

Globalisation and macroeconomic fluctuations

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Abstract

Globalisation is a highly debated issue. The 2008 credit crisis has highlighted how globalisation might facilitate crisis spreading. This thesis attempts to undertake an analysis of the effects of globalisation on macroeconomic fluctuations, booms and crises, by identifying the theoretical effects of globalisation on the economy and by conducting statistical analysis on a dataset covering much of the world over the period 1970-2014. It is found that economic globalisation is associated with a lower chance of an economic crisis occurring in the next year, that a composite score for globalisation is associated with a lower chance of an economic boom occurring in the next year, and that political globalisation is, most likely through unobserved variables involving policy reform, associated with a higher chance of an economic boom starting in the next year. This might either be due to a decrease in the overall number of fluctuations, or due to a decrease in the number of fluctuations that reach the dummy threshold – that is, a decrease in the strength of fluctuations. The overall effects are small, a few percent points' increase or decrease in the chances of an fluctuation occurring in the next year, *ceteris paribus*.

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Chapter 1: Introduction

Much of the last decade has been defined by the economic devastation wrought by the credit crisis that began in 2008. This crisis, having begun in the United States as a result of poor mortgages and risky financial policy (Jean-Yves & Loïc, 2013), spread like wildfire until it covered much of the world, and in particular the developed world. Crises have been found to lead to impoverishment and unemployment (Stiglitz, 2002) and harsh austerity cutting down on many social provisions and safety nets. The past decade has thoroughly shown how dramatically macroeconomic fluctuations, though they seem very distant from an average person's daily affairs and way of life, can affect the lives of people. The social upheavals which rocked many affected European countries, such as Spain, at the height of the crisis illustrate how an economic downturn may affect other parts of society besides the economy. Furthermore, the social security networks that used to characterize the European welfare state have in many countries been downscaled and weakened. Austerity has swept the continent, leading to an increase in poverty, including in my native Netherlands (Hoff & Wildeboer Schut, 2016). All this only serves to further highlight the destructive potential of an economic crisis.

At the same time, globalisation has in recent decades reached unprecedented levels. Never before has the world been so interconnected in many ways. Globalisation extends to every domain of human society, including the economy, politics, cultures and the ways people live together (Held et al., 1999).

To what degree are these two connected? Does globalisation meaningfully affect these macroeconomic fluctuations? As neither globalisation nor macroeconomic fluctuations are new topics, this question has intrigued scholars for a good while now, and overall opinions in the literature are divided. The fact that globalisation often goes hand in hand with liberalization of the economy in the broadest sense (Rajan, 2007; Jean-Yves & Loïc, 2013) does not help either, since cause and effect become hard to separate. The entanglement of effects of liberalization and globalisation itself makes their separate effects hard to distinguish.

The positive effects of globalisation are conceived of as originating from a number of channels, including the free movement of goods, capital and people (Martens & Amelung, 2010), major increases in global trade (Held et al., 1999), increased investment and capital accumulation (Wacziarg & Horn Welch, 2003), improvements in the functioning of the financial sector (King & Levine, 1993), and improved access to capital (Levine, 2001). Others point towards negative consequences of globalisation, including the spreading of economic shocks through commodity prices (Held et al., 1999; Tuca, 2014), the uneven character of trade liberalisation (Stiglitz, 2002), effects on national policy and the decline of the welfare state (Held et al., 1999), the encouragement of risky financial practices (Jean-Yves & Loïc, 2013), increased volatility in the financial sector (Demergüç-Kunt & Detragiache, 1999), rapid fluctuations in capital flows (Reinhart & Calvo, 2000), within the context of reduced potency of national policymaking (Bordo & Murshid, 2001). A number of writers also point to contradictory or conditional effects, including Rodrik (1997), Edison et al. (2002) and Demergüç-Kunt & Levine (2008).

Simply put, there is much ambiguity and debate regarding this issue. The purpose of this thesis therefore is to shed another light on this controversial issue, drawing upon the most recent data available. I will phrase the following main research question:

What is the effect of globalisation on the chance of an economic boom or crisis beginning?

When answering this main question, I distinguish between both types of economic fluctuation – booms and crises, and between globalisation in three main domains – economic, social and political globalisation. This gives us a total of six sub-questions.

I find that globalisation in general, and economic globalisation in particular, is broadly associated with a more stable national economy – reflected in a lower chance of a crisis or a boom beginning. This may be because globalisation itself has stabilizing effects – for instance, through changes in export demand helping to compensate for shocks in the national economy. It may also be because countries with more stable economies tend to globalise more.

This thesis first examines the theoretical effects of globalisation on the economy and their implications for the frequency, duration and strength of macroeconomic fluctuations. While it was my intention to also test these three dimensions statistically, due to limitations with regards to time and data availability this was not possible. The analysis of theory allows for a first tentative answer to the research questions. I will also statistically test the effect of globalisation on an economic boom or crisis beginning in the next year, to give a more final and substantiated answer to the research questions.

The second chapter discusses the definitions of globalisation and economic crisis. Since many conflicting definitions of both these concepts exist, it is important for the clarity of the analysis to establish their meaning unambiguously beforehand. The third chapter provides an overview of some of the channels through which globalisation affects an economy, and focuses in particular on trade, international finance, prices, technology and migration. The fourth chapter gives an overview of the methodology and data used for the empirical section, which is the fifth chapter. The sixth chapter, lastly, discusses the findings and limitations of this research project, and gives some suggestions for further research.

Chapter 2: The definitions of globalization and macroeconomic fluctuation

‘Globalization’ and ‘economic fluctuation’ are both very broad concepts, with varying definitions circulating in the literature. To avoid getting mired in ambiguity, it is important to clearly define both before the analysis. In this section, I will first discuss the definition of globalization. Then I will discuss the definition of economic fluctuations. A discussion of the statistical definitions of both concepts is found in the fourth chapter.

2.1 On the theoretical definition of globalization

Society can be conceived of as consisting of a number of different interacting domains or spheres, including the political, the economic, the social and the cultural spheres (Alexander, 2006). These spheres are theoretical concepts, are to a degree distinct from the others, and one may influence the others. Changes in one sphere have an effect on the others. According to the sociologist Alexander, society as a whole can be conceived of as consisting of these interacting elements.

Globalization can be conceived of as an intertwined development across these spheres, including economics, society, politics and culture (Held et al., 1999). In practice, it is manifested through increasing international interaction between countries and businesses, with regards to economics, politics, society and culture. The literature emphasises two main factors that have been at the root of globalisation as it is today.

The first dimension is technology. The tremendous increase in technology, including advances in information and communication technology as well as physical mobility and transportation, has enabled the emergence of a global market, especially for finance (Rajan, 2007; Tuca, 2014). It has enabled capital to move across the globe at the click of a mouse, and it enables ever-larger amounts of trade. Furthermore, much of the speed by which shocks can now traverse the globe has been enabled by information technology (Tuca, 2014).

The second factor is ideology. Rajan (2007) describes this ideological cause in terms of two developments: the push by international institutions like the WTO towards liberalisation of formerly closed economies, and secondly a shift towards laissez-faire thinking among governments, resulting in vastly different economic policy. Stiglitz (2000, 2002) agrees, noting especially the importance of ideology for the push towards liberalisation of financial and capital markets. Furthermore, he deems a rejection of the dominant ideology of the IMF and other international institutions a necessary condition for a country’s successful participation in globalization, global finance and global trade. Tuca (2014) lastly emphasises the role deregulation has played in enabling the emergence of a global financial market. She also argues that this deregulation has increased the vulnerability of those economies to shocks, which exacerbated the spread of the 2008 crisis.

These two factors can be seen as two parts of one essential factor which I term ‘accessibility’. It is the accessibility of other societies and social domains, the ease by which they are able to interact with other societies and social domains across the world, which is increased by better technology and greater socio-economic openness. This lays at the heart of globalization.

To what degree is globalisation new? Held et al. (1999) have devoted an entire book to arguing that it is not entirely new, though they do argue that in recent years it has taken on an unprecedented magnitude. According to Held et al., the global interconnectedness we see today is a continuation of trends that emerged in earlier eras, a strengthening of a

phenomenon that has been manifesting itself since the days of the Roman Empire. The ease and speed at which information, people and goods move across the globe in our time is, however, entirely unprecedented, with the internet as a good example. While trade and transmission of information were present in earlier eras, it has never before been quite as quick. It is the technological factor of globalization, mentioned by Rajan (2007) and Tuca (2014), that has made this possible. Furthermore, the dimension of ideology is even more distinct from earlier times. While trade is, as mentioned before, nothing new, the context of modern economics is. We now have a group of highly developed service-based economies importing great volumes of industrial and agricultural products to sustain their domestic consumption (Held et al., 1999). This reflects the fact that the world economy today is highly specialized and interconnected through flows of trade and finance. Furthermore, the fall of the Soviet Union in 1991 removed any alternative power bloc capable of withstanding the liberalization push that Stiglitz (2000, 2002) denounces so strongly. In summary, what makes the current epoch different from earlier times is that the accessibility dimension, which is the root of globalization, is now fundamentally different. Countries across the world are now more easily reached by globalisation and generally feature fewer obstacles to this than ever before.

We now have the following elements of globalization laid out. Firstly, it is intertwined change across the social spheres. Secondly, it is characterized by an increase in international economic openness and an increasing intensity of global trade and finance. Thirdly, it has been made possible by recent technological and ideological developments leading to an unprecedented speed and ease of transmission of people, goods and technology.

From these elements, I would define globalization as follows: Globalization is the continuous and intertwined development of the social spheres. These developments occur both within and between countries, but as a result of the increased international interaction we saw before. While this kind of intertwined development has indeed been ongoing since the dawn of human civilization, it has now fundamentally different. Ever since the 1970's, the world has seen an increase in accessibility, as both technical and political barriers have been reduced. Though global connectedness and trade are nothing new, the current intensity and ease of transmit with regards to people, goods and information is unprecedented. This new phenomenon has steered the development of the social spheres in a new direction. While it is not distinct in its causes or effects, globalization can be seen as a common factor that is present in the development of each of Alexander's social spheres; politics, culture, economics and society itself. It is in the intertwined change in these spheres, under the influence of changes in technology and ideology and their resulting increases in global accessibility, that globalization is manifested.

If summarized in one sentence, globalization is the development of the economy, society, politics and culture of countries as a result of increasing international interconnectedness and interaction between countries, businesses and other actors.

This is summarized in image 2.1.1 below:

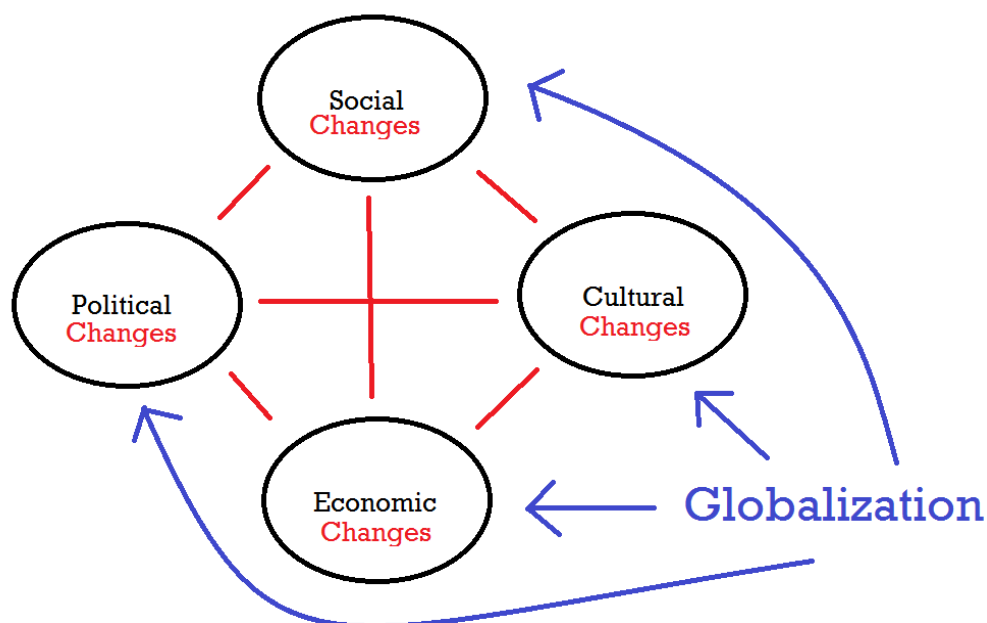


Image 2.1.1 – Globalization and the social spheres

This image illustrates how each of the spheres influences others. Globalization affects each sphere also, and their interconnected nature results in secondary effects spreading through the interactions between the spheres.

2.2 – On the theoretical definition of macroeconomic fluctuation

The effects of a boom or crisis are revealed in deviations from the long-term trend GDP per capita values. Three important dimensions of a fluctuation may be distinguished – firstly the frequency, or the general volatility of an economy. Secondly, there is the severity of the fluctuation – the magnitude by which actual GDP per capita fluctuates from its trend level. The third dimension is the duration of the fluctuation, the amount of time until actual GDP per capita once again follows the trend prediction.

In the theoretical chapter, chapter 3, I attempt to identify the effect of five main ‘channels’ through which globalisation affects the economy on each of these three dimensions. While it was my intention to also test each of these statistically in chapter 5, data and time limitations did not permit testing the duration of the fluctuations. However, I am able to draw conclusions regarding the frequency and severity of fluctuations. As for the duration dimension – some potential theoretical effects are identified in chapter 3, but they cannot be tested or verified empirically in this thesis.

2.3 – Summary of definitions

Now, for clarity’s sake, let us shortly summarize the definitions of globalization and boom or crisis.

Globalization consists of changes in the economy and other social spheres as a result of the growing worldwide interconnectedness. This is brought on by an increase in accessibility through technological development and a decrease in political barriers to openness. These changes contain both the direct effects of globalization and secondary effects flowing through changes in other social spheres.

An economic boom is a positive deviation from trend GDP per capita of the actual GDP per capita. This can be easily operationalized by estimating the percentage by which the actual GDP per capita for any year deviates from the predicted trend GDP per capita.

An economic crisis, being the other side of the coin compared to the boom, is a negative deviation from long-term GDP per capita of the actual GDP per capita.

Chapter 3: The theoretical effects of globalization on the economy

Globalization is one of the great developments of our time. In the words of Held et al. (1999), it is “the widening, deepening and speeding up of worldwide interconnectedness” (1999:2), which naturally has bearing on the economy. Globalization is a concept that contains many meanings and definitions, depending on who you ask. Care should be taken that globalization is not conceived as something abstract, something ‘out there’ and wholly separate from our subject matter here. Globalization is a collection of effects and developments over recent decades that are fundamentally intertwined, as we discussed in the previous chapter.

In this chapter, the theoretical channels of globalisation to the economy are explored. These channels each have implications for the severity, duration and frequency of fluctuations. By exploring these effects as identified by the literature, a tentative first answer to each of our three sub-questions might be given. If these theoretical effects hold up in reality, however, will be tested in the empirical chapters to come. The ‘effects on the economy’ discussed here are not really ‘effects’ in the strictest sense, as there is no definitive cause – they are ways in which the economy has changed during the period we call globalization, influenced by developments in other domains which occurred in the same time period.

Five channels in particular are explored. Each of these has implications for economic fluctuations themselves, and also for economic growth and development as a whole. The channels are, respectively, international trade, international finance, prices, technology and migration. Each will be examined in turn in the sections of this chapter. Lastly, the effects of globalization as a whole, as a sum of the five channels’ effects, on the severity, duration and frequency of economic fluctuations are summarized.

First, a short overview of the literature on globalization and economic booms or recessions. Several works discuss this connection. Bordo & Murshid (2001) examine whether, as a result of globalization, crisis contagion has increased. They find no evidence for this hypothesis. However, the research of Bordo & Murshid mainly consists of a comparison between the 1990’s and the 1890’s. Held et al. (1999) show that globalization enjoyed a peak during the 1890’s. Comparing two peaks might be misleading when estimating the effects of globalization. Combined with the possibility that globalization is an ongoing process that has changed and intensified since the 1990’s, it might be that the contagion has in fact increased during recent years, even when compared to the highly globalized 1890’s.

With regards to frequency, however, Bordo et al. (2001) find a considerable increase since the collapse of the Bretton Woods system. They find that frequency has doubled compared to the Bretton Woods period. Only the interwar period displays a higher frequency of crises than the current period. (Bordo et al., 2001). Reinhart & Rogoff describe a correlation between capital mobility and economic volatility. In particular, they highlight five periods of simultaneous national debt defaulting that occurred in history, each of which was the result of an increase in capital mobility (Reinhart & Rogoff, 2008a).

It may also be that it is not just the frequency, duration or severity of recessions that is affected, but also the type. Bordo & Eichengreen (2003) find an increase in so-called ‘twin crises’ of the sort distinguished by Reinhart & Kaminsky (1999). A twin crisis is a coincidence of a currency and a banking crisis. The consequences for an economy are much more severe than they would be for a singular crisis, because the banking and currency crises deepen each other and hamper post-crisis recovery. Bordo et al. (2001) find that a twin crisis

results in a considerably longer recovery time, and that recovery time has increased in recent years.

3.1 – Globalization and trade

Table 1 provides a broad overview of the literature on the effects of globalization on trade. These works will be discussed in more detail below, in table 3.1.

Paper	Trade effect	Channel	Conditional on
Held et al. (1999)	A major increase in international trade, leading to specialization and technology transfers	The emergence of global markets and a reduction in trade barriers	
Martens & Amelung (2010)	Free flows of trade, capital, technology, labour		
Rodriguez & Rodrik (2001)	Doubtful effects at best		
Stiglitz (2002)	Either net gain or net loss from trade	Forced trade openness or heavy subsidies	Location: US & EU benefit, sub-Saharan Africa loses
Wacziarg & Horn Welch (2003)	Positive growth effect of trade	Increased investment & capital accumulation	Institutions, absence of upheaval, magnitude of reforms, general macroeconomic policy

Table 3.1: Trade effects of globalization

According to Held et al. (1999), the trade aspect of globalization entails a reduction in barriers to trade such as tariffs or quotas, as well as increasing international competition between businesses.

Trade facilitates specialization and transfers of technology. Furthermore, trade increases competition, compelling domestic firms to strive for greater productivity, and engenders a general transformation of domestic economies. Exporting industries benefit from trade while import-competing industries suffer, and in this way resources are reallocated across an economy, theoretically resulting in greater allocative efficiency (Krugman et al., 2014). In this way, trade is often theoretically conceived to have generally beneficial effects, and enhancing growth. This is also highlighted by Martens and Amelung (2010). Wacziarg & Horn Welch (2003) also find significant positive effects of trade, stemming from increased investment and capital accumulation under certain conditions. However, almost half of Wacziarg & Horn Welch's sample finds zero or negative growth effects. It is concluded that the growth effects of trade are contingent on a number of factors, including institutions in the broadest sense, the absence of political upheaval, the magnitude of reforms undertaken as well as general macroeconomic policymaking (Wacziarg & Horn Welch, 2003).

