export Margin (Index)	Variable 2 - Intensive Margin (Index)	Variable 3 - Export Diversification (Index)	Variable 4 - Food and live animals (Index)	Variable 5 - Beverages and tobacco (Index)	Variable 6 - Crude materials, inedible, except fuels (Index)	Variable 7 - Mineral fuels, lubricants and related materials (Index)	Variable 8 - Animal and vegetable oils and fats (Index)	Variable 9 - Chemicals (Index)	Variable 10 - Manufactured goods chiefly by material (Index)	Variable 11 - Machinery and transport equipment (Index)	Variable 12 - Miscellaneous manufactured articles (Index)	Variable 13 - Commodity & transactions not classified according to kind (Index)	Variable 14 - Export Quality Index (Index)
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Polity2	polity2
Voice and Accountability	voice_acc
Political Stability and Absence of Violence&Terrorism	stability
Govermemnt Effectiveness	govt_effect
Regulatory Quality	regulatory_qual
Rule of Law	rule_law
Control of Corruption	corruption
Country Risk Level	risk_level
Continent Dummies	dummy_continent
Income Level	inc_level
Currency Crises Dummies	dummy_crises1
Banking Crises Dummies	dummy_crises2
Sovereign Debt Crises Dummies	dummy_crises3
data1var1 - Private debt, loans and debt securities (Percent of GDP)	private_debt1
data1var2 - Household debt, loans and debt securities (Percent of GDP)	household_debt1
data1var3 - Nonfinancial corporate debt, loans and debt securities (Percent of GDP)	corporate_debt
data1var4 - Private debt, all instruments (Percent of GDP)	private_debt2
data1var5 - Household debt, all instruments (Percent of GDP)	household_debt2
data1var6 - Nonfinancial corporate debt, all instruments (Percent of GDP)	corporate_debt2
data2var1 - Central Government Debt (Percent of GDP)	govt_debt1
data2var2- General Government Debt (Percent of GDP)	govt_debt2
data2var3 - Nonfinancial Public Sector Debt (Percent of GDP)	public_sector1
data2var4 - Public Sector Debt (Percent of GDP)	public_sector2
data3var1 - Real GDP growth (Annual percent change)	real_gdp1
data3var2 - GDP, current prices (Billions of U.S. dollars)	gdp1
data3var3 - GDP per capita, current prices (U.S. dollars per capita)	gdp_pc1
data3var4 - GDP, current prices (Purchasing power parity; billions of international dollars)	gdp3
data3var5 - GDP per capita, current prices (Purchasing power parity; international dollars per capita)	gdp_pc2
data3var6 - GDP based on PPP, share of world (Percent of World)	gdp5
data3var7 - Implied PPP conversion rate (National currency per international dollar)	ppp_rate
data3var8 - Inflation rate, average consumer prices (Annual percent change)	inflation1
data3var9 - Inflation rate, end of period consumer prices (Annual percent change)	inflation2
data3var10 - Population (Millions of people)	population
data3var11 - Unemployment rate (Percent)	unemployment
data3var12 - Current account balance U.S. dollars (Billions of U.S. dollars)	ca1
data3var13 - Current account balance, percent of GDP (Percent of GDP)	ca2
data3var14 - General government net lending/borrowing (Percent of GDP)	govt_lending
data3var15 - General government gross debt (Percent of GDP)	govt_debt1
data4var1 - Net lending/borrowing (also referred as overall balance) (% of GDP)	lending_borrowing1
data4var2 - Primary net lending/borrowing (also referred as primary balance) (% of GDP)	lending_borrowing2
data4var3 - Cyclically adjusted balance (% of Potential GDP)	balance1
data4var4 - Cyclically adjusted primary balance (% of Potential GDP)	balance2



data4var5 - Revenue (% of GDP)	revenue
data4var6 - Expenditure (% of GDP)	expenditure
data4var7 - Gross debt position (% of GDP)	gross_debt
data4var8 - Net debt (% of GDP)	net_debt
