Charles University in Prague

Faculty of Social Sciences

Institute of Economic Studies

M.A. DISSERTATION

Financial Globalization and Macroeconomic Volatility: an Empirical Study of the Effects of Foreign Bank Presence on the Volatility of Consumption and Growth.

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Charles University in Prague

Faculty of Social Sciences

Institute of Economic Studies

University College London

School of Slavonic and East European Studies

Chiara Casula

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M.A. Dissertation

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Author: Chiara Casula

Supervisor: doc.Ing. Tomáš Cahlík CSc.

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Abstract

Financial integration has been at the centre of a wide debate, especially with respect to its effects on stability, inequality and welfare. This thesis presents an empirical investigation on the relationship between financial integration and macroeconomic volatility. The present study takes advantage of the publication of a new database on integration in the banking industry, and estimates its effects on the volatility of output and consumption, on a set of 136 countries over the years 1996 to 2009, using regions and country fixed effects. The analysis focuses on the effect of foreign bank presence on macroeconomic volatility, and as a further application, on the effect of foreign bank assets on macroeconomic volatility. Furthermore, the present study will determine whether the findings change for Central and Eastern European Countries and the countries of the Commonwealth of Independent States. The main finding is that foreign bank presence is significantly related to the volatility of output, but it is not related to the volatility of private consumption growth. The original contribution of this paper is to empirically analyse data on foreign bank presence as proxies for financial integration, and to relate them to the volatility of output and consumption.

Key Words:

Financial Integration, Macroeconomic Volatility, Foreign Bank Presence, Foreign Bank Assets, GDP Growth, Private Consumption Growth, Stability.

Abstrakt

Finanční integrace byla a je středem široké diskuse, zvláště kvůli efektům na stabilitu, nerovnost a blahobyt. Tato práce zkoumá empirický vztah mezi finanční integrací a makroekonomickou volatilitou. Tento výzkum především čerpá ze zveřejnění nové databáze o integraci bankovnictví a odhaduje vliv této integrace na volatilitu výroby a spotřeby. Analýza vychází z dat o 136 zemích mezi roky 1996 - 2009 a používá ekonometrický model s fixním efektem. Rozbor se zaměřuje na dopad přítomnosti zahraniční banky na stabilitu ekonomického systému. Výzkum také zkoumá, zdali se výsledky týkající se stabilnosti systému liší mezi zeměmi střední a východní Evropy a zeměmi Společenství nezávislých států. Nejdůležitější zjištění je to, že s přítomností zahraniční banky významně souvisí volatilita hrubého domácího produktu a nesouvisí volatilita soukromé spotřeby. Originálním přínosem práce je to, že používá data o přítomnosti zahraniční banky jako indikátoru finanční integrace a vztahuje je k volatilitě výstupu a spotřeby.

Klíčová slova:

Finanční integrace , Zahraniční Banky, Výstupu, Spotřeby, Makroekonomicky Volatilita, Stabilita.

Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature. The author grants to Charles University permission to reproduce and to distribute copies of this thesis document in whole or in part. This dissertation is 24.216 words in length, excluding appendices.

Prague, May 18th, 2012

Signature

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Acronyms

AREAER: Annual Report on Exchange rate Arrangements and Exchange rate Restrictions

CEE: Central and Eastern Europe

CIS: Commonwealth of Independent States

EBRD: European Bank for Reconstruction and Development

ECB: European Central Bank

EU: European Union

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

IMF: International Monetary Fund

LSDV: Least Square Dummy Variable

OECD: Organization for Economic Cooperation and Development

PPP: Purchasing Power Parity

PWT: Penn World Tables

RGDPL: Real GDP growth (Laspeyres) at 2005 constant prices, adjusted for PPP.

RGDPL2: Real GDP growth (Laspeyres) at 2005 constant prices, rate of domestic absorption, adjusted for PPP.

RGDPCH: Real GDP growth (Chain Series)

VOL: Volatility

WB: World Bank

Introduction

Financial Integration has been at the centre of a wide debate, mainly with regards to its effects on stability, inequality and welfare. This thesis is concerned with studying the possible effects of integration in the banking industry on the volatility of output and private consumption. In order to do so, this dissertation takes advantage of the publishing of a new database on bank ownership by Claessens and Van Horen (2012), and using other reliable data sources, employs a newly assembled database.