Doubt about this positive view, however, are held by others. Rodriguez & Rodrik (2001) argue that the positive effects of trade openness originate from a misidentification that proxies trade openness as a number of policy variables that themselves also have growth effects. Stiglitz (2002) argues that trade openness in the modern world only goes one way: developed nations force trade openness on others while continuing to protect their own industries with tariffs. The World Bank's calculation of gains from trade after the 1994 Uruguay round

showed that the US and Europe benefitted from trade, while sub-Saharan Africa suffered a loss. It is Stiglitz's contention that the one-sided character of free trade is the cause of this.

3.1.1 Trade and economic fluctuations

Trade also has bearing on economic booms and crises. The effects identified in the literature will be summarized in table 3.2 below, and then discussed more thoroughly.

Paper	Boom/crisis effect	Channel	Conditional on
Bordo & Murshid (2001)	Potentially event-spreading effect		
Held et al. (1999)	Increased spillovers of effects	Larger exposure to foreign shocks	Specialization
Held et al. (1999)	Reduced mitigation of negative effects of trade	Reduced social security	
Rodrik (1997)	Double. Can have positive effects or negative		Positive effects are conditional on the mitigating of negative effects through social security
Tuca (2014)	Global spread of 2008 crisis	Dependency on trade	

Table 3.2 – Boom/crisis effects of trade

International trade can function as a channel for shock spread. Held et al. (1999) show how this works through export demand and import prices, which affect domestic economies even if the shock occurred elsewhere. Held et al. (1999) argue that international economic specialization increases the potency of this channel. Indeed, they show an increasing correlation of economic fluctuations in major economies (Held et al., 1999). Tuca (2014) highlights the role trade dependency played in the spread of the 2008 credit crisis. According to her, more open countries were hit harder.

3.1.2 Trade and policy

Trade openness correlates with certain policy changes that have bearing on economic fluctuations. According to Held et al. (1999), export sector employers are more likely to resist social security programme implementation, which through the frequent decrease of low-skill employment prospects in developed countries become more necessary. Rodrik (1997) emphasises the need for policy to mitigate the negative consequences of trade openness in order to maintain public support. Ironically, these very policies become more and more discouraged, as Held et al. show. This fits in well with the so-called Washington Consensus of free trade-related reforms, as discussed in Williamson (1990), which prescribes an agenda of government withdrawal from the economy, often as a condition for receiving financial aid from the Bretton Woods institutions.

Considering how the IMF's conditional loan programmes usually entail enforcing Washington consensus-based reforms, the implications are disturbing. Furthermore, as we saw above, openness to trade itself also implies greater resistance to, and smaller scope for, social security. Stiglitz (2000, 2002) also highlights the undemocratic nature of the IMF-induced reforms in developing countries. If we consider all this, a rather disturbing picture emerges. The IMF would enforce its Washington consensus reforms undemocratically, without consulting with local populations or (according to Stiglitz) governments themselves. Some people would benefit from these reforms and from trade, while others would lose. The institutional reforms Rodrik emphasises would not be enacted as they contradict the

Consensus. This means that the vulnerability of the economy is increased considerably, even as trade openness would enhance volatility as we have seen. The increased volatility of the economy, as well as the structural adjustment that follows trade, may well push many people into poverty. A social safety net, which might have preserved some purchasing power and quality of life for those people, would either be or shortly become non-existent due to the IMF's reform programme. Those people that bear the brunt of the adverse impacts would be unable to express their discontent democratically due to the nature of the IMF's intervention. It is a rather grim picture where a small group of people, reaping the benefits of trade openness, lord over an impoverished population that is unable to withstand the pressures of structural adjustment and economic instability, and unable to voice their dissent. It is also speculation based on theoretical possibilities, but disturbing nonetheless.

3.1.3 Summary of effects through trade

International trade has a number of implications for economic fluctuations.

With regards to frequency, trade provides a channel for the spreading of shocks, positive or negative, internationally through changes in export demand (Held et al., 1999). The more specialized an economy is, the more potent these effects might become (Held et al., 1999). It is for this reason that I theorize trade increases the frequency of fluctuations.

With regards to severity and duration, trade is however also a stabilizing factor. In times of economic crisis, stable demand for export, which might even increase if the real interest rate is adjusted downwards (Sorensen & Whitta-Jacobsen, 2010), provides a stable source of income from parts of the world that are not affected by the economic crisis. In this way, the crisis is shortened and its effects lessened.

On the other hand, if central banks increase real interest rates in response to rising inflation during an economic boom, trade might be reduced. This would dampen economic growth and lead to a quicker return to steady-state values (Sorensen & Whitta-Jacobsen, 2010). In both cases, the severity and duration of the fluctuation are reduced.

3.2 – Globalization and finance

According to Held et al. (1999, chapter 4), the international flows of money at the time of writing was almost 1.5 trillion USD per day. Worldwide average yearly per capita income was around 10,000 USD in 2016 (IMF, 2017), which I will approximate as \$1000 a month for sake of simplicity. Monthly financial flows, when we say a month contains on average 30 days, are \$45 trillion. Let us also approximate the world population as 7 billion. 7 billion people would earn 7 trillion USD in a month. Though the math here is very approximate, it shows that financial flows are almost 7 times as large as the world's total income. This is a colossal sum, illustrating the importance of financial markets in the contemporary economy.

Financial openness consists of a dismantling of capital controls by governments, and the constitution of one single global financial market. Another important aspect of financial globalization emphasised by Held et al. is that exchange and interest rates are increasingly determined at the international or global level.

3.2.1 The economic effects of financial openness

Before we discuss the effects, a distinction needs to be made between financial liberalization and financial development. Financial liberalization entails the retreat of government and policy from financial markets through measures such as the release of capital controls. Hence, it mainly involves governments. Financial development, on the other hand, relates to

improvements in the quality and functioning of financial institutions themselves. Many of the beneficial effects of financial liberalization occur through an improvement in financial development (Demergüç-Kunt & Detragiache, 1999).

The following table gives a broad overview on some of the literature on financial liberalization and growth:

Paper	Growth effect	Channel	Conditional on
Arteta et al. (2003)	Positive growth effect of capital account liberalization		Macroeconomic stability
Bekaert et al. (2008)	Positive growth effect of equity market liberalization		Economic reforms, legal conditions, investment climate, financial development
Bekaert et al. (2008)	Positive growth effect of capital account liberalization		Economic reforms, legal conditions, investment climate, financial development
Demergüç-Kunt & Levine (2008)	Growth effects of financial development	Positive when long-term growth determinants are affected	
Demergüç-Kunt & Detragiache (1999)	Positive growth effect of financial liberalization	Increase in financial development	Absence of banking crises
Edison et al. (2002)	Growth effects of financial openness	Positive when facilitating risk-sharing, specialization & capital allocation. Negative when inducing capital flight.	
Edwards (2001)	Positive growth effect of capital mobility		High economic development
King & Levine (1993)	Positive growth effect of financial development		
Levine (2001)	Positive growth effect of financial liberalization	Increase in capital access, greater competition in financial sector	
Rajan & Zingales (1996)	Positive growth effect of financial liberalization	Decrease in costs of external finance	
Rodrik & Sabramian (2009)	Negative growth effects of financial liberalization	Exchange rate appreciation through capital inflows	Constrained credit demand rather than constrained credit supply

Table 3.3: Overview of literature on growth effects of financial liberalization

As the table shows, many of the studies undertaken on this subject show positive growth effects of financial liberalization and its components, capital account liberalization and equity market liberalization. A number of things bear pointing out, however.

The financial sector provides five main functions for the economy, which are improved by financial development: information production, investment monitoring, risk management and distribution, providing a channel from savings to investment and a general easing of commerce (Demergüç-Kunt & Levine, 2008). Lastly, financial development may affect fundamental variables affecting an economy's growth path, including the savings rate, investment and technology (Demergüç-Kunt & Levine, 2008).

However, many of the positive effects found depend on conditions, including economic development (Edwards, 2001), the absence of crises or other economic upheaval (Arteta et al., 2003; Demergüç-Kunt & Detragiache, 1999), as well as policy factors (Bekaert et al., 2008). Rodrik & Sabramian highlight two main assumptions underlying the hypothesis of positive growth effects from financial liberalization: that developing countries are capital-constrained, and that the risks of financial liberalization, which we will discuss later, can be mitigated by prudent policy (Rodrik & Sabramian, 2009). Indeed, the constraint assumption is shared by Rajan & Zingales (1996), Levine (2001) and Bekaert et al. (2008). Bekaert et al. (2008) also emphasises the role of policy. Rodrik & Sabramian's argument that the growth effect of liberalization might be negative builds on their view that developing countries may not be constrained in capital *access*, but rather in capital *demand*. In such a case, the exchange rate appreciation caused by inflowing capital further discourages investment and exacerbates the problem (Rodrik & Sabramian, 2009).

3.2.2 *Financial openness and economic fluctuations*

Numerous writers, including Jean-Yves & Loïc (2013), Stiglitz (2002), Tuca (2014), Held et al. (1999) emphasise the volatility of global finance and free capital markets. This has bearing on the real economy also. Jean-Yves & Loïc (2013) describe how, since the 1970's, many producers in the real economy have come to increasingly rely on financial and stock markets for finance. This dependency creates a channel by which shocks in the financial sector, if they affect interest rates or the willingness of banks to provide loans, may quickly spread to the real economy. In this way, the volatility of global financial markets also has bearing on the fluctuations occurring in the real economy.

It is the volatility of capital markets that is at the heart of Stiglitz's (2002) scathing criticism, and it is also a topic to which we will return in abundance over the course of this thesis. Because capital is tremendously mobile, being able to move across the globe at the click of a computer mouse, the capital market is very fickle. It is subject to trends and sudden shifts in investor opinions regarding one particular country, which may give rise to large-scale capital withdrawals with devastating results for national economies. Stiglitz (2002) in particular calls the financial markets 'arbitrary' and 'capricious'.

Capital flight is therefore an important risk associated with financial liberalization. Cuddington (1986) describes its effects: rapid depreciation of the exchange rate, fluctuating interest rates if the central bank attempts to entice capital to remain, potential depletion of foreign currency stocks if the central bank attempts to stabilize the currency, and a drop in tax revenues. The tax revenue drop in particular is problematic, since it may push a government into austerity or debt insolvency. If the government borrows more to offset the drop in revenues, the marginal costs of borrowing in the country will increase and investment will be discouraged. The final result is recession, and in the case of the South East Asian crisis discussed by Stiglitz, waves of bankruptcies. Bordo & Murshid (2001) describe a number of crises occurring up to the Second World War, emphasising the role of capital flight as a common cause.

A second risk associated with financial liberalization is the risk of banking crisis (Demergüç-Kunt & Detragiache 1999). A banking crisis stems from a sudden loss of assets or liquidity among banks, inducing problems with servicing debts which may induce liquidity shortages in other banks also, as well as panic and bank runs among the public (Reinhart & Kaminsky, 1999). Simply put, a banking crisis undermines the viability of the financial system by

draining it of assets and reserves, making a large-scale government intervention in the financial sector necessary.

According to Demergüç-Kunt & Detragiache, financial liberalization increases the likelihood of banking crises by increasing the ability of banks to take on risk, especially when limited liability encourages excessive risk-taking on part of the financial actors. Stronger institutions, however, can mitigate the increasing risk of banking crises. Overall, Demergüç-Kunt & Detragiache find positive growth effects of financial liberalization, but only in countries where no banking crisis occurred. If a banking crisis did occur, it cancelled out the positive growth effects. Reinhart & Kaminsky (1999) argue that the incidence of twin crises, which we discussed before, is a result of financial liberalization. If this is the case, it begs to doubt the positive growth effects found by so many writers. Not only would crises become more likely, they would also become more damaging. Indeed, as we saw before, not only do rapid increases in capital mobility usually spawn global episodes of economic upheaval (Reinhart & Rogoff, 2008a), crises, and in particular twin crises, have become much more frequent in the post-Bretton Woods period (Bordo et al., 2001).

Held et al. describe how the increasing enmeshment of financial institutions and banks into a network of mutual debt leads to a structural weakness. A collapse in one bank or a group of banks can, through defaulting on debts held by other banks, quickly spread across the financial sector, with tremendous effects for the economy. It is precisely this possibility which has given rise to the term 'too big to fail' (Jean-Yves & Loïc, 2013). Simply put, banks now exist whose collapse would endanger the integrity of the entire financial system as well as the real economy which, as we saw before, is now intrinsically linked to it.

3.2.3 Financial openness and policy

Financial openness also has important implications for policy. Sorensen & Whitta-Jacobsen (2010) emphasise the role of monetary policy in safeguarding macroeconomic stability. However, according to Held et al., since government control on the money supply has been weakened, this policy is vulnerable to global financial fluctuations. Countries have become more pressured to pursue lean 'monetarist' policy with a reduced emphasis on welfare and social safety nets. Expansionary policy of the Keynesian sort can quickly lead to capital flight or increasing interest rates. The scope for anticyclical policy is hence fundamentally reduced (Held et al., 1999). In the case of pegged interest rates, a liberalization of capital controls also greatly increases vulnerability to speculative attacks (Held et al., 1999; Sorensen & Whitta-Jacobsen, 2010). The emergence of a global financial market compelled many governments to embrace more 'market-friendly' policy, at the expense of the welfare state. Elements of this market-friendly policy mentioned by Held et al. are price stability, reductions in public spending and debt, reduced corporate taxation, privatization of government-owned businesses as well as labour market deregulation (Held et al., 1999). This is also intrinsically linked to the effects of trade we discussed before, where exporting entrepreneurs argued for a safeguarding of international competitiveness. The market-friendly policy discussed above safeguards a different kind of competitiveness, by securing the appeal of a country for foreign investors.

A second important dimension of the policy effects is distinguished by Jean-Yves & Loïc (2013), though it is ambiguous whether this is actually cause or effect. Jean-Yves & Loïc describe how many governments since the 1970's have come to embrace laissez-faire ideology. Deregulation, which accompanied this ideological shift, has facilitated the emergence and of the global financial market. To address the weaknesses of this global

market, which became all too apparent in 2008, Jean-Yves & Loïc call for greater international cooperation in managing this market.

Stiglitz (2002) discusses the impacts of financial globalization on the welfare state. He states that capital and financial market reforms can lead to significant welfare losses through several channels. Firstly, through the aforementioned volatility, the risk of recession is increased – and recessions always impact the poor disproportionately. Secondly, the potential risk of capital flight compels governments to disproportionately tax the lower and middle classes, who are not quite as mobile. Thirdly, structural adjustment programmes of the sort favoured by the IMF heavily favour the curbing of inflation. Interest rates are raised, which reduces job creation and productive investment.

3.2.4 Summary of effects through finance

International finance has several implications for economic fluctuations.

With regards to frequency, the role of international finance as both shock-creator and shock-spreader is emphasised by many authors (e.g. Tuca, 2014; Jean-Yves & Loïc, 2013 and Stiglitz, 2002). According to Jean-Yves & Loïc (2013), the dependency of real-economy producers on capital provided by the financial markets also provides a channel for shocks in the financial sector to spread to the real economy. For this reason, I state that international finance increases the frequency of economic fluctuations.

The effects of finance on duration and severity of economic fluctuations function mainly through effects on policy. By reducing the scope for activist economic policy (Held et al., 1999), inducing deregulation (Jean-Yves & Loïc, 2013) and leading to welfare losses (Stiglitz, 2002), financial globalization undermines several mechanisms that might've otherwise dampened the impact of an economic crisis, both increasing its effects and leading to slower recovery. On the other hand, deregulation may stimulate the economy during booms as well. It is for this reason that I state that international finance increases the duration and severity of economic fluctuations.

3.3 Globalization and prices

Globalization has bearing on prices and, through prices, affects economic booms and crises. This section discusses several effects of globalization on prices and of prices on economic booms and crises, flowing through primary product price trends and price volatility.

The first is the most straightforward: an increase in competition, which is what global trade implies (Held et al., 1999) leads to lower prices in more heavily contested products. Hence, global trade implies a terms of trade loss if a country lacks comparative advantage for heavily contested goods. This effect may be avoided if the economy were diversified, but global trade also implies an increase in specialization (Held et al., 1999), which is the exact opposite. These two effects, price drops due to competition and a tendency to increase specialization, have troublesome implications for developing countries in particular. As many developing countries are mainly involved in primary resource exploitation, which features considerable competition, their terms of trade are under pressure.

Many primary products, in particular agricultural products, feature high price volatility (Banse et al., 2008; Jacks et al., 2011). According to Banse et al., the high volatility of agricultural prices is a consequence of the characteristics of agricultural markets, in particular its inelastic demand and supply-curves. However, the long-term trend of agricultural prices was in decline

due to rapid technological advancement, up until 2006-2007 when they suddenly skyrocketed. The constant fluctuations of oil prices are another example of the volatility of primary products. According to Jacks et al. (2011), since 1960 the primary product-exporting regions of South America, Asia and Africa experienced three times as much terms-of-trade volatility than the manufactured goods-exporting countries.

The sudden rising and falling in prices translates to similarly sudden increases and drops of national incomes in particular, which in the case of developing countries often depend to a significant degree on export taxes levied on primary product exports, due to the ease of implementing an export tax (Kasara, 2007). Furthermore, agricultural exports are often the most significant sources of foreign exchange (Kasara, 2007). Thus volatility in agricultural prices may translate to volatility in national incomes, imperilling debt servicing and public spending. This mechanism is described by Bordo & Eichengreen (2003), who conclude that price fluctuations in primary products are a major cause of economic recessions ever since the Napoleonic Wars. For countries heavily reliant on export of primary products such as food or other resources, fluctuations and especially rapid drops can severely affect the solvency of debts held by the national government or local entrepreneurs, which in turn can lead to a wave of bankruptcies severely affecting the viability of a national economy.

Now recall the terms of trade pressure discussed previously. If, as Kasara argues, agricultural taxation forms an easy source of revenue and important source of foreign exchange for national governments, and if, as Banse et al. argue, agricultural prices are also steadily pressures downwards through the combination of inelastic demand and technological advancement, then the downward pressure on agricultural prices translates into a systematic drop in developing countries government revenues, provided they are unable to diversify their production and income sources. Such a drop in income has considerable effects for the resilience of an economy to the effects of economic recession. Less money for social programmes or expansionary policy may well translate into more severe and longer-lasting recessions, since the mitigating mechanisms present in many developed countries cannot be adequately funded.