data5var1 - Real GDP Growth (Annual percent change)	real_gdp2
data5var2 - Real Non-Oil GDP Growth (Annual percent change)	non_oil
data5var3 - Real Per Capita GDP Growth (Annual percent change)	gdp_pc3
data5var4 - Total Investment (% of GDP) (Percent of GDP)	investment1
data5var5 - Gross National Savings (% of GDP) (Percent of GDP)	savings
data5var6 - Overall Fiscal Balance, Including Grants (% of GDP) (Percent of GDP)	fiscal_balance1
data5var7 - Overall Fiscal Balance, Excluding Grants (% of GDP) (Percent of GDP)	fiscal_balance2
data5var8 - Government Revenue, Excluding Grants (% of GDP) (Percent of GDP)	revenue2
data5var9 - Government Expenditure (% of GDP) (Percent of GDP)	govt_expenditure1
data5var10 - Government Debt (% of GDP) (Percent of GDP)	govt_debt2
data5var11 - Broad Money (% of GDP) (Percent of GDP)	broad_money1
data5var12 - Claims on Nonfinancial Private Sector (% of GDP) (Percent of GDP)	private_sector1
data5var13 - Claims on Nonfinancial Private Sector (%) (Annual percent change)	private_sector2
data5var14 - Broad Money Growth (Annual percent change)	broad_money2
data5var15 - Exports of Goods and Services (% of GDP) (Percent of GDP)	export1
data5var16 - External Current Account, Incl.Grants (% of GDP) (Percent of GDP)	ca3
data5var17 - Imports of Goods and Services (% of GDP) (Percent of GDP)	import1
data5var18 - Trade Balance (% of GDP) (Percent of GDP)	trade_balance
data5var19 - Net Foreign Direct Investment (% of GDP) (Percent of GDP)	net_fdi
data5var20 - Reserves (Months of Imports) (Months of imports of goods and services)	reserves1
data5var21 - Real Effective Exchange Rates (2010=100) (Annual Average Index, 2010 = 100)	exchange_rate1
data5var22 - Nominal Effective Exchange Rates (2010=100) (Annual Average Index, 2010 = 100)	exchange_rate2
data5var23 - External Debt, Official Debt, Debtor Based (% of GDP) (Percent of GDP)	external_debt
data5var24 - Consumer Prices, Average (Annual % Change) (Annual average percent change)	consumer_price1
data5var25 - Consumer Prices, End of Period (Annual % Change) (Annual average percent change)	consumer_price2
data5var26 - Terms of Trade (Index, 2010 = 100) (Index, 2010 = 100)	terms_trade
data6var1 - Ratio of reserve/ARA metric (Unit)	reserves2
data6var2 - Reserves/Broad Money (Unit)	reserves3
data6var3 - Reserves/Short-term Debt (STD) (Unit)	reserves4
data6var4 - Reserve/(Import/12) (Unit)	reserves5
data7var1 - Debt (% of GDP)	historical_debt
data8var1 -Direct Investment Abroad (Millions of US Dollars)	investment2
data8var2 - Direct Investment In Country (Millions of US Dollars)	investment3
data8var3 - Private Inflows excluding Direct Investment (Millions of US Dollars)	private_inflow1
data8var4 - Private Inflows excluding Direct Investment (% of GDP) (Percent)	private_inflow2
data8var5 - Private Outflows excluding Direct Investment (Millions of US Dollars)	private_outflow1
data8var6 - Private Outflows excluding Direct Investment (% of GDP) (Percent)	private_outflow2
data8var7 - Portfolio Investment Assets (Millions of US Dollars)	portfolio1

data8var8 - Portfolio Investment Liabilities (Millions of US Dollars)	portfolio2
data8var9 - Portfolio Investment Liabilities (Millions of US Dollars)	portfolio3
data8var10 - Equity Securities Liabilities (Millions of US Dollars)	equity_securities
data8var11 - Debt Securities Assets (Millions of US Dollars)	debt_securities1
data8var12 - Debt Securities Liabilities (Millions of US Dollars)	debt_securities2
data8var13 - Proxy for Official Other Investment Liabilities (Millions of US Dollars)	liabilities1
data8var14 - Other Investment Assets (Millions of US Dollars)	assets1