The literature review that follows shows that the relationship between financial globalization and volatility is not unambiguous. Given the fact that the determinants of macroeconomic volatility supported by theory do a poor job in explaining instability once prices and wages become flexible, there is a new strand of literature that takes into account the developments in the financial sector as determinants of macroeconomic volatility, which have been underplayed in classical economic theory. As outlined in Easterly, Islam and Stiglitz (2000) the question of what determines macroeconomic volatility is, therefore, an empirical one. The decision to study the effects of financial integration on macroeconomic volatility derives from the fact that is has been a relatively less studied subject, at least with respect to the relationship between financial integration and growth. Furthermore, not many studies have carried out a large panel data study on the integration in the banking industry, mainly because of the low data availability.

Using a new database on bank ownership compiled by Claessens and Van Horen (2012), this dissertation estimates the role of foreign bank presence and, as a further application, foreign owned assets in explaining output volatility, the volatility of private consumption growth, and the volatility of

the ratio of private consumption growth to GDP growth. Volatility has been calculated by taking the standard deviation of per capita GDP growth and private consumption growth over three intersecting years, as shown in appendix V, following the example in Bekaert, Harvey and Lundblad (2006), who instead take the standard deviations over five intersecting years. What follows is an empirical analysis based on panel data techniques, using fixed effects and taking into account the years from 1996 to 2009 for a set of 136 countries. Special attention has been given to the countries of Central and Eastern Europe and the Commonwealth of Independent States. As shown in section 4.2. Central and Eastern European Countries have been experiencing very large percentages of foreign bank presence since the beginning of the transition, and even though the pattern is flatter at the moment, the percentage of foreign banks in the CEE sample in 2009 is 67percent on average, which, as shown in appendix III, is much higher than the average for industrialized economies.

The analysis examines whether economic theory was right in estimating a negative relationship between financial integration and macroeconomic volatility. In theory, an increase in financial integration should be able to increase international risk sharing and to decrease macroeconomic instability. Nevertheless, many studies point to the fact that it is difficult to find an empirical answer to this question, especially when looking at the volatility of output. With regards to the relationship between financial integration and consumption growth volatility, the results have contradicted standard theory: the majority of studies find that an increase in financial integration will increase consumption volatility (Kose, Prasad, Rogoff, and Wei, 2006). The analysis that follows shows that the results for integration in the banking industry are not definitive, and they depend on the measure of GDP per capita growth that is chosen. For private consumption, this study shows that foreign bank presence is not significant, while foreign owned assets are, but the results contradict standard theory

because the relationship that is found is a positive one, meaning that an increase in foreign bank assets increases the volatility of private consumption growth. As Arellano (2008) shows, if the volatility of private consumption growth is higher than the volatility of output, this might indicate a negative effect of financial integration, because individuals tend to over-borrow in good times. Over-borrowing might then lead to an increase in sovereign risk, with the related increase in spreads, as witnessed during the recent financial crisis.

This dissertation is organized as follows: the first section presents the literature review on the subject, specifically looking at how to define and measure financial integration and macroeconomic volatility. It then presents a review of the empirical evidence found on the relationship between financial integration, growth and volatility and financial integration and stability. The last section of the literature review deals with current developments in the banking industry. The second chapter deals with methodology and data issues, it presents the measure of financial integration used, the quantitative methods used for the empirical analysis, the choice of variables and their properties and the preliminary data analysis. The third chapter presents the results, which are shown in the following order: the effect of financial integration on the volatility of GDP per capita growth, the effect of financial integration on the volatility of consumption growth, and the effect of financial integration on the volatility of the ratio of private consumption growth to GDP growth. The fourth chapter looks at a further application, namely it uses foreign bank assets instead of foreign bank presence, and it looks at the relationship with output and consumption volatility. Furthermore, an analysis of the effects of integration on macroeconomic volatility in the countries of Central and Eastern Europe and the Commonwealth of Independent States is presented. The fifth chapter discusses the results and the last chapter concludes.

1. Literature Review

1.1 Overview

There are three main questions associated with financial globalization (Prasad, Rogoff, Wei and Kose, 2003):

1) "What is the effect of financial globalization on economic growth?
2) What is the effect of financial globalization on macroeconomic volatility?
3) What are the factors that help countries exploit the full potential benefits of Financial Globalization?" (p. ix)

This dissertation is concerned mainly with question number two, with an important specification. Instead of studying the ramifications of financial globalization, which is a term that per se can hardly be defined, let alone measured; this dissertation investigates the particular effect of one type of financial integration mechanism. In particular it considers the relationship between integration in the banking industry and macroeconomic volatility.