However, there is also a different effect at play. Jacks et al. (2011) examine the effects of globalization, conceptualized as an increase in world market integration, on the volatility of commodity prices. They find no evidence that agricultural price volatility has increased over time – in fact, their evidence indicates that global trade reduces price volatility. Jacks et al. suggest that this is because integration into a large global market helps stabilize the effects of small local shocks which would be felt much more strongly in the case of autarky.

3.3.1 Summary of effects through prices

To conclude, the effects of globalization on prices are twofold. Firstly, the persistent terms-of-trade losses associated with specialization in primary products may imperil developing countries and hamper their future development. The recession-mitigating mechanisms present in most developed countries are weaker in developing countries, and therefore I expect stronger crisis effects and a longer duration.

Secondly, globalization reduces price volatility. On the one hand, this reduces shocks and thus would reduce event frequency, but on the other hand globalization itself can also be a source of shocks originating from outside the country. Jacks et al. argue that the frequency-reducing effect is much stronger, but for our study here it remains to be seen. For now, the effect of globalization on frequency is ambiguous. It may be that the relative importance of both effects depends on the importance of primary product exports for that particular country. In that case,

globalization would be frequency-reducing for those countries that export large volumes of primary products, while frequency-increasing for others.

3.4 Globalization and Technology

As we discussed in the previous chapter, is technology one of the two main causes of globalization today. Technology, we have seen, reduces barriers – both in terms of making physical distance more easily traversable, and by allowing instant communication across the world (Rajan, 2007; Tuca, 2014). However, the effects are not unidirectional. Globalization itself affects technology as well, especially through enabling a faster global diffusion of technology through trade.

There are several channels through which technology may spread. The first channel is the promoting of exporter firms when a country opens up to trade (Held et al., 1999). Exporter firms, being usually larger and more productive than those who do not (Bustos, 2011; Bernard & Jensen, 1997), are much more able to invest in high-technology capital. The opportunities offered by trade also incentivise firms to increase technology (Bustos, 2011). Domestic firms who compete with imports are also incentivised to invest more in research and development (Clark et al., 2011).

The third and most important channel is the availability. As we saw, technology makes for greater ease of transport for people, goods and knowledge. The reduction of trade barriers associated with globalisation (Rajan, 2007) makes for greater ease of access of foreign goods, which may embody advanced technology. Thus, technology spreads much more easily as a result of globalisation – both in its physical form embedded in products, and as knowledge (Helpman, 1997).

While these effects are important to mention and have implications for the growth rates of countries, they do not have direct bearing on economic fluctuations of the sort we are concerned with in this thesis.

3.4.1 Does technology cause economic fluctuations?

The question is, then, whether technology has implications for the economic fluctuations this thesis is concerned with. Many macroeconomic models, such as the Solow growth model, consider technological growth to be an important factor in determining long-term productivity growth, together with population growth (Krugman et al., 2014).

Two main schools can be distinguished with regards to the causing of short-term shocks by technology.

The first school, the New Keynesian school, assumes shocks are caused mainly by demand-side factors such as business confidence and government expenditures (Romer, 1993). Considering how wages are sticky in the short run but demand for goods is not, the disparity between the two provides an explanation for the existence of involuntary unemployment: in response to a demand shock, labour demand falls and a disparity emerges between labour demand and labour supply (which is unemployment) until the nominal wages have adjusted (Romer, 1993).

The second school, the Real Business Cycle school, assumed that rather than demand-side factors it is supply-side factors that drive short-term shocks. One of the most prominent of these is the technology shock, which we are concerned with here (Plosser, 1989). Thus, the Real Business Cycle school does, in contradiction to the New Keynesian school, hold that

technology is an important source of short-run shocks in addition to determining Solow's long-term growth path.

Several studies test the effects of technology as shock creators. Comin et al. (2009) look at the effects of expectations. According to their work, expectations of productivity growth in the near future serve as positive shocks by stimulating the amount of hours worked, as well as output and investment. They find that 'innovation shocks', as they call it, explain a third of output fluctuations. However, their work implies that it is future expectations as a more general factor, of which expected technological growth is a part, that is a predictor for economic fluctuations rather than technological growth in isolation.

Gali (1996) disagrees. He argues that the data displays a very poor correlation between productivity growth and hours worked. Gali & Rabanal (2005) also disagree strongly with the contention that technology shocks play a major role in the business cycle. They offer a broad overview of research regarding this relationship, and conclude that the majority of the evidence argues against the view of Comin et al. and others. Their evidence points to a negative labour effect of productivity increases, which persists for about a year after the initial shock. However, this effect plays only a very small role in determining the business cycle fluctuation pattern: Gali & Rabanal show that the fluctuations in labour input and economic output caused by permanent productivity shocks (that is, by technological growth) only explain 5% and 7% of those variables' business cycle fluctuations.

3.4.2 Technology and shock spread

Unlike the somewhat controversial hypothesis that technology may or may not be a cause of shocks, its effect in spreading shocks is well-established. We have seen before that technological growth goes hand-in-hand with globalization as a whole (Rajan, 2007; Tuca, 2014). Tuca (2014) discusses how technology, by increasing the speed of global financial transfers, played an important role in the rapid spread of the 2008 Credit Crisis. Much of the contagion associated with financial markets, which we discussed before, has been facilitated by advances in technology. Thus, through affecting financial markets and enabling global trade, technology plays an important role in the global spread of economic crises. Trade, likewise, has been enhanced to a significant degree by advances in technology. For a discussion of the effects through finance and trade, please refer back to their respective sections.

3.4.3 Summary of effects through technology

Whether technology is a source of shocks or not is disputed. Therefore, for now the effects of technology on frequency is considered ambiguous.

Effects on duration and severity were not apparent in the literature.

3.5 Globalization and Migration

Migration is now, more than anything, a politically contentious issue – to a much larger degree than the channels discussed earlier. It is also strongly connected to globalization. In this section we will first discuss the connection between globalization and migration, and then the effects of migration on the economy. Lastly we draw inferences from these two elements to hypothesise the effects of migration on the economic fluctuations with which this thesis is concerned.

3.5.1 Globalization and migration

Held et al. (1999) argue that migration has increased tremendously since the second world war. Nowadays, they say, every country in the world is to some degree impacted by the arriving and departing of people and their labour power. But the migration Held et al. (1999) see nowadays is different in a few key ways from migration in earlier periods in history. Firstly, they see an increase in high-skilled migrants. As those people have to come from somewhere, this leads to a 'brain drain' in the global South as those people with the best prospects seek greener pastures in developed countries. Secondly, the series of civil wars that have swept Africa since the decolonization period have led to an increase in the number of international refugees and asylum seekers, both regionally and globally. Lastly, Held et al. (1999) see a large increase in temporary migration – that is, tourism and other recreative travels.

With regards to magnitude, Held et al. (1999) show how modern migration is now more geographically extensive than ever before, owing to technological advancements facilitating the easy transportation of people over large distances. While in terms of absolute numbers, modern migratory flows are greater than ever before, in terms of population proportions it is smaller than migration in the pre-WW1 era (Held et al., 1999; Colic-Peisker, 2017).

The character of migration is now also fundamentally different. Whereas Held et al. (1999) argue that migration in earlier epochs was mostly a regional affair, owing to limited means of transportation, it is now becoming truly global. Never before has transportation been so easy and so accessible, and this translates to truly global, intercontinental migrant flows.

Air travel, according to Held et al. (1999), is an important factor in making migration easier, faster and cheaper. This has particularly been of importance for the high-skilled migrants.

3.5.2 Migration and the economy

Migration has several impacts according to Held et al. (1999). The first is demographic, by providing an influx of usually young people whose presence can offset the rising average age of native Western populations. In the absence of migration, due to low birth rates, the 'dependency ratio' of elderly vs. working people tends to rise, putting pressure on the welfare state. It can be argued that migration plays a vital role in maintaining the viability of the welfare state despite low Western birth rates. (Held et al., 1999; Colic-Peisker, 2017)).

With regards to labour, migration has several effects. Firstly, for the source countries, the departure of many people reduces the unemployment rate by lowering the number of people per job (Held et al., 1999).

On the other hand, we've seen before that modern migration may feature a 'brain drain', whereby the most skilled people tend to leave for more prosperous locales. While this is all nice and dandy for them, it also undermines the developmental potential of their places of birth. High-skilled work is of great importance for developing regions and countries, and if it systematically departs then the scope for development, economic or otherwise, is fundamentally reduced.

These people also go somewhere. With Western countries transitioning to a tertiary, knowledge-based economy, the high-skilled 'brain drain migrants' from elsewhere make for a very attractive influx of knowledge, talent and ability (Colic-Peisker, 2017). However, difficulties in translation and adjustment mean that a considerable segment of this knowledge

is lost – something Colic-Peisker terms the ‘brain waste’ (2017: 6), so the beneficial effects might be somewhat more limited than what would otherwise be expected. It also means a net loss for the world economy, as the total world skill level would have remained higher if the brain drain migrants had stayed in their home countries, where they would not be subject to brain waste.

Colic-Peisker (2017) argues that, besides the demographic impacts of migration, migrants also provide a convenient source of low-cost unskilled labour for businesses to profit from. The Solow growth model holds population growth to be one of the key determinants of long-term growth (Krugman et al., 2014). However, migration does not only present a boost to population growth, it also represents an influx of people in their rawest form. In this way, the capital/labour ratio is reduced and the marginal productivity of capital increased. It can be argued that migration increases the productiveness of investment.

One more element that is important to mention is remittances. Remittances, at their simplest, are portions of a migrants’ income that are sent back to the family members that remained behind (Kane, 1995). According to Orozco (2002), the remittances have played an important role in enmeshing underdeveloped countries in the global network of globalization. Furthermore, the remittances affect trade and economic growth in the countries to which they are sent (Orozco, 2012). The importance of remittances for national economies is considerable, though it varies from country to country. Orozco (2012) shows that, for many Latin American countries in 1999, remittances made up between 2% and 25% of GDP. Given this magnitude, they may be able to provide something of a counterbalance to the negative brain drain effects we’ve seen before.

Overall, it can be said that migration has broadly positive effects on the host economies, while the sender economies face ambiguous results (Colic-Peisker, 2017). Host economies benefit from larger population growth, a lower dependency ratio, and an influx of high-skilled workers. Sender economies, while enjoying a reduction in unemployment from migration, also face a ‘brain drain’ which may, in the long term, significantly reduce the scope for economic development, though this may be offset by remittances providing extra purchasing power.

3.5.3 The effects of migration on economic fluctuations

Several effects may be distinguished. Firstly, we have the welfare state effect: through an influx of young workers and the subsequent reduction of the dependency ratio, migration helps maintain the viability of the welfare state in developed countries. In this way, though the effect on welfare states, migration would help dampen the magnitude and duration of an economic crisis.

Secondly, by providing a stable source of income that does not depend on that country’s own economy, remittances might help stabilize a national economy in the event of a local or regional crisis, possibly reducing both the length and depth of the crisis.

Pandit (1997) describes a connection between migration and the state of the economy. In times of economic prosperity, countries tend to attract more migrants while in times of crisis the flow is reduced. If we conceive of immigrants as providing a boost to marginal capital productivity as well as long-term growth, we see that a larger inflow of migrants benefits economic growth. In times of recession, the slowdown in this influx of foreign talent might reduce growth further (Pandit, 1997) and deepen the crisis. Similarly, when an economy is

booming its attractiveness might be enhanced, attracting more migrants (Pandit, 1997) and further increasing the boom. With other words, migration might be procyclical.

As a summary of effects, I hypothesise that migration is pro-cyclical during booms, boosting the size of a boom. The effects on a crisis might be more ambiguous due to the procyclical element clashing with the welfare state effects and the stable source of income in regional crises.

3.6 Summary of theoretical effects

In this section, we will look upon the sum of effects for the five channels, for each of the three dimensions of a fluctuation on which this thesis focuses. The table below summarizes these effects.

Channel	Frequency	Duration	Severity
Trade	Increasing, due to shock spread	Decreasing, due to stabilizing effects	Decreasing, due to stabilizing effects
Finance	Increasing, due to shock creation and spread	Increasing, due to policy effects	Increasing, due to policy effects
Prices	Ambiguous - increasing if country is dependent on agricultural exports, decreasing otherwise	Depends on effects on government spending.	Depends on effects on government spending.
Technology	Ambiguous		
Migration		Procyclical during booms, ambiguous during economic crises	Procyclical during booms, ambiguous during economic crises

Table 3.4 – Overview of the theoretical effects of globalization on economic fluctuations

In summary, it is clear that there is no singular ‘effect’ of globalization on economic fluctuations to be found. The examined channels have different and often contradictory effects on each of the three dimensions, which means that the final impact of globalization on economic fluctuations is, firstly, theoretically ambiguous, and secondly depends on the relative weights of each channel. In the next chapters these predictions will be tested empirically.

While I am able to statistically test the existence of a frequency and severity effect, it is not possible to test for a duration effect. This is because of data limitations.

Chapter 4: Data and methodology

In this chapter, I will discuss the data and methodology employed over the course of this research. First I will discuss the control variables used in the model. Then the data and its various sources will be considered. Lastly I will proceed to discuss the methodology and models used.

This research is conducted on yearly data covering the period 1970 – 2014. This period was chosen for two reasons. Firstly, it is in recent years that globalization has manifested itself most strongly, and therefore it is in recent years that its effects have become strongest and most apparent. The second reason is more practical, being data availability. Whereas the data from my first major source, the World Bank World Development Indicators database, goes from 1960 until 2016, the data available on the KOF website only covers the period 1970 – 2014.

4.1 – The main dependent and explanatory variables

4.1.1. The dependent variable

To analyze the effects of globalization on economic fluctuations, we need to obtain measures of these booms and crises. The most straightforward way to do this is to assign dummy variables to boom/crisis years. In order to get these dummies, I follow several steps.

Firstly, we need reference values: long-term trend GDP per capita, computed in 2010USD. To get these, I will apply the Hodrick-Prescott filter (Hodrick & Prescott, 1997). Hodrick & Prescott divide economic growth into two parts: a cyclical part which varies over time, and a structural long-term part. While the long-term part is determined by such variables as output growth, consumption and investment, the short-term cyclical part is mainly determined by changes in hours worked (Hodrick & Prescott, 1997). For different perspectives on the causes of these changes I will refer you back to section 3.4 and the rough overview of the New Keynesian and Real Business Cycle theories presented there. It is mainly labour demand that responds in the short term to economic fluctuations like those that are the subject of this research.

In the Hodrick-Prescott procedure, it is assumed that real output growth, y , consists of a cyclical part and a structural part. That is, $y = g + c$, where g is structural growth and c is a cyclical deviation from this structural growth path. The structural growth path g is then found by solving the following least squares formula wherein g is minimized:

$$\text{Min}_{\{g_t\}_{t=1}^T} \left\{ \sum_{t=1}^T c_t^2 + \lambda \sum_{t=1}^T [(g_t - g_{t-1}) - (g_{t-1} - g_{t-2})]^2 \right\}$$

(Hodrick & Prescott, 1997 p.3)

In the formula, c_t represents the yearly deviation of the actual growth rate from the long-term growth rate, that is $y_t - g_t$. T stands for time, in this thesis measured in years, while g_t represents the long-term growth trend.

A larger λ , in effect, relegates a larger part of yearly growth variations to the cyclical component, resulting in a more stable structural growth estimate by reducing the effect of short-term variations (Hodrick & Prescott, 1997). I will follow Ravn & Uhlig (2002)'s recommendation in setting the λ for yearly data at 6.25.

Having obtained our long-term trend values for GDP per capita from the trend growth estimates we got from the Hodrick-Prescott procedure, we can now turn to the second step: deviations. The deviations from long-term values are obtained by subtracting the actual GDP real per capita from the projected trend GDP per capita, in percentages. A minus sign in the deviation will represent a below long-term value, a plus sign higher than the long-term level. We will calculate these values for all countries and years.

This gives us our deviation values. We can now, based on these, assign the actual crisis and boom dummies. We compute the size of the deviation as share of predicted trend GDP per capita and assign a series of dummies based on thresholds of 3%, 4.5%, 6% and 9%. Then for each of these fluctuations onsets are computed – by which I mean that only the first year of a boom or crisis is assigned the dummy. This is because we are interested mainly in the impact of globalisation on the beginning of fluctuations. Each year assumes one of three values for our various thresholds: a -1 for a crisis onset, a 1 for a boom onset, and a 0 for the absence of either.

There is a further consideration. With regards to setting the limit for assigning dummies, a compromise needs to be considered. On the one hand, we want to set the requirements high enough to make sure the booms and crises measured are actually meaningful. These fluctuations imply increases and decreases in employment, as labour demand most strongly responds to short-term economic fluctuations, and they therefore have a large positive or negative impact on the daily lives and incomes of people living in affected economies. On the other hand, we also want enough booms and crisis dummies to safeguard statistical power.

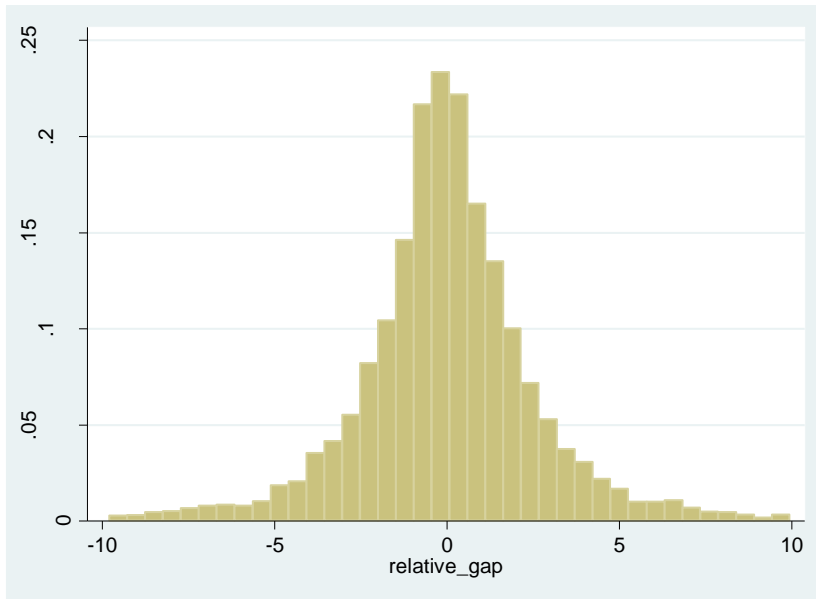
As the main threshold for the fluctuation dummies I computed, I took a 4.5% deviation of actual real GDP per capita from predicted trend GDP per capita. The choice of 4.5% was made because such an increase or drop in average income has considerable consequences for the lives and livelihoods of people living in those countries. A drop of real GDP per capita of 4.5% in a year is quite something. In comparison, GDP per capita in the Netherlands fell by 4.3% in 2009, the most severe year of the credit crisis (World Development Indicators, 2017). I will compare the effects of globalisation on a 4.5% drop to the effects of fluctuations of 3%, 6% and 9% respectively. This gives us a broad overview of the effects of globalisation on fluctuations of different magnitude, and allows us to answer the research question with regards to both the frequency of fluctuations and, if we compare the effects of globalisation for fluctuations of different magnitude, their strength.