data8var15 - Other Investment Liabilities (Millions of US Dollars)	liabilities2
data8var16 - Financial Derivatives (Millions of US Dollars)	derivatives
data8var17 - Debt Forgiveness (Millions of US Dollars)	debt_forgiveness
data8var18 - Nominal GDP (Millions of US Dollars)	nominal_gdp
data9var1 - Overall Openness Index (all asset categories) (Units)	openness_index
data9var2 - Openness of Capital Inflows Index (1=fully liberalized) (Units)	inflow_openness
data9var3 - Openness of Capital Outflows Index (1=fully liberalized) (Units)	outflow_openness
data9var4 - Financial Market Openness Index (equity, bond, money market, collective investment, derivatives) 1=fully liberalized (Units)	market_openness
data9var5 - Nonresident Openness Index (1=fully liberalized) (Units)	nonresident_openness
data9var6 - Resident Openness Index (1=fully liberalized) (Units)	resident_openness
data9var7 - Equity openness index (1=fully liberalized) (Units)	equity_openness
data9var8 - Bond openness index (1=fully liberalized) (Units)	bond_openness
data9var9 - Money market openness index (1=fully liberalized) (Units)	money_openness
data9var10 - Collective investment openness index (1=fully liberalized) (Units)	investment_openness1
data9var11 - Derivative investment openness index (1=fully liberalized) (Units)	investment_openness2
data9var12 - Commercial credit openness index (1=fully liberalized) (Units)	credit_openness1
data9var13 - Financial credit openness index (1=fully liberalized) (Units)	credit_openness2
data9var14 - Guarantee openness index (1=fully liberalized) (Units)	guarantee_openness
data9var15 - Direct investment openness index (1=fully liberalized) (Units)	investment_openness3
data9var16 - Direct investment liquidation openness index (1=fully liberalized) (Units)	investment_openness4
data9var17 - Real estate capital transaction openness index (1=fully liberalized) (Units)	estate_openness
data9var18 - Personal capital transaction openness index (1=fully liberalized) (Units)	personal_openness
data10var1 - Government revenue, percent of GDP (% of GDP)	govt_revenue
data10var2 - Government expenditure, percent of GDP (% of GDP)	govt_expenditure2
data10var3 - Government primary expenditure, percent of GDP (% of GDP)	govt_expenditure3
data10var4 - Interest paid on public debt, percent of GDP (% of GDP)	interest_debt
data10var5 - Government primary balance, percent of GDP (% of GDP)	govt_balance
data10var6 - Gross public debt, percent of GDP (% of GDP)	gross_debt2
data10var7 - Real GDP growth rate, percent	real_gdp3
data10var8 - Real long-term government bond yield, percent	govt_bond
data11var1 - Extensive Margin (Index)	extensive_margin
data11var2 - Intensive Margin (Index)	intensive_margin
data11var3 - Export Diversification Index (Index)	export_index
data11var4 - Food and live animals (Index)	food_animals
data11var5 - Beverages and tobacco (Index)	beverages_tobacco

data11var6 - Crude materials, inedible, except fuels (Index)	crude_fuels
data11var7 - Mineral fuels, lubricants and related materials (Index)	mineral_materials
data11var8 - Animal and vegetable oils and fats (Index)	animal_fats
data11var9 - Chemicals (Index)	chemicals_index
data11var10 - Manufact goods classified chiefly by material (Index)	manufact_material
data11var11 - Machinery and transport equipment (Index)	machinery_equipment
data11var12 - Miscellaneous manufactured articles (Index)	miscellaneous_articles
data11var13 - Commodity & transactions not classified accord to kind (Index)	commodity_transactions
data11var14 - Export Quality Index (Index)	export_index

Table A2.14. All Countries with Crises, Neighbors, Trade Partners