The table below gives an overview of the occurrence of fluctuations of a particular magnitude in the dataset:

Fluctuation	Crises	Booms
3.0%	375	453
4.5%	202	252
6.0%	126	144
9.0%	57	57

Table 4.1 – Occurrence of fluctuations, by magnitude.

And a histogram gives us an overview of the overall distribution of the relative_gap measure. Note that I removed extreme values since they made interpretation of the histogram much more difficult.



Graph 4.1 – Histogram of the relative gap variable

More illustrative, perhaps, is a table of the percentiles. This is given below.

Percentile	Value
1%	-10.34
5%	-4.59
10%	-3.03
25%	-1.28
50%	-0.05
75%	1.29
90%	3.02
95%	4.50
99%	9.06

Table 4.2 – percentiles of the relative gap

As the table shows, roughly 10% of our observations have a relative gap of at least $|4.5\%|$. This is also shown by table 4.1 – the roughly 800 dummies assign make up some 10% of our roughly 8000 observations. All these are very rough and approximate numbers, but they give an idea of what exactly the 4.5% dummy means.

4.1.2 – The KOF index

To use it as a statistical regressor, globalization has to be captured in a number, an index. I will now discuss the index I will use, which is the KOF-index developed by Dreher (2006) and Dreher et al. (2008).

The KOF index (Dreher, 2006; Dreher et al., 2008) conceptualises globalization as consisting of three main dimensions: economic, social and political globalization. This fits in closely with the view of globalisation as intertwined development across several social spheres outlined in chapter 2. Indeed, on the KOF-index website it is stated that the index conceptualises globalization as a growth in transnational networks across large distances, which is made possible by flows of people, information, and goods (KOF website, 2017).

The economic dimension contains variables measuring flows of trade and investment, and economic restrictions to these. The social dimension contains both technological and cultural variables, measuring flows of information, tourism, international communication in terms of mail and telephone use, use of the Internet, financial remittances, ownership of televisions, sale of newspapers and books, as well as the presence of Ikea and McDonalds stores as a measure of what they call ‘cultural proximity’. The political dimension is mainly concerned with transnational governance, including the number of embassies, membership of international organizations and treaties, and U.N. peace mission participation. The KOF-index is a numerical index of globalization with scores ranging between 0 and 100.

It is clear that the KOF-index is very similar to this thesis in its view of globalization and its causes in particular. What is notable, however, is that their view of politics is different. Whereas the KOF-index is mainly concerned with transnational governance, the kind of politics this research is concerned with is mostly national policy. This would allow us to treat national political effects as an outcome variable, as they are not part of the KOF-index itself.

For this research, regressions will be performed using the composite KOF score, and the separate three dimensions. Descriptive statistics for each of the four KOF variables are presented below.

Variable	Obs	Mean	Std. Dev.	Min	Max
koftot	7639	41.56994	21.31277	.18	92.84
kofeco	6619	45.66227	22.93587	.09	98.55
kofsoc	7859	36.81666	23.09196	.1	93.48
kofpol	8023	44.38115	28.02504	.01	98.41

Table 4.3 – Descriptive statistics for the KOF variables

4.2 Control variables

A number of control variables are included in the model. These are variables that are significant predictors for the macroeconomic fluctuations we are concerned with, but that are not included in or correlated with the various dimensions of the KOF-index. They are included, most importantly, to reduce the size of the omitted variable bias that will undoubtedly play a role in our model – more about this in the model section. Though it is impossible to control for everything, I attempt to at least include the most prominent and common fluctuation predictors in the model.

Since a number of variables that are commonly controlled for in macroeconomic statistical research are part of the KOF-index, these will not be controlled for. Below I will shortly discuss each control variable and the reason for its inclusion. I have visually judged histograms for the distribution of each control variable, and took natural logarithms where needed to ensure the control variables are normally distributed.

Consumer price inflation (lninflation). High inflation is often considered an indicator of macroeconomic instability. This in itself makes it important to control for, as not doing so will likely induce omitted variable bias. Furthermore, inflation stabilization attempts have often failed, potentially resulting in balance-of-payments crises and resulting in monetary devaluations (Calvo & Végh, 1999). With other words, high inflation tends to induce stabilization programmes which may affect the fluctuation-proneness of national economies, because the changes in the interest rate this implies has an effect on investment and the inflow

of foreign capital (Sørensen and Whitta-Jacobsen, 2011). A natural logarithm is taken of the inflation rate in %, to ensure the variable is normally distributed.

Domestic credit to the private sector, per person (Incredit). The definition given in the World Development Indicators dataset describes domestic credit to the private sector as in financial resources that are made available to private enterprises. It has notable effects on economic activity, and reflects the measure of development of the domestic financial sector. In short, a higher value indicates that borrowers and lenders can connect more easily, leading to a greater ease of borrowing money and doing investment. This stimulates economic activity and growth. In addition, Jean-Yves & Loïc (2013) discuss how ease of borrowing can easily increase the vulnerability of an economy to shocks and the proliferation of ‘toxic’ financial assets, as well as providing a channel by which changes in the monetary economy can now affect the real economy also. Both effects have implications for the macroeconomic fluctuations this thesis is concerned with.

A natural logarithm is taken to ensure the variable is normally distributed.

Exchange rate regime (exchange dummies). Sørensen and Whitta-Jacobsen (2011) discuss how countries with more fixed exchange rates are vulnerable to speculative attacks, serving as a potential source of shocks. Note that each of the three dummies included represents a category of ‘fixedness’, going from 1 (very fixed) to 3 (very free). The reference, not included in the regressions, is the absence of an independent national currency, such as the Eurozone. Control over exchange rates can either limit or increase the ability of central banks to enact monetary policy that affects the real economy, since a more fixed exchange rate imposes certain requirements on the relationship between foreign and domestic interest rates and inflation (Sørensen and Whitta-Jacobsen, 2011).

A fixed exchange rate requires that, in the long term, domestic inflation equals foreign inflation. More intermediate levels of fixedness, such as a restricted float or free float based on inflation targeting, allow the central bank more control over interest rates as changes in the exchange rate may compensate for differences between domestic and foreign interest rates and inflation. This means the central bank is more capable of manipulating interest rates in response to fluctuations in the real economy, following the Taylor rule for example. Thus, in an economy featuring a freer exchange rate, central banks can use interest rate policy to function as an extra stabilizing agent in the economy, limiting the strength and duration of an economic crisis. (Sørensen and Whitta-Jacobsen, 2011).

General government final consumption expenditure, per person (Ingovexp). As Rodrik showed, social policy goes a long way in mitigating the negative consequences of globalization for those adversely impacted by it. I use government spending per person as a proxy for this.

Changes in government spending per person can also function as independent shocks to the economy, either positive or negative. They themselves can therefore function as a fluctuation cause. This mechanism also underpins the entire Keynesian school of economics, which holds that governments should spend during crisis times and save during boom times to reduce overall fluctuations. In what is commonly known as anti-cyclical policy. However, if governments boost spending in booming times and cut spending during a crisis, the final effect can also be pro-cyclical, reinforcing the strength of the fluctuations (Sørensen & Whitta-Jacobsen, 2011).

Both these theories have implications for our model.

Poverty (poor_country). Since globalisation is conceived as having different effects in rich and poor countries, the KOF variables are interacted with a dummy representing observations with a GDP per capita of below 3000 USD. Particularly the price channel identified in the theoretical section is much more prominent in poor countries, and in those with a high dependency of agricultural exports. Stiglitz (2000, 2002), as we saw in previous chapters, also highlights the different impacts of globalisation for richer and poorer countries – according to him, rich countries benefit more while poor countries suffer. He argues that this is mainly due to the fact that trade openness usually does not go both ways – developing nations are expected to open up their markets to foreign trade as a condition for receiving financial aid, while many developed nations continue to protect their own domestic industries, particularly in the agricultural sector. Including this variable allows us to measure these potential effects.

Real interest rate in % (lnrealinterest). Closely linked to inflation, the real interest rate correlates with macroeconomic stability and potentially to inflation stabilization attempts of the sort Calvo & Végh discuss. An increase in real interest has two effects. Firstly, investors in the country itself are discouraged by the higher cost of taking out loans, and investment drops off. On the other hand, the higher interest rate makes the country more attractive for an influx of foreign capital. Lower interest rates have opposite effects, increasing investment but discouraging foreign capital. These mechanisms are stronger in highly globalised countries where access to foreign capital is easier. For this reason, effects of real interest rates can be considered effects of globalisation by proxy.

A natural logarithm is taken to ensure the variable is normally distributed.

Political variables. Three political variables are included in the controls. All three are derived from the Polity IV index, given in (Integrated Network for Societal Conflict Research & Center for Systemic Peace, 2017a). The polity IV index assigns countries a score between 1 and 10 each year for the degree of democracy or autocracy in their governments. Two specifications were used in the estimations of this paper. The first specification includes both democracy (democ) and autocracy (autoc)-variables separately. Due to collinearity concerns, a second specification is done featuring a composite Polity IV score, obtained by subtracting the autocracy score from the democracy score.

Two main theoretical arguments can be made for including political variables as controls in the dataset.

Firstly, according to Przeworski et al. (1999), a more democratic regime is more concerned with maintaining public support and features stronger accountability mechanisms. Furthermore, democratic countries usually feature stronger institutions and less corruption, both of which affect economic performance (Knack & Keefer, 1995;. Overall, democracy is significantly correlated with economic performance (Feld & Savioz, 1997). Quinn & Woolley (2001) also argue that democratic countries feature more stable and gradual economic growth compared to the high peaks and deep lows of an autocratic economy. Since globalisation is significantly correlated with democracy (the dataset showing a correlation of 0.45 between koftot and the first lag of the polity score), not including political variables means a risk of attributing the separate effects of democracy to globalisation.

The second argument is more circumspect, and also doubtful. If, as Rodrik (1997) says, globalisation increases a need for social security systems, then it is to be expected that democratic governments will respond to this need more strongly due to their greater concern

with public approval. In the presence of this need, then, a democratic system would feature greater government response than an autocracy.

This argument is problematic in two ways. Firstly, it leaves the absence of a significant effect open to two interpretations: it can either be because there is no greater need for social security, or it can be because democratic governments do not in fact respond more strongly to that need. A second problem is that empirical evidence on this link is mixed. Mulligan et al. (2002) find no systematic difference in the likelihood of enacting certain social security policies between democratic and nondemocratic governments. Avelino et al. (2005) on the other hand do find a significant connection between social security and democracy, and also report a positive connection between social security and trade openness.

Directly including social security in the model, as well as these other political variables, would be much more desirable, as it would avoid this whole proxy and its associated problems. Due to data limitations, however, this is unfortunately not possible.

The KOF-index is interacted with a dummy representing democracy scores above 5 (*high_democ*), to measure the potentially different effects globalisation may have in more democratic countries.

Regime changes (regchange). Besides assigning scores for democracy and autocracy, the Polity IV index also includes regime changes. A regime change, according to the Polity IV User's Manual, consists of a change in the democracy or autocracy score by at least 3 points in a single year. (Integrated Network for Societal Conflict Research & Center for Systemic Peace, 2017b). Whereas in the original dataset, the regime change scores encompassed a spectrum ranging from +3 (strong democracy transition) to -2 (strong autocratic transition) and a number of dummies for special situations such as state collapse or state transformation, I have simplified this to a simple set of two dummies: a dummy for a democratic transition of any size, and a dummy for an autocratic transition of any size. The special situation dummies in the original Polity IV dataset were set to 0.

Hausman et al. (2005) show how democratic transitions in particular can sometimes trigger extended periods of above-average macroeconomic performance, that is, a macroeconomic boom.

Total population (population). Unlike real GDP or real GDP per capita, total population is not prone to fluctuations and is therefore a more reliable predictor of country size, and hence the magnitude of effects through the trade and finance channels. A natural logarithm is taken to ensure the variable is normally distributed.

Descriptive statistics for the control variables are shown below.

Variable	Obs	Mean	Std. Dev.	Min	Max
gdp	7387	3.29e+14	2.65e+14	1.65e+08	1.00e+15
exchange	8955	1.511446	.9098017	0	3
democ	6278	4.492991	4.15168	0	10
autoc	6278	3.120898	3.498771	0	10
regtrans	8955	.0196538	.2109735	-1	1
lninflation	6041	1.901162	1.306995	-7.393417	10.10279
lnpopulation	8909	15.1039	2.233416	8.77848	21.03389
lnrealinte~t	3839	1.831644	.9812135	-5.445815	6.671778
lncredit	6425	11.44406	2.308835	.8804356	16.43069
lngovexp	6572	10.98753	1.66492	6.342721	14.58362
high_democ	8955	.3418202	.4743462	0	1
poor_country	8955	.3759911	.4844048	0	1

Table 4.4 – Descriptive statistics for the control variables

4.3 Final model and specification

The statistical model chosen is a multinomial logit model. The multinomial element consists of estimating a set of outcomes instead of just two as in a regular logit model. The three potential outcomes are -1 (crisis onset), 0 (no onset) and 1 (boom onset).

A logit model is estimated using maximum likelihood estimation. Fundamentally, maximum likelihood estimation obtains coefficients by estimating which coefficients result in a distribution for the dependent variable that as closely as possible mimics the distribution found in the dataset. Simply put, the values for coefficients that are chosen give the values for the dependent variable the highest likelihood of occurring. Here, the coefficients are chosen in such a way that the predicted outcomes – that is, the predicted onsets of booms and crises – most closely correspond to the actual booms and crisis onsets that are in the dataset. In terms of the equation shown below, *globalisation* and *controls* are both known, and β_0 and vectors β_1 and β_2 are chosen in such a way that the predicted *Onset* most closely reflects the actual *Onset*. This is a slightly different method of estimation compared to others such as the commonly used least squares, which focuses on minimizing the standard errors in the equation. MLE is well-suited to large samples, being asymptotically efficient. It is commonly used for estimating discrete choice models – that is, models where the dependent variable consists of one or more alternatives rather than being continuous.

This model features some attractive properties – most importantly, predicted chances of an event occurring are always between 0 and 1, unlike in a linear probability model. Furthermore, a maximum likelihood model allows us to interpret the marginal effects of variables as changes in the predicted chance of an event occurring, *ceteris paribus* (Verbeek, 2008). So, while the coefficients cannot be interpreted directly, interpretation of the marginal effects is also fairly straightforward. However, such a model also requires a number of assumptions to be made with regards to the standard errors in particular. Of particular importance are assumptions regarding normality, the absence of autocorrelation and heteroskedasticity, and omitted variable bias (Verbeek, 2008). Problems with each of those four assumptions might endanger the validity of our model.

With regards to normality, I have visually judged the distributions of the variables, both dependent and explanatory, and sought to take natural logarithms wherever appropriate. In this way, I have ensured a normal distribution of the variables in our model, which also implies normality of the residuals.

Since we are dealing with macroeconomic data that is most likely rife with endogeneity, autocorrelation is doubtlessly present. To limit its effects, I have estimated the model using heteroskedasticity and autocorrelation-robust standard errors. While this might not remove the problems entirely, it offers some level of protection.

Omitted variable bias, however, is most likely also present simply because it is beyond the scope of this thesis and most likely also not possible to control for everything. It is for this reason that none of the estimates can be interpreted as causal effects. I have attempted to control for the most prominent macroeconomic indicators that are not part of the KOF-index, as well as a set of continent-level fixed effects to capture continent-specific unobserved variables. Hopefully this limits the impact of omitted variable bias.

The final equation is as follows:

$$Onset_{ijt} = \beta_0 + \beta_1 globalisation' + \beta_2 controls' + \varepsilon_{it}.$$

In this specification, $Onset_{ijt}$ is the main dependent dummy variable, assuming values of either -1, 0 or 1. This model is computed over four different dummy variables, measuring deviations of 3%, 4.5%, 6% and 9% respectively.

Globalisation is a matrix consisting of the appropriate globalisation indicators, including either the composite globalisation variable or sub-variables, and the interaction or squared variables depending on the model. More of that below.

Controls is a matrix consisting of the appropriate control variables discussed above.

β_0 is an intercept, and β_1 and β_2 are vectors of the appropriate coefficients.

Chapter 5: Results

In this chapter, I discuss the results of the statistical analysis. Regressions were performed over a dataset containing yearly observations for 199 countries over the period 1970 – 2014. First I give a general overview of the dataset and the fluctuation dummies computed. Then we discuss the main regression set computed and its findings. Lastly we compare those regressions to a series of fluctuation dummies of different magnitude to conceive the potentially varying effects globalisation might have for fluctuations of varying intensity. Furthermore, the regressions are compared to a set computed when selecting observations with a composite KOF score of over 15. This was done because the data showed a considerable peak in observations occurring very close to 0, which may potentially affect our estimates.

Regressions are performed including either the composite KOF score (*koftot*) or individual subscores for the three major dimensions (*kofeco* for economic globalisation, *kofpol* for political globalisation, *kofsoc* for social globalisation).

The 4.5% category, which is our main focus, is explored in more detail below.

Continent	Crisis	Boom	Countries	Crises per country	Booms per country	Crisis/boom ratio
Africa	68	95	53	1,283	1,792	0,716
Asia & Oceania	79	82	65	1,215	1,262	0,963
Europe	16	35	43	0,372	0,814	0,457
North America	18	21	26	0,692	0,808	0,857
South America	21	19	12	1,750	1,583	1,105
Total	202	252	199	1,015	1,266	0,802

Table 5.1 – Booms and crises per continent

Table 5.12 shows us some interesting things. Firstly, the economies of the generally richer and more globalised continents of Europe and North America are more stable. This effect is present in North America even though that continent contains the poorer Caribbean region. The economies of Africa, by contrast, are much more volatile, though they have a crisis/boom ratio below the global average. The economies of South America, however, are both volatile and have the highest crisis/boom ratio of any continent. Only in South America do crises occur more often than booms. Asia and Oceania are not remarkable besides their generally higher volatility.

I will now proceed to discuss the results of the estimations. Important to note is that, when I state the effect in percentages, it is a higher or lower chance compared to a country at the sample average for all variables except the one whose effect is analysed. The effects are compared to a situation where that particular variable has score 0.

5.1 – Results of the estimation using the composite KOF score

VARIABLES	Simple model		With controls		Controls & High_Democ		Controls & Poor		Controls & Quadratic		With everything	
	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45
	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx
koftot_l1	-0.000171** (0.000081)	-0.000365*** (0.000084)	0.000028 (0.000063)	-0.000171*** (0.000062)	0.000095 (0.000074)	-0.000183* (0.000099)	0.000039 (0.000072)	-0.000208*** (0.000060)	-0.000094 (0.000133)	-0.000087 (0.000182)	-0.000027 (0.000140)	-0.000239 (0.000211)
koftot_highdemoc_l1					-0.000001 (0.000001)	0.000000 (0.000001)					-0.000001* (0.000001)	0.000001 (0.000001)
koftot_poor_l1							-0.000000 (0.000001)	0.000001 (0.000001)			-0.000000 (0.000001)	0.000001 (0.000001)
koftot ² _l1									0.000002 (0.000002)	-0.000001 (0.000002)	0.000002 (0.000002)	-0.000000 (0.000003)
democ_l1			0.000150 (0.000520)	-0.000092 (0.000719)	0.000883 (0.000638)	-0.000167 (0.000857)	0.000147 (0.000531)	-0.000068 (0.000700)	0.000180 (0.000504)	-0.000083 (0.000695)	0.000907 (0.000618)	-0.000385 (0.000892)
autoc_l1			0.000545 (0.000562)	0.000652 (0.000739)	0.000734 (0.000575)	0.000650 (0.000742)	0.000555 (0.000572)	0.000637 (0.000706)	0.000584 (0.000549)	0.000630 (0.000725)	0.000792 (0.000575)	0.000597 (0.000711)
lninflation_l1			0.001485* (0.000789)	0.004101*** (0.001449)	0.001343* (0.000785)	0.004133*** (0.001442)	0.001517* (0.000807)	0.003954*** (0.001392)	0.001633* (0.000863)	0.003888*** (0.001481)	0.001510* (0.000870)	0.003912*** (0.001482)
lnpopulation_l1			-0.000191 (0.000420)	-0.001217 (0.000859)	-0.000112 (0.000398)	-0.001232 (0.000865)	-0.000186 (0.000429)	-0.001168 (0.000836)	-0.000175 (0.000403)	-0.001145 (0.000858)	-0.000076 (0.000397)	-0.001165 (0.000855)
lnrealinterest_l1			0.001991* (0.001054)	0.000388 (0.001063)	0.001846* (0.001010)	0.000384 (0.001073)	0.002043* (0.001080)	0.000431 (0.001021)	0.001978* (0.001065)	0.000397 (0.001040)	0.001874* (0.001016)	0.000433 (0.001015)
lncredit_l1			0.000957 (0.001269)	0.000684 (0.001762)	0.000615 (0.001213)	0.000717 (0.001764)	0.000909 (0.001278)	0.000761 (0.001744)	0.000790 (0.001266)	0.000688 (0.001719)	0.000414 (0.001232)	0.000902 (0.001720)
lngovexp_l1			-0.001138 (0.001744)	-0.000289 (0.002426)	-0.001052 (0.001690)	-0.000290 (0.002448)	-0.001354 (0.001847)	0.000537 (0.002492)	-0.001261 (0.001701)	-0.000177 (0.002422)	-0.001245 (0.001755)	0.000663 (0.002536)
exchange_dummy1_l1			-0.004048*** (0.001301)	-0.008961*** (0.002045)	-0.003883*** (0.001241)	-0.009030*** (0.002089)	-0.004097*** (0.001316)	-0.008682*** (0.002137)	-0.003917*** (0.001243)	-0.008771*** (0.002063)	-0.003797*** (0.001173)	-0.008669*** (0.002100)
exchange_dummy2_l1			0.001513 (0.002806)	0.008979 (0.007243)	0.001891 (0.002788)	0.008933 (0.007320)	0.001636 (0.002888)	0.008127 (0.006931)	0.001928 (0.002830)	0.008710 (0.007086)	0.002491 (0.002979)	0.007622 (0.006857)
exchange_dummy3_l1			-0.001497 (0.001962)	0.005941 (0.005009)	-0.001140 (0.001934)	0.005925 (0.005079)	-0.001436 (0.001962)	0.005352 (0.004846)	-0.001082 (0.001895)	0.005638 (0.004921)	-0.000652 (0.001962)	0.005017 (0.004905)
autocratic transition			-0.004295*** (0.001378)	-0.009519*** (0.002171)	-0.004115*** (0.001311)	-0.009579*** (0.002215)	-0.004333*** (0.001390)	-0.009189*** (0.002260)	-0.004161*** (0.001318)	-0.009315*** (0.002190)	-0.004027*** (0.001240)	-0.009194*** (0.002225)
democratic transition			0.008839 (0.010922)	0.010795 (0.011944)	0.008052 (0.009844)	0.010896 (0.012127)	0.009285 (0.011360)	0.010234 (0.011220)	0.009260 (0.011251)	0.010374 (0.011481)	0.008657 (0.010334)	0.010248 (0.011199)
africa	-0.006711* (0.004079)	-0.000161 (0.005906)	-0.001205 (0.002510)	0.001696 (0.005829)	-0.001679 (0.002343)	0.001798 (0.005749)	-0.001089 (0.002577)	0.001196 (0.005425)	-0.001280 (0.002461)	0.001632 (0.005672)	-0.001657 (0.002361)	0.001638 (0.005407)
asiaoceania	-0.007386* (0.004081)	-0.008749 (0.005451)	-0.000591 (0.002347)	0.003693 (0.006856)	-0.001420 (0.002255)	0.003831 (0.006756)	-0.000404 (0.002409)	0.002810 (0.006220)	-0.000877 (0.002285)	0.003618 (0.006689)	-0.001611 (0.002339)	0.003278 (0.006196)
europa	-0.021152*** (0.003451)	-0.010024* (0.005780)	-0.004509** (0.002180)	0.001471 (0.006293)	-0.004038* (0.002126)	0.001449 (0.006317)	-0.004525** (0.002176)	0.001383 (0.006194)	-0.005356** (0.002418)	0.001901 (0.006342)	-0.004717** (0.002252)	0.001591 (0.006109)
northamerica	-0.015339*** (0.003309)	-0.016685*** (0.004782)	-0.003937*** (0.001507)	-0.008072** (0.003343)	-0.003814** (0.001514)	-0.008146** (0.003365)	-0.003949** (0.001605)	-0.007947** (0.003236)	-0.003945*** (0.001440)	-0.007848** (0.003449)	-0.003815** (0.001493)	-0.007827** (0.003341)
brettonwoods			-0.004363*** (0.001412)	0.057290 (0.036566)	-0.004183*** (0.001344)	0.057686 (0.036853)	-0.004393*** (0.001421)	0.061957 (0.038773)	-0.004223*** (0.001347)	0.054928 (0.034529)	-0.004091*** (0.001269)	0.061421 (0.037592)
observations	7,454	7,454	2,566	2,566	2,566	2,566	2,566	2,566	2,566	2,566	2,566	2,566

Table 5.2 – Main estimation, composite KOF, dummies assigned at 4.5%.

Firstly, as a general remark, all estimations were done using heteroskedasticity-robust standard errors. As discussed in the previous chapter, homoscedasticity is an important assumption of maximum likelihood estimation, and therefore important to safeguard.

5.1.1 – The basic model

~~Table 5.2 – Main estimation, composite KOF, dummies assigned at~~ The first two columns, (1) and (2), represent the most simple model. This model contains our main explanatory variable *koftot* and a set of continent dummies, taking South America as reference. We see that globalisation here has a stabilizing impact – reducing the likelihood of both booms and crises. This is reflected in the statistically significant negative coefficients for *koftot_11*, which reflect lower chances of a boom or crisis happening in that particular year if a country is globalised – that is, if the KOF score is larger than 0. These effects are significant for any degree of globalisation, but increase as a country globalises more. They are also linear, meaning that every added point on the KOF index has the same effect.

At the sample mean *koftot* score of ~41.57 (table 4.3), column 1 gives a significant effect of $41.57 * -0.000171 = 0.71\%$ less chance of a crisis onset compared to a country at the sample mean where globalisation is 0.

Column 2 gives a significant effect of $41.47 * -0.000365 = 1.51\%$ less chance of a boom onset compared to a country at the sample mean where globalisation is 0.

At the sample maximum *koftot* score of 92.84, the effects are $92.84 * -0.000171 = 1.59\%$ less chance of a crisis onset and $92.84 * -0.000365 = 3.39\%$ less chance of a boom onset compared to a country at the sample mean where globalisation is 0. It should be noted that the stabilizing effects with regards to booms are roughly twice as strong as those for crises.

5.2.2 – The model with controls

However, these effects might not be robust against the inclusion of control variables. Hence, the second regression shown in columns (3) and (4) contains the various control variables discussed in previous chapters. The coefficient for our crisis effect in column 3 becomes insignificant, meaning that we can no longer state that it is not equal to zero. There is no statistically significant effect of globalisation on economic crisis onset in this model.

The coefficients for the boom effect in column 4 is still statistically significant. It results in a $41.47 * -0.000171 = 0.71\%$ lower chance of a boom onset at the sample mean, and a $92.84 * -0.000171 = -1.59\%$ lower chance of a boom onset at the sample maximum score for *koftot*. This is once again compared to a country at the sample mean with a *koftot* score of 0.

Including the control variables, however, leads to two problems. The first is, as table 5.3 below shows, an increase in collinearity to a considerable level. This level, though not yet high enough to be considered ‘dangerous’, may still affect the standard errors of our estimates and therefore the conclusions of the t-tests of the coefficients. With other words, collinearity induces a higher risk of type II errors – accepting the H0-hypothesis of no significant effect when this is not the case in reality, when there is in fact an effect. This is because collinearity inflates the standard errors of our estimates and in that way biases the t-statistics downwards. The second problem, as reflected in the bottom row of the table, is a very large drop in the number of observations used for the estimation.

The large drop in the number of observations has two implications. The first and most straightforward one is a drop in efficiency due to loss of information. Since Stata only considers observations valid when they have a value for every single one of our control variables, all observations missing at least one value are dropped, which is about two-thirds of the dataset.

Secondly, and much more troublesome, is the nature of the decrease. Since only observations with values for all variables are considered, it is most likely the case that the observations that are maintained have significantly different characteristics than the rest of the sample. With other words, since inclusion in the regressions depends on the quality of the data-gathering conducted by those countries themselves, and since the quality of this data-gathering most likely depends on a number of characteristics that also influence the economy as well as globalisation, conclusions drawn based on this sub-sample are most likely not valid for the entire sample. Doing a simple comparison of averages for some control variables for the observations included or excluded in the model with controls gives us the following table:

Variable	Included	Excluded	Overall
GDPpc	13217,83	9891,93	11041,31
Govexp	15,86	16,74	16,4
Polityscore	5,03	-1,14	1,37
Inflation	10,2	57,29	38,19
Population	41.7 million	19.1 million	27.2 million
Credit	45,96	31,39	37,04
Onset, 4.5%	0,009	0,004	0,006
Onset, 3.0%	0,013	0,007	0,009
Onset, 6.0%	0,001	0,002	0,002
Onset, 9.0%	0,0003	-0,0002	0

Table 5.3 – Comparison of mean values

It is clear from the table that the sub-sample considered by the regressions from column (3) onward is significantly different from the entire sample in a number of important ways. Included observations feature much higher GDP per capita, a higher polity score, less inflation, a larger population and more credit to the private sector than the overall score of the sample.

5.1.3 – The models with interaction and quadratic variables

Several models including interaction and quadratic effects were also computed. I will now discuss the theoretical motivations for these interactions. Since nonlinear or interaction effects may induce omitted variable bias if not included, it is important to check for them. Based on theory it is possible the effect of globalisation depends on some other factors.

The emphasis on complementary policy to help diminish the negative impacts of globalisation found in the writings of among others, Rodrik, is of importance. Due to data limitations I cannot specifically include social security or similar policies in the model. I can, however, assuming the enactment of these policies is more likely in democratic states featuring higher accountability, interact globalisation with a dummy covering those countries. Refer back to the previous chapter for a cautious justification of this assumption, based on Przeworski et al. (1999). The Polity IV index assigned democracy and autocracy scores to countries on a yearly basis, and based on these scores I assigned a dummy to those observations where the democracy score was at least 5 points higher than the autocracy score. This dummy, *high_democ*, was then also interacted with the globalization variable.

The regression featuring the *high_democ* interaction is given in columns (5) and (6). No statistically significant effects are found for any variable – meaning that the coefficients cannot be distinguished from 0. Based on these results, I cannot confirm the presence of an interaction effect – that is, there is no evidence that globalisation has a different impact in a democratic country compared to an autocracy.

We do see the standard error for our globalization estimates increasing considerably, hinting at collinearity. For this reason, the inflated standard errors may lead to a type II error. However, since the coefficients themselves are not affected by collinearity, and since the coefficient for our interaction effect is exceedingly small, the effect is most likely very minor if it exists at all. The boom coefficient for *koftot* maintains approximately the same size as in the model with controls (columns 3 and 4), but drops in significance to 10% due to an increase in the standard error. The crisis effect for *koftot* increases but remains insignificant. Overall, this dataset does not show different effects of globalization in highly democratic countries.

Building on Stiglitz's assertion that globalisation might be detrimental to poor countries, I interact globalisation with a dummy variable, *poor*, covering years in which real GDP per capita was below \$3000 in 2010USD. No statistically significant coefficient is found for an interaction effect, indicating that there is no evidence that the impacts of globalisation are different for poor countries. There is also no statistically significant coefficient for an effect on crisis onsets, much like in the model with controls (columns 3 and 4).

Column 8 does show a statistically significant effect of globalisation on the chance of a boom onset, being $41.47 * -0.000208 = 0.86\%$ less chance of a boom onset at the sample average, and $92.84 * -0.000208 = -1.93\%$ less chance of a boom onset at the sample maximum. Once again these effects are evaluated compared to a country at the sample mean with a globalisation score of 0.

Lastly, globalisation might have an optimum value featuring maximum stability. To check for this, I included a squared globalization variable in the model. The quadratic regression is shown in columns (9) and (10). Here, none of the globalization variables is significant – neither the linear nor the quadratic. It is notable that the boom coefficient halves in size compared to the other models, and the crisis coefficient becomes negative and of the same magnitude as the boom coefficient. Since neither is significant, however, we cannot say that these coefficients are significantly different from zero. Overall, we no longer find evidence for any globalisation effect, neither linear nor nonlinear. Once more, the presence of much higher standard errors for our estimates hints at considerable collinearity.

The last regression set, columns (11) and (12), includes both interactions and the quadratic term. Once again a sizeable increase in standard errors points to considerable collinearity. What we do find here, however, is weak evidence pointing towards an added preventive effect of high democracy on the likelihood of a crisis occurring. This effect is very small, however, only a fraction of the effects of some of the control variables. Furthermore, its significance is low at 10%, so it may well be a fluke. The boom coefficient here is the largest of all models, but so is its standard error. Collinearity may inflate the standard error to the point of rendering the coefficient insignificant despite its large size. The crisis coefficient remains small and insignificant.

5.1.4 – Model suitability

To find which of our models is most suitable, we compare scores from the Akaike and Schwartz-Bayesian information criteria.

Regression	AIC	BIC
Simple model	3.510,536	3.593,534
With controls	737,206	959,510
High_democ interaction	738,497	972,502
Poor interaction	739,031	973,035
Quadratic	740,042	974,046
All of the above	742,991	1.000,396

Table 5.5 – Information criteria comparison

As we can see in the table, the regression with controls offers the lowest information criteria scores. This indicates that it is the regression with controls that is the most suitable. As an added advantage, that model also features comparatively less collinearity than the models with interaction or squared variables.

5.1.5 – Collinearity and the alternative model

With regards to the collinearity problem, the table below gives an overview of the Variance Inflation Factors for the various models estimated.

Variance Inflation Factors	Simple model	Controls	Highdemoc	Poor	Quadratic	All
koftot_l1	4.31	9.18	27.22	9.83	83.85	106.88
koftot_highdemoc_l1			22.99			23.96
koftot_poor_l1				2.75		3.08
koftot ² _l1					55.32	63.01

Table 5.4 – Variance Inflation Factors

As the table shows, the collinearity is considerable. It becomes an especially large problem in the regressions featuring the high_democ interaction, the quadratic effects, and with all interactions and effects – much like what I already expected, based on the inflation of standard errors in those estimations.

To combat the collinearity problem I highlighted before, an alternative specification was considered which features two main changes compared to the specification used in table 5.2. Firstly, this specification uses a composite Polity IV score, and not separate democracy and autocracy scores as used in the original specification. The Polity IV score is calculated by subtracting the autocracy score from the democracy score, getting a total score between 10 and -10 (Integrated Network for Societal Conflict Research & Center for Systemic Peace, 2017a). Secondly, the variables govexp and credit, reflecting government consumptive expenditures per capita and domestic credit to the private sector per capita were shown by VIF comparison to be subject to very high collinearity. Thus, in this specification, the variables are dropped. This does, however, mean that we swap the problem of collinearity for the problem of likely omitted variable bias. I leave it up to the reader which specification is more appropriate. Without further ado, here is the table of marginal effects computed using this specification.