Countries	trade1	trade2	trade3	trade4	trade5	neighbour 1	neighbour2	neighbour 3	neighbour 4	neighbour 5	neighbour 6	neighbour 7	neighbour 8	neighbour 9	neighbour 10	neighbour 11	neighbour 12	neighbour 13	neighbour 14
Albania	Italy	Serbia	Greece	Germany	Malta	Greece	Kosovo	Macedonia	Montenegro	Serbia									
Algeria	Italy	Spain	France	United States	Brazil	Libya	Morocco	Mali	Mauritania	Niger	Tunisia								
Angola	China	India	Spain	France	Portugal	Congo, Democratic	Congo, Republic	Namibia	Zambia	Paraguay									
Argentina	Brazil	China	United States	Chile	India	Bolivia	Brazil	Chile	Venezuela	Uruguay									
Armenia	Russia	Bulgaria	Georgia	Roa	Germany	Azerbaijan	Georgia	Iran	Turkey	Papua New Guinea	Solomon Islands								
Australia	China	Japan	Korea	United States	India	Indonesia	Timor-Leste	New Zealand	New Zealand										
Austria	Germany	Italy	Switzerland	France	Switzerland	Czech Republic	Germany	Hungary	Italy	Slovenia									
Azerbaijan	Italy	Germany	Spain	Indonesia	Greece	Armenia	Georgia	Iran	Turkey	Russia									
Bangladesh	United States	Germany	Spain	France	India	Myanmar													
Belarus	Russia	United Kingdom	Ukraine	Germany	Lithuania	Latvia	Poland	Russia	Ukraine										
Belgium	Germany	France	United Kingdom	France	Italy	France	Germany	Netherlands											
Belize	United States	United Kingdom	Jamaica	Netherlands	Trinidad and Tobago	Guatemala	Mexico												
Benin	France	Brazil	Niger	Thailand	Nigeria	Burkina Faso	Niger	Nigeria	Togo										
Bolivia	United States	United Kingdom	Argentina	Peru	Colombia	Argentina	Brazil	Chile	Peru	Paraguay									
Bosnia and Herzegovina	Germany	Italy	Croatia	Serbia	Slovenia	Croatia	Montenegro	Serbia											
Botswana	Belgium	India	United Arab Emirates	South Africa	Singapore	Namibia	South Africa	Zimbabwe											
Brazil	United States	China	Argentina	Netherlands	Japan	Argentina	Bolivia	Colombia	Guyana	Peru	Paraguay	Suriname	Uruguay	Venezuela					
Bulgaria	Germany	Italy	Romania	Turkey	Greece	Turkey	Greece	Macedonia	Romania	Serbia									
Burkina Faso	Switzerland	Singapore	India	Cote d'Ivoire	South Africa	Benin	Ghana	Mali	Niger	Togo									
Burundi	Congo, Democratic	Switzerland	United Arab Emirates	Kenya	Germany	Congo, Democratic	Rwanda	Tanzania											
Cambodia	United States	United Kingdom	Germany	Japan	Canada	Laos P.D.R.	Thailand	Vietnam											
Cameroon	Netherlands	Belgium	Italy	France	China	Central African Republic	Congo, Republic	Gabon	Equatorial Guinea	Nigeria	Chad								
Canada	United States	China	United Kingdom	Japan	Mexico	United States													
Central African Republic	France	Burundi	China	Cameroon	Germany	Cameroon	Congo, Democratic	Congo, Republic	Sudan	South Sudan	Chad								
Chad	France	Cameroun	Nigeria	United States	Italy	Central African Republic	Cameroon	Libya	Niger	Nigeria	Sudan								
Chile	United States	Brazil	United Kingdom	Korea	Argentina	Bolivia	Peru	Kazakhstan	Kyrgyzstan	Laos P.D.R.	Macao	Monaco	Nepal	Pakistan	Korea	Tajikistan	Vietnam	Russia	
China	Japan	United States	Korea	Germany	Singapore	Afghanistan	Bhutan	India	Bhutan	Kazakhstan	Kyrgyzstan	Laos P.D.R.	Macao	Monaco	Nepal	Pakistan	Korea	Tajikistan	Vietnam
Colombia	United States	Venezuela	Germany	Peru	Ecuador	Panama	Brazil	Ecuador	Peru	Venezuela	Tanzania	France							
Congo	United States	United States	Germany	Canada	South Africa	Madagascar	Madagascar	Mayotte	Senegal	Tanzania	France								
Congo, Dem. Rep.	China	Zambia	Korea	Italy	Indonesia	Angola	Burundi	Central African Republic	Congo, Democratic	Rwanda	South Sudan	Tanzania	Uganda	Zambia					
Congo, Rep.	United States	Netherlands	France	Belgium	Vietnam	Angola	Central African Republic	Cameroon	Congo, Democratic	Gabon									
Costa Rica	United States	Belgium	Germany	Italy	Vietnam	Nicaragua	Panama	Bolivia											