All observations, KOF composite score								
	With controls		Controls & High_Democ		Controls & Poor		Controls & Quadratic	
	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom
	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	onset45 mfx dydx	onset45 mfx dydx	onset45 mfx dydx	onset45 mfx dydx	onset45 mfx dydx	onset45 mfx dydx	onset45 mfx dydx	onset45 mfx dydx
kofotot_l1	0.000019 (0.000055)	-0.000189*** (0.000062)	0.000048 (0.000056)	-0.000201** (0.000094)	0.000023 (0.000051)	-0.000204*** (0.000063)	-0.000140 (0.000131)	-0.000085 (0.000188)
kofotot_highdemoc_l1			-0.000001 (0.000001)	0.000000 (0.000001)				
kofotot_poor_l1					-0.000000 (0.000000)	0.000001 (0.000001)		
kofotot ² _l1							0.000002 (0.000002)	-0.000001 (0.000002)
polityscore_l1	-0.000174 (0.000150)	-0.000430* (0.000228)	-0.000007 (0.000198)	-0.000469 (0.000341)	-0.000180 (0.000151)	-0.000398* (0.000228)	-0.000181 (0.000147)	-0.000396* (0.000215)
lninflation_l1	0.001129 (0.000760)	0.003870*** (0.001385)	0.001035 (0.000752)	0.003840*** (0.001381)	0.001209 (0.000759)	0.003629*** (0.001331)	0.001357* (0.000803)	0.003541** (0.001384)
lnpopulation_l1	0.000063 (0.000435)	-0.001093 (0.000855)	0.000030 (0.000416)	-0.001081 (0.000852)	0.000106 (0.000455)	-0.001112 (0.000830)	0.000072 (0.000421)	-0.001009 (.)
lnrealinterest_l1	0.001950** (0.000968)	-0.000403 (0.001037)	0.001796** (0.000913)	-0.000402 (0.001036)	0.001979** (0.000961)	-0.000442 (0.001018)	0.001929** (0.000931)	-0.000383 (0.000996)
exchange_dummy1_l1	-0.004289*** (0.001250)	-0.009844*** (0.002085)	-0.004157*** (0.001224)	-0.009842*** (0.002103)	-0.004265*** (0.001221)	-0.009612*** (0.002131)	-0.004041*** (0.001148)	-0.009492*** (0.002061)
exchange_dummy2_l1	0.001436 (0.002809)	0.005367 (0.005707)	0.001533 (0.002718)	0.005260 (0.005684)	0.001644 (0.002937)	0.004891 (0.005517)	0.001927 (0.002814)	0.005098 (0.005497)
exchange_dummy3_l1	-0.001562 (0.001798)	0.004775 (0.004258)	-0.001408 (0.001784)	0.004730 (0.004226)	-0.001187 (0.001937)	0.004169 (0.004172)	-0.000788 (0.001828)	0.004308 (0.004210)
autocratic transition	-0.004543*** (0.001323)	-0.010427*** (0.002209)	-0.004417*** (0.001298)	-0.010448*** (0.002231)	-0.004516*** (0.001291)	-0.010182*** (0.002258)	-0.004301*** (0.001220)	-0.010086*** (0.002191)
democratic transition	0.007634 (0.009337)	0.014655 (0.012354)	0.006227 (0.008005)	0.014823 (0.012601)	0.008408 (0.010044)	0.013590 (0.011648)	0.008191 (0.009690)	0.013581 (0.011584)
africa	-0.002209 (0.002057)	0.001058 (0.005538)	-0.002506 (0.001915)	0.001134 (0.005475)	-0.001635 (0.002155)	0.000008 (0.005016)	-0.001879 (0.001954)	0.000801 (0.005216)
asiaoceania	-0.001527 (0.002201)	0.001592 (0.006315)	-0.001978 (0.002122)	0.001657 (0.006218)	-0.001086 (0.002189)	0.000716 (0.005753)	-0.001624 (0.002054)	0.001414 (0.006001)
europa	-0.004956*** (0.001861)	0.002935 (0.006763)	-0.004547** (0.001789)	0.002839 (0.006742)	-0.005035*** (0.001863)	0.003444 (0.006989)	-0.006047*** (0.002129)	0.003543 (0.006938)
northamerica	-0.004184*** (0.001537)	-0.008826** (0.003476)	-0.004112*** (0.001480)	-0.008786** (0.003478)	-0.004084*** (0.001578)	-0.008727*** (0.003361)	-0.004095*** (0.001412)	-0.008424** (0.003502)
brettonwoods	-0.004631*** (0.001359)	0.065546* (0.039207)	-0.004505*** (0.001335)	0.065146* (0.038970)	-0.004610*** (0.001329)	0.067486* (0.040306)	-0.004390*** (0.001254)	0.061375* (0.036755)
observations	2,726	2,726	2,726	2,726	2,726	2,726	2,726	2,726

Table 5.6 – Regression results, using composite KOF and the alternative specification.

The logic following the inclusion of controls, interactions and the quadratic effect are the same as before. Refer back to the discussion of table 5.2 for that. With regards to the results, what do we see? We see that the negative effect of globalisation on boom onset likelihood is now robust to the inclusion of interaction variables. We also see no evidence for the presence of interacting effects, so no evidence that the effect of globalisation depends on democracy or on wealth. No evidence for quadratic effects is found either, so based on this data there is no ‘optimal’ level of globalisation, above and below which effects decrease. We do see a slight increase in the number of observations, but the sample selection bias is likely still very significant. With regards to the standard errors, we see a slight drop in the regressions using both interactions. The standard errors of the regression with controls and the regression with a quadratic effect are not significantly affected.

Comparing the effects of table 5.2 to a model where observations were selected for having a composite KOF score of above 15 (found in appendix A), very little changes. The 5%-significant marginal effect of globalization on boom onset likelihood falls slightly to 0.0164

percent point. Once again we do not find any statistically significant effect of interactions or nonlinear effects.

5.2 – Results of the estimation using KOF subdimensions

Now we will estimate the same regressions using the three dimensions of the KOF index rather than the composite score. With regards to correlation between the three dimensions of the KOF index, there are the following numbers:

Pairwise correlation between kofeco and kofsoc: 0.5331

Pairwise correlation between kofeco and kofpol: 0.2583

Pairwise correlation between kofsoc and kofpol: 0.2681

The correlation between the three dimensions is somewhat worrying, but not of a size that would be very problematic.

A table with VIF values for the subdimensions is given below.

Variance Inflation Factors	Simple model	Controls	Highdemoc	Poor	Quadratic	All
kofeco_l1	6.46	8.96	37.89	10.92	106.99	170.13
kofeco_highdemoc_l1			35.43			45.57
kofeco_poor_l1				7.92		11.43
kofeco ² _l1					68.01	77.68
kofpol_1	4.51	8.99	28.34	11.93	106.54	157.16
kofpol_highdemoc_l1			26.44			30.45
kofpol_poor_l1				7.56		9.56
kofpol ² _l1					67.30	73.63
kofsoc_l1	5.87	8.82	43.22	9.65	72.39	139.07
kofsoc_highdemoc_l1			40.60			48.83
kofsoc_poor_l1				6.62		9.50
kofsoc ² _l1					48.52	62.71

Table 5.7 – Variance inflation factors for the subdimensions

Once again, we see that collinearity inflates the standard errors by a considerable degree. This means that we will most likely run a high risk of type II errors – falsely accepting the H₀-hypothesis of no effect when an effect is in fact present in reality.

VARIABLES	Simple model		With controls		Controls & High_Democ		Controls & Poor		Controls & Quadratic		With everything	
	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45
	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx
kofeco_l1	-0.000185** (0.000080)	-0.000025 (0.000102)	-0.000073** (0.000033)	0.000082 (0.000090)	-0.000057 (0.000040)	0.000141 (0.000135)	-0.000045 (0.000032)	0.000046 (0.000078)	-0.000097 (0.000107)	0.000133 (0.000208)	0.000044 (0.000084)	0.000078 (0.000210)
kofpol_l1	-0.000196*** (0.000064)	-0.000168** (0.000068)	0.000029 (0.000047)	0.000048 (0.000062)	0.000056 (0.000066)	-0.000004 (0.000041)	0.000009 (0.000049)	0.000100 (0.000080)	-0.000003 (0.000092)	0.000415** (0.000197)	-0.000024 (0.000084)	0.000560** (0.000265)
kofsoc_l1	0.000070 (0.000100)	-0.000221** (0.000104)	0.000070 (0.000067)	-0.000048 (0.000075)	0.000098 (0.000066)	-0.000152 (0.000149)	0.000080 (0.000072)	-0.000054 (0.000076)	-0.000039 (0.000101)	0.000066 (0.000180)	-0.000023 (0.000073)	-0.000070 (0.000258)
kofeco_highdemoc_l1					-0.000000 (0.000000)	-0.000001 (0.000001)					-0.000000 (0.000000)	-0.000001 (0.000001)
kofpol_highdemoc_l1					-0.000000 (0.000001)	0.000001 (0.000001)					-0.000000 (0.000000)	0.000001 (0.000001)
kofsoc_highdemoc_l1					-0.000000 (0.000001)	0.000001 (0.000002)					-0.000000 (0.000001)	0.000002 (0.000002)
kofeco_poor_l1							-0.000001 (0.000001)	0.000001 (0.000001)			-0.000001** (0.000000)	0.000001 (0.000001)
kofpol_poor_l1							0.000001 (0.000001)	-0.000001 (0.000001)			0.000000 (0.000000)	-0.000001 (0.000001)
kofsoc_poor_l1							-0.000001 (0.000001)	0.000000 (0.000002)			0.000000 (0.000001)	0.000001 (0.000002)
kofeco2_l1									0.000000 (0.000001)	-0.000001 (0.000002)	-0.000001 (0.000001)	0.000001 (0.000002)
kofpol2_l1									0.000000 (0.000001)	-0.000004** (0.000002)	0.000001 (0.000001)	-0.000005** (0.000002)
kofsoc2_l1									0.000001 (0.000001)	-0.000001 (0.000002)	0.000001 (0.000001)	-0.000001 (0.000003)
democ_l1			0.000199 (0.000449)	0.000209 (0.000822)	0.001053 (0.000658)	-0.000560 (0.001235)	0.000194 (0.000454)	0.000177 (0.000835)	0.000199 (0.000431)	0.000418 (0.000759)	0.000842 (0.000597)	-0.000404 (0.001086)
autoc_l1			0.000509 (0.000510)	0.000991 (0.000842)	0.000753 (0.000556)	0.000808 (0.000868)	0.000518 (0.000525)	0.000948 (0.000830)	0.000511 (0.000486)	0.001087 (0.000795)	0.000644 (0.000504)	0.000885 (0.000755)
lninflation_l1			0.001160 (0.000741)	0.004679*** (0.001632)	0.000988 (0.000779)	0.004883*** (0.001663)	0.001030 (0.000666)	0.004600*** (0.001688)	0.001232* (0.000741)	0.003903*** (0.001403)	0.000841 (0.000694)	0.003639** (0.001435)
lnpopulation_l1			-0.000411 (0.000539)	-0.001706 (0.001123)	-0.000289 (0.000462)	-0.001828 (0.001123)	-0.000483 (0.000533)	-0.001565 (0.001102)	-0.000426 (0.000552)	-0.001031 (0.001016)	-0.000491 (0.000519)	-0.000682 (0.000989)
lnrealinterest_l1			0.001660* (0.000907)	0.000367 (0.001131)	0.001396* (0.000821)	0.000491 (0.001189)	0.001627* (0.000830)	0.000346 (0.001147)	0.001647* (0.000939)	0.000260 (0.001001)	0.001272* (0.000715)	0.000383 (0.000992)
lncredit_l1			0.000704 (0.001225)	0.001147 (0.001760)	0.000244 (0.001135)	0.001791 (0.001760)	0.000202 (0.001211)	0.001415 (0.001755)	0.000533 (0.001212)	0.000695 (0.001625)	-0.000093 (0.001033)	0.001215 (0.001517)
lngovexp_l1			-0.001295 (0.001471)	-0.002768 (0.002736)	-0.001048 (0.001408)	-0.003204 (0.002718)	-0.000981 (0.001464)	-0.003329 (0.002859)	-0.001281 (0.001371)	-0.002003 (0.002491)	-0.000992 (.)	-0.002689 (0.002406)
exchange_dummy1_l1			-0.003293*** (0.001155)	-0.009275*** (0.002039)	-0.003073** (0.001224)	-0.009377*** (0.002043)	-0.003148*** (0.001052)	-0.009298*** (0.002011)	-0.003167*** (0.001066)	-0.008451*** (0.002070)	-0.002712*** (0.001047)	-0.008073*** (0.002008)
exchange_dummy2_l1			0.000714 (0.002281)	0.011624 (0.008133)	0.000850 (0.002208)	0.011550 (0.008370)	0.000550 (0.002194)	0.012028 (0.008352)	0.001294 (0.002427)	0.010357 (0.007368)	0.001065 (0.002218)	0.010260 (0.007470)
exchange_dummy3_l1			-0.001475 (0.001684)	0.006269 (0.005151)	-0.001245 (0.001506)	0.006374 (0.005284)	-0.001435 (0.001651)	0.006532 (0.005239)	-0.000907 (0.001655)	0.004521 (0.004784)	-0.000726 (0.001401)	0.004479 (0.004768)
regtrans_dummy1_l1			-0.003498*** (0.001227)	-0.009862*** (0.002162)	-0.003243** (0.001288)	-0.009929*** (0.002157)	-0.003346*** (0.001115)	-0.009882*** (0.002132)	-0.003371*** (0.001132)	-0.008985*** (0.002196)	-0.002881*** (0.001105)	-0.008578*** (0.002130)
regtrans_dummy3_l1			0.008875 (0.010570)	0.015383 (0.014245)	0.007950 (0.009084)	0.015213 (0.014377)	0.008876 (0.010753)	0.015461 (0.014305)	0.009480 (0.011226)	0.012588 (0.012134)	0.007903 (0.009241)	0.011376 (0.011319)
africa	-0.008223** (0.004158)	-0.000942 (0.006803)	-0.001297 (0.001998)	0.003568 (0.006840)	-0.001743 (0.001783)	0.004377 (0.007342)	-0.001606 (0.001741)	0.004833 (0.007022)	-0.001630 (0.001925)	0.002578 (0.005775)	-0.001902 (0.001514)	0.004457 (0.006117)
asiaoceania	-0.009966** (0.003949)	-0.010200 (0.006209)	-0.000372 (0.002119)	0.004469 (0.007267)	-0.001236 (0.001871)	0.005176 (0.007703)	-0.000511 (0.002056)	0.005266 (0.007275)	-0.001075 (0.002037)	0.004128 (0.006563)	-0.001510 (0.001805)	0.005427 (0.006625)
europa	-0.021098*** (0.003857)	-0.010141 (0.006685)	-0.004044* (0.002159)	0.001388 (0.006596)	-0.003639* (0.002200)	0.001128 (0.006495)	-0.003966** (0.001922)	0.001808 (0.006713)	-0.005105** (0.002409)	0.002935 (0.006507)	-0.003889** (0.001968)	0.003364 (0.006324)
northamerica	-0.014044*** (0.003249)	-0.015292*** (0.005748)	-0.003334** (0.001306)	-0.008500** (0.003319)	-0.003157** (0.001483)	-0.008539** (0.003360)	-0.003218*** (0.001225)	-0.008225** (0.003368)	-0.003339*** (0.001230)	-0.008178*** (0.003117)	-0.002802** (0.001342)	-0.007519** (0.003031)
brettonwoods			-0.003546*** (0.001255)	0.073852 (0.047621)	-0.003285** (0.001314)	0.074944 (0.051040)	-0.003387*** (0.001143)	0.066771 (0.046469)	-0.003409*** (0.001155)	0.066460 (0.042247)	-0.002922*** (0.001134)	0.060001 (0.041814)
Observations	6,457	6,457	2,513	2,513	2,513	2,513	2,513	2,513	2,513	2,513	2,513	2,513

Table 5.8 – Estimation using the KOF subscores, on the 4.5% dummy.

5.2.1 The simple model

The regression procedure and theoretical underpinning was the same as in table 5.3, so refer back for a thorough explanation. In the simple model, columns (1) and (2), we find a statistically significant negative effect of economic globalisation on the likelihood of a crisis onset, an overall stabilizing effect of political globalisation reducing the chances of both booms and crises occurring, and a negative effect of social globalisation on the likelihood of a boom onset.

With regards to boom onsets, economic globalisation does not have a significant coefficient. Social globalisation is associated with a 0.81% lower chance of a crisis onset at its mean value and with a 2.07% lower chance at its sample maximum. Political globalisation is associated with a 0.75% lower chance of a crisis onset at its mean value, and with a 1.65% lower chance at its sample maximum value.

With regards to crisis onsets, at its mean value economic globalisation is associated with a 0.84% lower chance of a crisis onset, and at its sample maximum with a 1.82% lower chance of a crisis onset. Social globalisation does not have a significant coefficient and therefore its effects cannot be said to be different than 0. Political globalisation is associated with a 0.87% lower chance of a boom onset at its mean value, and with a 1.93% lower chance of a boom onset at its maximum value.

5.2.2 – *The model with controls*

In columns (3) and (4), the model with controls, there are no longer any significant effects on booms. This might be because the effects of the three dimensions are conditional upon each other, or because of collinearity. In the model with controls, only economic globalisation has a statistically significant effect, and only on crisis onset chance. This means all other coefficients cannot be confirmed to be different from 0. The effect of economic globalisation translates into a 0.33% lower chance of a crisis onset at its mean value, and a 0.72% lower chance of a crisis onset at its maximum value.

5.2.3 – *The models with interaction- or quadratic effects*

We do not find any significant coefficients or evidence for interaction effects with either high democracy or low GDP in columns (5) to (8).

We also see a significant nonlinear effect for political globalisation in column (10), but no effects – either linear or nonlinear, for the other globalisation dimensions. There, political globalisation increases the likelihood of booms nonlinearly with diminishing returns. Taking first derivatives and solving for 0 gives us

$$0.000415 - 0.00004\text{kofpol} = 0, \text{ or } \text{kofpol} = 0.000415 / 2 * 0.000004.$$

Solving for 0 gives $\text{kofpol} = 51.875$.

At this score for political globalisation, the effect is optimal, being $(0.000415 * 51.875) - (0.000004 * 51.875^2) * 100\% = 1.076\%$.

Keeping all variables at the sample mean, the optimum score for political globalisation increases the chances of a boom starting in a particular year by 1.076% compared to a country at the sample mean with no political globalisation.

In the model with all controls, interactions and quadratic terms, lastly, we find two significant effects. We find a statistically significant but very small effect of economic globalisation, associating it with a slightly lower chance of a crisis onset only in very poor countries. This is reflected by the significant negative coefficient for kofeco_poor . We also find a significant positive effect of political globalisation, which is nonlinearly associated with a higher chance of a boom beginning. Note that the optimum in this estimation is found at

$(0.000560/2*0.000005\text{kofpol}) = 56$. At this level, the overall effect is a 1.568% percent increase, ceteris paribus, compared to a country at the sample mean without political globalisation.

5.2.4 – Collinearity and the alternative model

We consider the same alternative specification as in the previous section, to reduce the problem of collinearity. This entails replacing the separate *democ* and *autoc* variables with a composite Polity IV score, and omitting variables *govexp* and *credit*. Results are given below.

VARIABLES	With controls		Controls & High_Democ		Controls & Poor		Controls & Quadratic	
	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom
	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45
	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx
kofeco_l1	-0.000082** (0.000033)	-0.000024 (0.000077)	-0.000074** (0.000036)	0.000008 (0.000114)	-0.000054* (0.000032)	-0.000025 (0.000068)	-0.000085 (0.000122)	-0.000100 (0.000177)
kofpol_l1	0.000027 (0.000045)	0.000029 (0.000061)	0.000039 (0.000035)	-0.000021 (0.000077)	0.000000 (0.000045)	0.000064 (0.000067)	0.000014 (0.000093)	0.000330 (0.000208)
kofsoc_l1	0.000055 (0.000060)	-0.000071 (0.000071)	0.000070 (0.000056)	-0.000151 (0.000143)	0.000056 (0.000060)	-0.000103 (0.000070)	-0.000063 (0.000108)	0.000135 (0.000205)
kofeco_highdemoc_l1			-0.000000 (0.000000)	-0.000000 (0.000001)				
kofpol_highdemoc_l1			-0.000000 (0.000001)	0.000001 (0.000001)				
kofsoc_highdemoc_l1			-0.000000 (0.000001)	0.000001 (0.000002)				
kofeco_poor_l1					-0.000001 (0.000000)	-0.000000 (0.000001)		
kofpol_poor_l1					0.000001 (0.000001)	-0.000001 (0.000001)		
kofsoc_poor_l1					-0.000000 (0.000001)	0.000001 (0.000002)		
kofeco2_l1							0.000000 (0.000002)	0.000001 (0.000002)
kofpol2_l1							0.000000 (0.000001)	-0.000003 (0.000002)
kofsoc2_l1							0.000001 (0.000001)	-0.000003 (0.000002)
polityscore_l1	-0.000093 (0.000141)	-0.000462* (0.000263)	0.000131 (0.000200)	-0.000844* (0.000459)	-0.000089 (0.000131)	-0.000452* (0.000267)	-0.000097 (0.000138)	-0.000401 (0.000244)
lninflation_l1	0.000929 (0.000711)	0.004406*** (0.001630)	0.000785 (0.000714)	0.004295*** (0.001636)	0.000874 (0.000658)	0.004228*** (0.001619)	0.000999 (0.000738)	0.003941*** (0.001457)
lnpopulation_l1	-0.000343 (0.000589)	-0.001545 (0.001175)	-0.000357 (0.000495)	-0.001419 (0.001153)	-0.000476 (0.000560)	-0.001281 (0.001179)	-0.000348 (0.000645)	-0.000973 (0.001083)
lnrealinterest_l1	0.001845** (0.000841)	-0.000524 (0.001137)	0.001567** (0.000725)	-0.000365 (0.001136)	0.001843** (0.000783)	-0.000495 (0.001139)	0.001869** (0.000854)	-0.000512 (0.001080)
exchange_dummy1_l1	-0.003720*** (0.001167)	-0.010678*** (0.002115)	-0.003483*** (0.001131)	-0.010516*** (0.002076)	-0.003555*** (0.001118)	-0.010541*** (0.002090)	-0.003610*** (0.001080)	-0.009992*** (0.002149)
exchange_dummy2_l1	0.001231 (0.002580)	0.007605 (0.006533)	0.001140 (0.002357)	0.007207 (0.006465)	0.001075 (0.002479)	0.007331 (0.006584)	0.001820 (0.002706)	0.006989 (0.006122)
exchange_dummy3_l1	-0.001341 (0.001719)	0.005330 (0.004752)	-0.001290 (0.001569)	0.005549 (0.004616)	-0.001363 (0.001747)	0.005370 (0.004801)	-0.000786 (0.001739)	0.003930 (0.004709)
regtrans_dummy1_l1	-0.003944*** (0.001240)	-0.011321*** (0.002241)	-0.003710*** (0.001207)	-0.011191*** (0.002209)	-0.003785*** (0.001191)	-0.011208*** (0.002222)	-0.003832*** (0.001148)	-0.010599*** (0.002279)
regtrans_dummy3_l1	0.007716 (0.009350)	0.017663 (0.014001)	0.005793 (0.007266)	0.019519 (0.015332)	0.007917 (0.009847)	0.017199 (0.013898)	0.008117 (0.009779)	0.014740 (0.012414)
africa	-0.001360 (0.001862)	0.004135 (0.007029)	-0.001721 (0.001614)	0.004968 (0.007311)	-0.001497 (0.001665)	0.005214 (0.006968)	-0.001587 (0.001758)	0.003616 (0.006387)
asiaoceania	-0.000647 (0.002103)	0.002892 (0.007328)	-0.001278 (0.001881)	0.003310 (0.007389)	-0.000703 (0.002010)	0.003350 (0.007040)	-0.001236 (0.002014)	0.002923 (0.006937)
europa	-0.004949** (0.002018)	0.001976 (0.007159)	-0.004332** (0.001887)	0.000861 (0.006607)	-0.004724** (0.001926)	0.002102 (0.007158)	-0.005924** (0.002317)	0.004090 (0.007691)
northamerica	-0.003752*** (0.001394)	-0.009463** (0.003751)	-0.003587*** (0.001346)	-0.009212** (0.003652)	-0.003645*** (0.001299)	-0.009129** (0.003679)	-0.003778*** (0.001332)	-0.009152** (0.003553)
brettonwoods	-0.004024*** (0.001274)	0.068637* (0.040972)	-0.003793*** (0.001243)	0.069175 (0.042136)	-0.003868*** (0.001231)	0.064302 (0.040449)	-0.003908*** (0.001178)	0.063826* (0.038713)
Observations	2,666	2,666	2,666	2,666	2,666	2,666	2,666	2,666

Table 5.9. Regression results using the alternative specification, using KOF subcores.

What do we see? The only significant effect found in the regression results is the negative effect of economic globalisation on the likelihood of an economic crisis beginning. We no longer see evidence for a quadratic effect of political globalisation like we did in table 5.6. In terms of magnitude, the effect of economic globalisation does not significantly change in this alternative specification. We do see that the standard errors are significantly lower, especially in the regressions with a *poor* interaction. Standard errors in the regression using controls and with the *high_democ* interaction do not significantly change, nor do the standard errors in the quadratic regression.

Comparing the estimates above with the set in the Appendix where observations were selected on having a KOF higher than 15 shows that most globalization coefficients become insignificant. We do find evidence for an interaction effect suggesting economic globalisation brings down the chances of a crisis occurring in highly democratic countries, which lends support to the position held by Rodrik and others.

5.2.5 – *The link to theory*

How does this all relate to the theoretical channels identified in chapter 3? One striking conclusion from the theoretical section was that the effects of globalisation, in many cases, contradict each other. The sum of these contradicting effects might be zero, as was often found in the empirical models estimated. Of course, the insignificant effects might also be due to collinearity inflating the standard errors, or simply because there is no effect. This, however, is impossible to discern with the current model. It does, however, make the significant results that much more striking. We've found an overall negative effect of globalisation on the odds of an economic boom in particular. Whether this is a causal effect is impossible to know, especially since there is most likely considerable omitted variable bias and we cannot extend the *ceteris paribus* condition to the unobserved variables also, which is required for identifying causal effects. It might be that globalisation is correlated with some other variable reducing the chances of a boom. This seems especially likely for the political subdimension, as it is difficult to conceive of a situation where membership of more international organisation causes a greater frequency of economic booms.

With regards to economic globalisation, it seems the overall effect is a stabilising one. The odds of an economic crisis occurring are reduced, while the odds of a boom occurring are not significantly affected. The overall effect is small, though statistically significant. Particularly the stabilizing effect of trade might have an impact here – as was discussed in the 3rd chapter, relatively small local crises can be quickly remedied through changes in import and export prices.

These results, however, all deal with the frequency dimension. The severity dimension is tested below.

5.3 – Other fluctuation sizes

To estimate the effects of globalisation on crisis severity, I will compare the results of the models estimated above with a model estimating dummies representing fluctuations of 3%, 6% and 9% respectively. For sake of brevity I will only estimate the model with controls – so without interaction or quadratic variables – which the information criteria showed to be the most appropriate.

My reasoning here is a bit circumspect, but bear with me. If globalisation is found to have a larger stabilising effect on greater fluctuations, we can see this as a reduction in the chance for any fluctuation to reach that threshold – for instance, fewer crises hit 6%. This could be seen as a reduction in the average magnitude of fluctuations if the effect of globalisation on smaller fluctuations is less pronounced. The coefficient consists of two parts – overall stabilization of the economy, and a reduction in severity meaning fewer crises hit the dummy threshold. If globalisation is found to have a smaller stabilizing effect on greater fluctuations, however, then apparently the stabilization found for smaller fluctuations is offset by a greater chance for a fluctuation, once it has started, to reach the dummy threshold. That is, the average severity will increase as more fluctuations hit a high threshold despite the reduction in smaller fluctuations.

VARIABLES	3% threshold		6% threshold		9% threshold	
	Crisis	Boom	Crisis	Boom	Crisis	Boom
	(1)	(2)	(3)	(4)	(5)	(6)
	onset30	onset30	onset60	onset60	onset90	onset90
	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx
koftot_l1	0.000091 (0.000174)	-0.000014 (0.000182)	0.000031 (0.000042)	-0.000001 (0.000001)	-0.000000 (0.000002)	0.000000 (0.000001)
democ_l1	-0.000179 (0.001722)	-0.001891 (0.001884)	-0.000432 (0.000370)	-0.000016 (0.000015)	-0.000005 (0.000015)	-0.000012 (0.000009)
autoc_l1	0.001384 (0.001922)	-0.000163 (0.002051)	0.000082 (0.000337)	-0.000005 (0.000008)	0.000013 (0.000011)	-0.000011 (0.000011)
lninflation_l1	0.003756 (0.002542)	-0.000019 (0.003843)	0.000732 (0.000665)	0.000072 (0.000054)	0.000021 (0.000040)	0.000008 (0.000011)
lnpopulation_l1	-0.002470 (0.001905)	-0.008252*** (0.002177)	-0.000380 (0.000371)	-0.000014 (0.000014)	0.000009 (0.000021)	-0.000012 (0.000013)
lnrealinterest_l1	0.002793 (0.003010)	-0.003133 (0.002616)	0.000898 (0.000635)	0.000013 (0.000014)	-0.000020 (0.000031)	0.000007 (0.000009)
lncredit_l1	-0.002383 (0.003661)	0.000371 (0.004500)	0.000041 (0.000798)	0.000006 (0.000026)	-0.000043 (0.000034)	0.000003 (0.000013)
lngovexp_l1	0.003873 (0.005072)	-0.004364 (0.006157)	0.000625 (0.001117)	0.000030 (0.000038)	0.000080 (0.000059)	-0.000025 (0.000016)
exchange_dummy1_l1	0.052223 (0.055834)	-0.033557*** (0.003656)	-0.002399** (0.000963)	0.000111 (0.000379)	-0.000057 (0.000050)	-0.000027 (0.000018)
exchange_dummy2_l1	-0.003624 (0.007397)	-0.003081 (0.010399)	-0.001530* (0.000872)	0.892453*** (0.108837)	0.000059 (0.000109)	-0.000020 (0.000036)
exchange_dummy3_l1	-0.015998** (0.007283)	-0.001629 (0.009505)	-0.000875 (0.001277)	0.485957** (0.195331)	0.000002 (0.000077)	-0.000073 (0.000059)
autocratic transition	0.002600 (0.023364)	-0.010614 (0.021193)	-0.002578** (0.001035)	-0.000077 (0.000073)	-0.000061 (0.000054)	-0.000029 (0.000019)
democratic transition	0.074880** (0.035717)	0.000027 (0.019191)	0.003282 (0.006064)	0.000132 (0.000199)	0.001280 (0.001263)	-0.000038 (0.000025)
africa	-0.010924 (0.007539)	-0.011415 (0.009884)	-0.000444 (0.002124)	0.000064 (0.000096)	-0.000060 (0.000071)	-0.000029 (0.000020)
asiaoceania	-0.000695 (0.008577)	-0.007110 (0.011128)	0.000209 (0.002158)	0.000101 (0.000129)	-0.000074 (0.000052)	-0.000006 (0.000032)
europa	-0.008197 (0.009178)	-0.004086 (0.012200)	-0.002829* (0.001699)	-0.000064 (0.000050)	-0.000057 (0.000078)	0.000035 (0.000066)
northamerica	-0.006262 (0.008203)	-0.017856* (0.009187)	-0.001524 (0.001617)	-0.000016 (0.000071)	-0.000412 (0.000341)	-0.000208 (0.000128)
brettonwoods	0.019020 (0.039631)	0.119256* (0.072157)	-0.002623** (0.001065)	0.000775 (0.000776)	-0.000063 (0.000057)	-0.000029 (0.000019)
observations	2,566	2,566	2,566	2,566	2,566	2,566

Table 5.10 – Marginal effects on other fluctuation dummies

None of the globalisation coefficients are significantly different from 0. This makes it impossible to say if globalisation has an effect on severity or not, as it has no marked effect on both small and large dummies, except for the 4.5%-category. Since only 42 6%-onsets and 11 9%-onsets are not excluded from the model due to missing data, this is most likely the cause of the insignificant coefficients in columns 3 to 6.

For columns 1 and 2, the 3%-fluctuations, this is not the case however. If an effect existed, it should have been picked up as 3%-fluctuations are more abundant than the 4.5% fluctuations for which significant effects were found in previous sections. If globalisation has no effect on small fluctuations and a significant reducing effect on larger fluctuations, this indicates overall strength of the booms is reduced.

5.4 – Summary of results

In this chapter, the statistical analysis indicates a significant and generally stabilizing effect of globalisation on national economies. Whether this effect is causal or runs through some other variable cannot be discerned. No evidence was found for the existence of different globalisation effects in either highly democratic or very poor countries, nor for a quadratic effect.

Economic globalisation in particular is associated with a lower chance of crisis onset, and this may be explained through the stabilizing effects of economic trade discussed in chapter 3. Furthermore, some evidence was found that economic globalisation is associated slightly more strongly with a lower crisis chance in very poor countries. Lastly, we found some evidence that political globalisation is nonlinearly associated with a higher boom chance, with the optimum occurring at a score of roughly 51.875. However, these nonlinear and interaction effects are not robust against an alternative specification including the Polity IV score instead of democracy and autocracy variables and omitting the government expenditures and credit to the private sector variables.

Comparing the effects of globalisation on a set of alternative fluctuation dummies shows us that the effect only holds for fluctuations of 4.5% and larger. This indicates that the effect might well be an effect on the strength of booms – that the number of booms does not change, but that fewer of them reach the 4.5% threshold. The fact that no statistically significant effect is found on booms of 3% or greater supports this.

Overall, the effects that are significant are fairly small in magnitude – usually between 0.5 and 1.5% change in onset chance compared to a completely unglobalized country at the sample mean.

Chapter 6: Discussion, limitations, conclusion

In this final chapter, three important elements come to the fore. First, the ways in which this research was limited and confounding factors will be discussed, as well as the broader internal and external validity of the findings. The broad conclusions of the theoretical and empirical sections are summarized and linked wherever appropriate. Afterwards we proceed to discuss the implications of those findings and the contribution to scientific and public debate regarding this issue. We end with some recommendations for future study.

6.1 – Limitations and confounds

Several elements have restricted the analysis performed in this thesis. I will explicitly discuss the internal validity (validity of the conclusions drawn) and external validity (generalizability beyond the sample). Furthermore, data limitations played an important role and will be discussed. The data limitation section is also strongly linked to the recommendations for future research, at the end of this chapter.

6.1.1 – Internal validity and model confounds

Many of the issues associated with estimating a multinomial logit model, or using maximum likelihood estimation in the first place, have been discussed in chapter 4. Please refer back if needed.

A further problem that has arisen is that of collinearity. As shown in the VIF tables in the previous chapter, many of the models suffer from very significant collinearity. This inflates the standard errors, biasing the t-statistics downwards and leading to a considerable risk of type II errors. For this reason, the estimated coefficients themselves are also of interest, and might have proven significant in the absence of collinearity. It is however impossible to know whether this is the case, or whether there simply is no statistically significant effect. It is worthy of note, however, that the coefficients which turned out significant despite this problem are all the more noteworthy because of it. I have attempted to combat the collinearity problem using an alternative model specification omitting the most significantly collinear variables. This did not result in significant changes compared to the first specification, so the impacts of collinearity might be quite limited.

Overall, I have attempted as well as possible to protect the analysis against the effects of misspecification and collinearity. While this might have reduced the impacts, they are most likely still present.

6.1.2 – External validity and representativeness of the sample

With regards to the external validity, generalizability is of paramount importance. To what degree is the sample representative for the entire population? My first intention was to ensure the representativeness of the sample for the entire population by making the sample the entire population - gathering a sample covering every country in the world over the time period considered. Soon, however, I ran into problems.

The first problem occurred when performing the Hodrick-Prescott procedure in order to identify trend and cyclical GDP per capita, as outlined in previous chapters. This procedure was not possible for any sample including groups, or countries, with less than 2 observations for GDP per capita during the time period. For this reason, I excluded those countries with 1

or 0 observations for GDP per capita from the sample. Since these countries were mostly small island nations and North Korea, I was not concerned.

Then I started estimating, and it turned out Stata rejected any and all observations that did not have data for every single variable. The more control variables I included in the model, the more observations were subsequently dropped. I will direct you back to the previous chapter for my analysis regarding this issue, but the bottom line is that the estimated model with control variables covers only a subsample that is likely significantly different from the entire population. With other words, the sample over which the model has been estimated is not representative and most likely disproportionately contains richer, more developed and more globalised nations. It is only for this group that the conclusions drawn in the previous chapter are valid. They cannot be generalized to the entire world.

6.1.3 – Data limitations

A last remark is related to the inclusion of variables. Due to data limitations, I have been unable to specifically include variables related to social policy on the national level and was forced to approximate them in several ways (as government expenditure and as a function of the democracy of a country). Furthermore, I was forced to rely on yearly data for my analysis, rather than quarterly or even monthly. While the inclusion of as many countries as possible helped safeguard the statistical power and efficiency of my dataset, a model estimated using quarterly or monthly data might provide greater depth – especially with regards to the duration effect, which I have not been able to model. With regards to the duration dimension, which is a part of my theoretical section, I have been unable to test or model it empirically. This is due to the fact that only a very low number of fluctuation years were not onsets. I have limited the empirical section to the onset variable, and recommend any empirical work on a duration effect of globalisation be done on quarterly or monthly data.

6.2 – Overview of conclusions

Three main results are important to mention. Firstly, it was found that the composite score of globalisation is associated with a lower chance of an economic boom beginning. Economic globalisation in itself, measured as the composite score of a number of macroeconomic variables measuring trade and other international interactions, is associated with a lower chance of an economic crisis occurring (*ceteris paribus*). This means that international trade most likely serves as a mechanism that ‘bleeds off’ domestic economic shocks through adjustment in import and export prices. This mechanism dominates the theoretical shock-enhancing and shock-spreading effects of financial globalisation in particular, but also of the other channels which were discussed in the third chapter. Due to the sample selection problem identified, the linear effect will mostly hold for more developed countries. Whether this is the case for undeveloped countries also cannot be tested with this dataset, as the interaction variable with a GDP per capita in the model with controls likely lacks enough observations to ensure statistical power.

Political globalisation was found to be nonlinearly associated with a higher chance of a boom occurring – with the optimum occurring about halfway in the spectrum. This significant result is not robust to an alternative specification, as discussed in the previous chapter, and is therefore suspect. Most likely, political globalisation is associated with other policy reforms that promote episodes of more rapid economic growth. The fact that the optimum occurs at a lower level than what is commonly found in most developed countries indicates that the associated effects are more beneficial for developing countries, though the sample selection

problem discussed in the previous section means that this cannot be established with any degree of certainty. Simply said, the observations that would allow us to test such an effect are not present in this dataset, if those data exist at all.