Cote d'Ivoire	Netherlands	United States	Belgium	France	Germany	Burkina Faso	Burkina Faso	Ghana	Guinea	Liberia	Mali								
Croatia	Italy	Slovenia	Germany	United Arab Emirates	Austria	United States	Hungary	Montenegro	Serbia	Slovenia									
Cyprus	United Kingdom	Greece	France	Italy	Egypt	Israel	Lebanon	Spain	Turkey	Greece									
Czech Republic	Germany	Slovak Republic	Poland	France	Austria	Germany	Poland	Slovakia											
Denmark	Germany	Sweden	United Kingdom	United States	Netherlands	Germany	Eritrea	Ethiopia	Somalia										
Djibouti	Ethiopia	France	Somalia	Brazil	Qatar	Ethiopia	Ethiopia	Somalia											
Dominica	Jamaica	United Kingdom	Antigua and Barbuda	France	Guyana	France	Venezuela												
Dominican Rep.	United States	Korea	Netherlands	China	Brazil	Haiti													
Ecuador	United States	Peru	Colombia	Chile	Italy	Colombia	Peru												
Egypt	India	Italy	United States	Spain	Saudi Arabia	Libya	Sudan	Israel											
El Salvador	United States	Guatemala	Honduras	Nicaragua	Costa Rica	Guatemala													
Equatorial Guinea	China	India	Korea	Philippines	United States	Cameroon	Gabon												
Eritrea	Sudan	Singapore	Italy	Netherlands	India	Djibouti	Ethiopia	Sudan											
Estonia	Finland	Sweden	Russia	Latvia	United States	Russia													
Ethiopia	Germany	China	Japan	Switzerland	Saudi Arabia	Djibouti	Eritrea	Kenya	Sudan	Somalia	South Sudan	Wallois and French							
Fiji	Australia	United States	United Kingdom	Japan	Singapore	New Caledonia	New Zealand	Tonga	Tuvalu	Vanuatu									
Finland	Germany	Sweden	Russia	United Kingdom	United States	Norway	Russia	Sweden											
France	Germany	Spain	Italy	United Kingdom	Belgium	Andorra	Belgium	Switzerland	Germany	Spain	Italy	Luxembourg							
FYR Macedonia	Germany	Serbia	Greece	Italy	United States	Albania	Bulgaria	Greece	Kosovo	Serbia									
Gabon	United States	China	France	Singapore	Switzerland	Cameroon	Congo, Republic	Equatorial Guinea											
Gambia	United Kingdom	Senegal	France	Germany	Morocco	Senegal													
Georgia	Turkey	Azerbaijan	Russia	Armenia	Turkmenistan	Armenia	Azerbaijan	Turkey	Russia										
Germany	France	United Kingdom	Italy	Netherlands	Austria	Belgium	Switzerland	Danmark	France										
Ghana	South Africa	Burkina Faso	Netherlands	Switzerland	France	Burkina Faso	Cote d'Ivoire	Togo											
Greece	Germany	Italy	Bulgaria	United Kingdom	Cyprus	Turkey	Albania	Bulgaria	Macedonia										



Ukraine	Russia	Turkey	United States	Germany	Italy	Belarus	Hungary	Moldova	Poland	Romania	Russia	Slovakia											
United Kingdom	United States	Germany	France	Netherlands	Ireland	Ireland																	
United States of America	Canada	Mexico	Japan	United Kingdom	Germany	Canada	Mexico																
Uruguay	Brazil	Argentina	United States	China	Germany	Argentina	Brazil																
Uzbekistan	Switzerland	China	Russia	Turkey	Kazakhstan	Afghanistan				Tajikistan	Turkmenistan												
Venezuela	United States	China	Colombia	Brazil	Mexico	Brazil	Colombia			Guam													
Vietnam	Japan	China	Australia	Singapore	China	China	Cambodia			Laos P.D.R.													
Yemen	Saudi Arabia	Oman	Somalia	Japan	Kenya	United Arab Emirates	Oman			Saudi Arabia													
Zambia	Switzerland	China	Singapore	South Africa	Congo, Democratic R.	Angola	Botswana			Congo, Democratic R.	Mozambique									Malawi	Namibia	Tanzania	Zimbabwe
Zimbabwe	South Africa	Mauritius	United Arab Emirates	Zambia	Botswana	Botswana	Mozambique			South Africa	Zambia												

Table A2.15. Variables Used for Each Crises Model

Currency Crises Model	Banking Crises Model	Debt Crises Model
cc_number_neighbor	bc_number_neighbor	dc_number_neighbor
cc_percent_neighbor	bc_percent_neighbor	dc_percent_neighbor
cc_number_trade	bc_number_trade	dc_number_trade
cc_percent_trade	bc_percent_trade	dc_percent_trade
capital_control	capital_control	capital_control
exchange_type	exchange_type	exchange_type
polity2	polity2	polity2
voice_acc	voice_acc	voice_acc
stability	stability	stability
govt_effect	govt_effect	govt_effect
regulatory_qual	regulatory_qual	regulatory_qual
rule_law	rule_law	rule_law
corruption	corruption	corruption
risk_level	risk_level	risk_level
dummy_continent	dummy_continent	dummy_continent
inc_level	inc_level	inc_level
dummy_crises1	dummy_crises2	dummy_crises3
inflation1	inflation1	private_debt2
population	population	household_debt2
unemployment	unemployment	corporate_debt2
ca2	lending_borrowing1	govt_debt2
balance1	reserves5	public_sector2
investment2	investment2	inflation1
investment3	investment3	reserves5
private_inflow2	portfolio1	historical_debt
private_outflow2	portfolio3	debt_forgiveness
nominal_gdp	equity_securities	nominal_gdp
openness_index	derivatives	openness_index
market_openness	nominal_gdp	govt_revenue
inflow_openness	openness_index	govt_expenditure2
outflow_openness	inflow_openness	gross_debt2
real_gdp3	outflow_openness	real_gdp3
extensive_margin	credit_openness1	export_index2
intensive_margin	credit_openness2	gdp1
food_animals	real_gdp3	gdp_pc1
beverages_tobacco	export_index2	
crude_fuels	gdp1	
mineral_materials	gdp_pc1	
animal_fats	govt_lending	
chemicals_index		
manufact_material		
machinery_equipment		
miscellaneous_articles		
commodity_transactions		
export_index2		
gdp1		
gdp_pc1		
ppp_rate		

<b>Table A3 - Countries Used in the Analyses</b>		
<b>Currency Crises - Countries</b>	<b>Banking Crises - Countries</b>	<b>Debt Crises - Countries</b>
Albania	Albania	Algeria
Australia	Australia	Angola
Austria	Austria	Argentina
Belarus	Belarus	Azerbaijan
Belgium	Belgium	Bangladesh
Brazil	Brazil	Belarus
Bulgaria	Bulgaria	Benin
Cambodia	Canada	Bolivia
Canada	Chile	Brazil
Chile	China	Burkina Faso
China	Colombia	Cambodia
Colombia	Costa Rica	Cameroon
Congo, Democratic Republic of the	Croatia	Chad
Costa Rica	Cyprus	Chile
Croatia	Czech Republic	China
Cyprus	Denmark	Colombia
Czech Republic	Egypt	Congo, Democratic Republic of the
Denmark	Estonia	Congo, Republic of the
Egypt	Ethiopia	Croatia
Ethiopia	FYR Macedonia	Cyprus
Finland	Finland	Czech Republic
France	France	Côte d'Ivoire
Georgia	Georgia	Dominican Republic
Germany	Germany	Ecuador
Greece	Greece	Egypt
Honduras	Honduras	Ethiopia
Hungary	Hungary	Ghana
India	Iceland	Guinea
Indonesia	India	Haiti
Ireland	Indonesia	Honduras
Israel	Ireland	Hungary
Japan	Israel	India
Kazakhstan	Italy	Indonesia
Kyrgyzstan	Japan	Kazakhstan
Malaysia	Kazakhstan	Kenya
Mauritius	Kyrgyzstan	Kuwait
Moldova	Latvia	Kyrgyzstan
Netherlands	Lithuania	Laos
Nicaragua	Malaysia	Libya
Norway	Mauritius	Madagascar
Panama	Moldova	Malaysia
Peru	Netherlands	Mali
Philippines	Nicaragua	Mexico
Poland	Norway	Moldova
Portugal	Panama	Mongolia
Romania	Peru	Mozambique
Slovakia	Philippines	Myanmar (Burma)
Slovenia	Poland	Nepal
Spain	Portugal	Nicaragua
Sweden	Romania	Niger
Switzerland	Russia	Nigeria
Tajikistan	Serbia	Pakistan
Tanzania	Slovakia	Papua New Guinea
Thailand	Slovenia	Peru
Turkey	Spain	Philippines
Turkmenistan	Sweden	Poland
Ukraine	Switzerland	Rwanda
United Kingdom	Tajikistan	Senegal
United States	Tanzania	Slovakia
Uzbekistan	Thailand	Slovenia
Venezuela	Turkey	South Africa
Vietnam	Ukraine	Sri Lanka
	United Kingdom	Sudan
	United States	Tajikistan
	Venezuela	Tanzania
	Vietnam	Thailand
	Yemen	Turkey
		Uganda
		Ukraine
		Uruguay
		Uzbekistan
		Venezuela
		Vietnam
		Zambia
		Zimbabwe
<b>Total 62 countries</b>	<b>Total 67 countries</b>	<b>Total 75 countries</b>