A further remark relates to the strength dimension of an economic crisis. Data indicates that the effect of globalisation might well translate into a reduced strength of fluctuations rather than a reduced number of them. This is because a significant stabilizing effect is found for fluctuations of 4.5% and larger but not for fluctuations of 3% and larger.

6.3 – Implications of the findings and contribution to popular and scientific debate

Globalization is a highly debated issue. As we saw in the introduction, globalisation's effects and the desirability of those effects are widely disputed. It is precisely for this reason that it is important to support the various arguments in favour and against with diligent scientific analysis. In this thesis, I have attempted to do just that, and provided an overview of the broad effects of globalisation on economic fluctuations in a subsample of countries with high-quality data gathering institutions. While keeping in mind the limitations discussed in the previous section, evidence was found that economic globalisation in particular is associated with a lower chance of an economic crisis occurring – something which, as far as I am concerned, is entirely favourable. This does not consider the various other effects globalisation might have, of course, but as far as the crisis dimension goes, evidence is positive.

Furthermore, overall globalisation has been associated with a more stable economy, even though we cannot tell whether highly globalised countries are more stable, or whether stable countries tend to globalise more. Some caution should therefore be taken in interpreting these results. This is just one estimation, and more evidence is required for a definitive picture regarding the economic effects of globalisation to emerge. Still, I add my findings to a growing pile of literature dealing with globalisation and its various economic, social and political effects. Judging whether globalisation as a whole is desirable or not depends on far more than one analysis, far more than an analysis of the economic effects, and far more than an analysis of the effects on economic fluctuations. This judgment also depends upon the reader's own moral and ideological viewpoints, and is far beyond the scope of this paper, or any other individual paper.

6.4 – Suggestions for further research

Firstly, there is the issue of the duration dimension of economic fluctuations. I intended to test it statistically, but was unable to do so due to data limitations. My first suggestion would be to test this dimension using quarterly or monthly data.

Secondly, there is the issue of selection bias. Due to limited availability of data in the World Development Indicators dataset, a very significant portion of the observations was rejected in the model. Estimating the effects of globalisation on economic fluctuations in countries with lower-quality data gathering institutions is extremely challenging if not impossible, but it is required to get a comprehensive overview of the effects of globalisation on economic fluctuations over the full spectrum of globalisation.

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Appendix A: Control variables and their sources

Control variable	Source
Democracy and autocracy	Polity IV Index, annual time-series 1800-2016
Regime changes	Polity IV Index, annual time-series 1800-2016
General government final consumption expenditure, per person	World Bank World Development Indicators
Real GDP	World Bank World Development Indicators
Consumer price inflation	World Bank World Development Indicators
Total population	World Bank World Development Indicators
Domestic credit to the private sector, per person	World Bank World Development Indicators
Real interest in %	World Bank World Development Indicators
Exchange rate regime	Exchange Rate Regime Ilzetzki, Reinhart, and Rogoff Classification
Poverty	Derived from GDP per capita data obtained from the World Bank World Development Indicators

Table A1.1 – Control variables and sources

Appendix B – Marginal effects when selecting observations on a composite KOF above 15

VARIABLES	Simple model		With controls		Controls & High_Democ		Controls & Poor		Controls & Quadratic		With everything	
	Crisis (1)	Boom (2)	Crisis (3)	Boom (4)	Crisis (5)	Boom (6)	Crisis (7)	Boom (8)	Crisis (9)	Boom (10)	Crisis (11)	Boom (12)
	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45
	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx
koftot_l1	-0.000135 (0.000088)	-0.000395*** (0.000088)	0.000020 (0.000056)	-0.000164** (0.000065)	0.000076 (0.000070)	-0.000253** (0.000103)	0.000021 (0.000059)	-0.000189*** (0.000063)	-0.000086 (0.000127)	-0.000018 (0.000199)	-0.000048 (0.000130)	-0.000120 (0.000218)
koftot_highdemoc_l1						-0.000001 (0.000001)	0.000001 (0.000001)				-0.000001 (0.000001)	0.000002* (0.000001)
koftot_poor_l1							-0.000000 (0.000001)	0.000001 (0.000001)			0.000000 (0.000000)	0.000001 (0.000001)
koftot ² _l1									0.000001 (0.000002)	-0.000002 (0.000003)	0.000002 (0.000002)	-0.000003 (0.000003)
democ_l1			0.000114 (0.000491)	0.000060 (0.000784)	0.000721 (0.000595)	-0.000549 (0.001001)	0.000113 (0.000488)	0.000060 (0.000760)	0.000142 (0.000459)	0.000071 (0.000730)	0.000743 (0.000561)	-0.000893 (0.000952)
autoc_l1			0.000473 (0.000511)	0.001107 (0.000800)	0.000634 (0.000524)	0.001070 (0.000831)	0.000471 (0.000507)	0.001060 (0.000775)	0.000507 (0.000484)	0.001033 (0.000781)	0.000692 (0.000509)	0.000914 (0.000774)
lninflation_l1			0.001055 (0.000698)	0.004137*** (0.001571)	0.000928 (0.000693)	0.004300*** (0.001583)	0.001048 (0.000699)	0.004003*** (0.001493)	0.001139 (0.000741)	0.003714** (0.001556)	0.001043 (0.000747)	0.003594** (0.001542)
lnpopulation_l1			0.000038 (0.000391)	-0.000873 (0.000928)	0.000104 (0.000370)	-0.000935 (0.000958)	0.000040 (0.000389)	-0.000858 (0.000893)	0.000055 (0.000366)	-0.000772 (0.000879)	0.000136 (0.000358)	-0.000760 (0.000867)
lnrealinterest_l1			0.002523*** (0.000927)	0.000282 (0.001136)	0.002381*** (0.000885)	0.000257 (0.001172)	0.002513*** (0.000917)	0.000307 (0.001092)	0.002463*** (0.000936)	0.000307 (0.001080)	0.002345*** (0.000899)	0.000331 (0.001031)
lncredit_l1			0.001166 (0.001321)	0.001045 (0.001695)	0.000809 (0.001297)	0.001328 (0.001753)	0.001150 (0.001303)	0.001061 (0.001657)	0.000994 (0.001303)	0.001035 (0.001595)	0.000628 (0.001773)	0.001467 (0.001586)
lngovexp_l1			-0.000781 (0.001753)	-0.000889 (0.002419)	-0.000629 (0.001717)	-0.000938 (0.002465)	-0.000807 (0.001835)	-0.000239 (0.002483)	-0.000870 (0.001661)	-0.000681 (0.002339)	-0.000666 (0.001773)	0.000154 (0.002361)
exchange_dummy1_l1			-0.003325** (0.001291)	-0.008785*** (0.002128)	-0.003194*** (0.001224)	-0.008969*** (0.002101)	-0.003309*** (0.001284)	-0.008546*** (0.002180)	0.003164*** (0.001214)	-0.008369*** (0.002182)	-0.003056*** (0.001153)	-0.008098*** (0.002101)
exchange_dummy2_l1			0.002553 (0.003017)	0.000873 (0.007079)	0.002773 (0.002970)	0.007626 (0.007038)	0.002540 (0.003011)	0.007441 (0.006774)	0.002879 (0.003051)	0.007545 (0.006751)	0.003260 (0.003167)	0.006062 (0.006162)
exchange_dummy3_l1			-0.001627 (0.001955)	0.003877 (0.004918)	-0.001396 (0.001903)	0.003629 (0.004976)	-0.001610 (0.001932)	0.003479 (0.004738)	-0.001237 (0.001870)	0.003392 (0.004677)	-0.000966 (0.001924)	0.002439 (0.004434)
autocratic transition			-0.003489*** (0.001351)	-0.009200*** (0.002230)	-0.003351*** (0.001281)	-0.009385*** (0.002200)	-0.003475*** (0.001344)	-0.008953*** (0.002286)	0.003326*** (0.001272)	-0.008768*** (0.002289)	-0.003212*** (0.001207)	-0.008469*** (0.002199)
democratic transition			0.004669 (0.009115)	0.006870 (0.011304)	0.004359 (0.008225)	0.007171 (0.011778)	0.004680 (0.009196)	0.006557 (0.010725)	0.004946 (0.009255)	0.006282 (0.010504)	0.004791 (0.008687)	0.006270 (0.010287)
africa	-0.007327* (0.004349)	-0.001961 (0.006050)	-0.001101 (0.002542)	0.000254 (0.005470)	-0.001388 (0.002410)	0.000871 (0.005595)	-0.001066 (0.002506)	-0.000151 (0.005056)	-0.001152 (0.002460)	0.000250 (0.005189)	-0.001438 (0.002355)	0.000914 (0.004954)
asiaoceania	-0.008129* (0.004327)	-0.010190* (0.005636)	-0.001003 (.)	0.000641 (0.006315)	-0.001662 (0.002169)	0.001440 (0.006530)	-0.000959 (0.002108)	0.000083 (0.005762)	-0.001217 (0.002102)	0.000641 (0.006009)	-0.001905 (0.002203)	0.001246 (0.005702)
europa	-0.020292*** (0.003705)	-0.011102* (0.005938)	-0.004146* (0.002310)	-0.000214 (0.006079)	-0.003797* (0.002292)	-0.000319 (0.006093)	-0.004092* (0.002248)	-0.000309 (0.005901)	-0.004818* (0.002637)	0.000547 (0.006035)	-0.004487* (0.002565)	0.001058 (0.005736)
northamerica	-0.014209*** (0.003643)	-0.018775*** (0.004813)	-0.003313** (0.001422)	-0.007895** (0.003459)	-0.003186** (0.001444)	-0.007962** (0.003493)	-0.003275** (0.001451)	-0.007772** (0.003304)	-0.003261** (0.001349)	-0.007418** (0.003581)	-0.003159** (0.001389)	-0.007055** (0.003440)
brettonwoods			-0.003639** (0.001425)	0.057408 (0.037867)	-0.003495*** (0.001353)	0.057206 (0.038195)	-0.003629** (0.001419)	0.059843 (0.038987)	0.003470*** (0.001338)	0.053468 (0.034222)	-0.003350*** (0.001272)	0.052858 (0.033165)
observations	6,667	6,667	2,283	2,283	2,283	2,283	2,283	2,283	2,283	2,283	2,283	2,283

Table B.1 – Estimates, using composite KOF, when selecting for koftot ≥ 15.

VARIABLES	Simple model		With controls		Controls & High_Democ		Controls & Poor		Controls & Quadratic		With everything	
	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom	Crisis	Boom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45	onset45
	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx
kofeco_l1	-0.000146* (0.000086)	-0.000009 (0.000109)	-0.000052* (0.000029)	0.000081 (0.000090)	-0.000019 (0.000027)	0.000121 (0.000129)	-0.000033 (0.000027)	0.000054 (0.000068)	-0.000062 (0.000102)	0.000213 (0.000241)	0.000072 (0.000075)	0.000207 (0.000234)
kofpol_l1	-0.000175** (0.000070)	-0.000206*** (0.000073)	0.000021 (0.000044)	0.000045 (0.000068)	0.000049 (0.000038)	-0.000009 (0.000083)	0.000007 (0.000044)	0.000085 (0.000088)	-0.000025 (0.000092)	0.000335 (0.000206)	-0.000018 (0.000073)	0.000378 (0.000240)
kofsoc_l1	0.000034 (0.000106)	-0.000260** (0.000112)	0.000079 (0.000067)	-0.000033 (0.000081)	0.000072 (0.000057)	-0.000235 (0.000145)	0.000078 (0.000068)	-0.000030 (0.000082)	0.000034 (0.000101)	0.000021 (0.000214)	-0.000001 (0.000070)	-0.000147 (0.000283)
kofeco_highdemoc_l1					-0.000000 (0.000000)	-0.000001 (0.000001)					-0.000001** (0.000000)	-0.000001 (0.000002)
kofpol_highdemoc_l1					-0.000000 (0.000000)	0.000001 (0.000001)					-0.000000 (0.000000)	0.000001 (0.000001)
kofsoc_highdemoc_l1					-0.000000 (0.000001)	0.000003 (0.000002)					0.000000 (0.000001)	0.000003 (0.000002)
kofeco_poor_l1							-0.000001 (0.000001)	0.000001 (0.000002)			-0.000001* (0.000001)	-0.000000 (0.000002)
kofpol_poor_l1							0.000000 (0.000001)	-0.000001 (0.000001)			0.000000 (0.000000)	-0.000001 (0.000001)
kofsoc_poor_l1							-0.000000 (0.000001)	-0.000000 (0.000003)			0.000000 (0.000001)	0.000001 (0.000003)
kofeco2_l1									0.000000 (0.000001)	-0.000002 (0.000002)	-0.000001 (0.000001)	-0.000001 (0.000003)
kofpol2_l1									0.000000 (0.000001)	-0.000003 (0.000002)	0.000000 (0.000001)	-0.000004* (0.000002)
kofsoc2_l1									0.000001 (0.000001)	-0.000000 (0.000002)	0.000001 (0.000001)	-0.000002 (0.000003)
democ_l1			0.000189 (0.000402)	0.000425 (0.000917)	0.000936* (0.000536)	-0.001144 (0.001339)	0.000203 (0.000409)	0.000388 (0.000931)	0.000171 (0.000407)	0.000595 (0.000869)	0.000763 (0.000517)	-0.001026 (0.001149)
autoc_l1			0.000497 (0.000458)	0.001512 (0.000920)	0.000704 (0.000446)	0.001240 (0.000925)	0.000507 (0.000471)	0.001481 (0.000920)	0.000493 (0.000445)	0.001568* (0.000909)	0.000604 (0.000413)	0.001267 (0.000846)
lninflation_l1			0.000856 (0.000659)	0.004669*** (0.001776)	0.000643 (0.000662)	0.004765*** (0.001716)	0.000796 (0.000599)	0.004607*** (0.001851)	0.000900 (0.000692)	0.004091** (0.001596)	0.000565 (0.000583)	0.003639** (0.001492)
lnpopulation_l1			-0.000027 (0.000494)	-0.001260 (0.001209)	0.000059 (0.000358)	-0.001459 (0.001163)	-0.000076 (0.000471)	-0.001188 (0.001190)	-0.000113 (0.000520)	-0.000866 (0.001142)	-0.000078 (0.000374)	-0.000683 (0.001054)
lnrealinterest_l1			0.002095*** (0.000794)	0.000228 (0.001226)	0.001713*** (0.000659)	0.000437 (0.001208)	0.001990*** (0.000736)	0.000203 (0.001248)	0.002151*** (0.000851)	0.000151 (0.001139)	0.001505** (0.000623)	0.000377 (0.001046)
lncredit_l1			0.000802 (0.001286)	0.001699 (0.001703)	0.000297 (0.001105)	0.002566 (0.001619)	0.000478 (0.001309)	0.001871 (0.001713)	0.000832 (0.001321)	0.001406 (0.001607)	0.000105 (0.001071)	0.001999 (0.001461)
lngovexp_l1			-0.001082 (0.001388)	-0.003652 (0.002609)	-0.000736 (0.001213)	-0.003904 (0.002419)	-0.000813 (0.001476)	-0.004237 (0.002770)	-0.001201 (0.001375)	-0.003154 (0.002420)	-0.000671 (0.001214)	-0.003386 (0.002290)
exchange_dummy1_l1			-0.002635** (0.001091)	-0.008985*** (0.002092)	-0.002249* (0.001150)	-0.008582*** (0.001974)	-0.002549** (0.001038)	-0.009006*** (0.002074)	-0.002649** (0.001083)	-0.008519*** (0.002159)	-0.002018** (0.001023)	-0.007616*** (0.001937)
exchange_dummy2_l1			0.001758 (0.002479)	0.010410 (0.007789)	0.001672 (0.002344)	0.009631 (0.007537)	0.001596 (0.002432)	0.010743 (0.007903)	0.002014 (0.002593)	0.009668 (0.007396)	0.001603 (0.002200)	0.008554 (0.006900)
exchange_dummy3_l1			-0.001387 (0.001603)	0.003844 (0.005045)	-0.001158 (0.001315)	0.003602 (0.004816)	-0.001369 (0.001556)	0.004088 (0.005101)	-0.001208 (0.001499)	0.002614 (0.004958)	-0.000923 (0.001100)	0.002248 (0.004501)
regtrans_dummy1_l1			-0.002771** (0.001147)	-0.009434*** (0.002194)	-0.002360** (0.001202)	-0.009014*** (0.002069)	-0.002680** (0.001087)	-0.009455*** (0.002175)	-0.002780** (0.001134)	-0.008904*** (0.002256)	-0.002122** (0.001068)	-0.007987*** (0.002028)
regtrans_dummy3_l1			0.005720 (0.009426)	0.011111 (0.013919)	0.004433 (0.007014)	0.011174 (0.013501)	0.005500 (0.009311)	0.011395 (0.014151)	0.006127 (0.010042)	0.009810 (0.012715)	0.004041 (0.006740)	0.009019 (0.011474)
africa	-0.009068** (0.004379)	-0.003275 (0.006873)	-0.001271 (0.001955)	0.002317 (0.006504)	-0.001463 (0.001592)	0.003431 (0.006665)	-0.001559 (0.001716)	0.003326 (0.006446)	-0.001390 (0.002042)	0.001736 (0.005785)	-0.001598 (0.001391)	0.003638 (0.005611)
asiaoceania	-0.011007*** (0.004159)	-0.012803** (0.006278)	-0.000900 (0.001880)	0.000999 (0.006480)	-0.001397 (0.001537)	0.002261 (0.006634)	-0.001052 (0.001795)	0.001682 (0.006354)	-0.001134 (0.002025)	0.001208 (0.006334)	-0.001519 (0.001534)	0.002977 (0.006003)
europa	-0.020045*** (0.004192)	-0.011194 (0.006866)	-0.003858 (0.002360)	-0.000243 (0.006182)	-0.003440 (0.002409)	-0.001576 (0.005291)	-0.003746* (0.002106)	0.000063 (0.006228)	-0.004458* (0.002669)	0.001374 (0.006523)	-0.003368 (0.002183)	0.001135 (0.005606)
northamerica	-0.013131*** (0.003620)	-0.015601*** (0.006014)	-0.002791** (0.001218)	-0.008123** (0.003443)	-0.002408* (0.001382)	-0.007744** (0.003218)	-0.002758** (0.001160)	-0.007864** (0.003552)	-0.002833** (0.001251)	-0.008091** (0.003381)	-0.002197* (0.001251)	-0.007034** (0.003085)
brettonwoods			-0.002882** (0.001204)	0.073763 (0.048600)	-0.002455* (0.001266)	0.078446 (0.054353)	-0.002784** (0.001145)	0.068473 (0.048094)	-0.002872** (0.001182)	0.066116 (0.043938)	-0.002208* (0.001127)	0.060818 (0.043787)
Observations	5,782	5,782	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237	2,237

Table B.2 – Estimates using KOF-subscores for observations with a total KOF above 15.