The decision to look at the effects of financial globalization on macroeconomic stability, rather than on growth, originates from the fact that macroeconomic volatility has, on the one hand, been a relatively less studied phenomenon, and on the other hand, the empirical literature whose review follows, has shown more consistent results. Furthermore, macroeconomic volatility has been negatively associated with economic growth, and it has been shown that is has negative repercussions on the poor (Easterly, Islam and Stiglitz, 2000).

One point that must be stressed is that this dissertation does not focus on the consequences of financial globalization on welfare, which might be the subject of future extensions of this work. Even though nothing in the social sciences, including economics, should be studied in a vacuum, it is still a challenge to look at the existing relationships in the data. Furthermore, in order to be very precise about the welfare implications of financial globalization it is better to look at single case studies. Comparative analysis, in the broad sense of the regression analysis applied to more than two countries and more than one period, can be very informative about the general trends.

The literature review is divided as follows: the first section presents definitions of Financial Integration and Financial Globalization, which even if they are often used as synonyms, do define different concepts. Furthermore the standard competitive model describing the determinants of macroeconomic volatility is outlined. The second section introduces methods currently used to measure financial integration. The third section reviews the general relationship between financial globalization and financial integration, growth and volatility. The fourth section analyses the relationship between foreign bank presence and stability. The concluding section gives an account of the current developments in the banking industry.

1.2 Defining Financial Integration, Financial Globalization and Macroeconomic Volatility

Financial globalization and financial integration refer to a series of arrangements at the transnational level for exchange in the international capital markets. Since the end of the Second World War, the world economy has been subjected to a set of revolutionary changes, whereby it has become easier for individuals and firms to exchange money now for promises to pay in the next period (Krugman and

Obstfeld, 2006). The growing importance of international trade has been accompanied by a growing importance of the international capital market, which links the capital markets of individual countries (Krugman and Obstfeld, 2006).

In theory, financial integration and financial globalization present two different concepts. Financial globalization refers to integration in the aggregate level, and is mainly concerned with cross border financial flows (Prasad, Rogoff, Wei and Kose 2003, p.2). Financial integration is instead referring to the links between one country and the international capital market (Prasad, Rogoff, Wei and Kose 2003, p.2). Clearly, the two terms are closely related, and they will be used as synonyms in this dissertation.

According to the widely used definition of Baele et al. "The market for a given set of financial instruments and/or services is fully integrated if all potential market participants with the same relevant characteristics:

1. Face a single set of rules when they decide to deal with those instruments and/or services.
2. Have equal access to the above-mentioned set of financial instruments and/or services.
3. Are treated equally when they are active in the market." (2004, p. 6)

This definition implies that financial integration can exist in the absence of convergence in financial structures (Baele at al., 2004); it can also exist in the presence of frictions in the financial markets. There are certain asymmetries which are inherent in the industry structure, and it is important to distinguish them from market fragmentation resulting in low financial integration (London Economics 2002, p. 13). Other definitions of financial integration focus more on the latter of the above-mentioned conditions, for example Altomonte and Nava describe financial integration as a situation

where “the flow of products, services and factors between countries are on the same terms and conditions as within countries” (2005, p.67). Broadly speaking, financial integration makes previously separate markets become as a single integrated market (London Economics 2000, p. 12); an example of previously fragmented financial markets working towards regional integration in services and intermediation is the European Union. A single integrated market can, in the European case, be understood as a “very large, single European Financial market where all intermediaries, private investors and firms meet to carry out financial transactions” (London Economics 2002, p. 8). Financial markets do not include only the banking sector, but also equities and bonds markets. In the European context, financial integration will be fully completed once the price of financial services in one country will be equal to the price of financial services in another country, taking into account eventual transaction and transportation costs (Altomonte and Nava, 2005). This definition is clearly a linked to the law of one price, which is a necessary but not sufficient condition for financial integration to take place.

Macroeconomic volatility can be defined as the volatility in output or as the volatility in private consumption. The standard competitive model assumes that any fluctuations in output will be the result of fluctuations in the input variables, such as changes in employment, technology, and the relationship between input and output variables (Easterly, Islam and Stiglitz 2000, p.2). The way in which the economy reacts to shocks will depend on a variety of variables, and it will determine the amount of fluctuations that are observed in a country’s GDP. Easterly, Islam and Stiglitz (2000) argue that mainly it is the behaviour of individuals, firms and the government, which will determine the collective behaviour that will have an effect on expectations. In turn expectations will determine whether the economy will go back to full employment or not (Easterly, Islam and Stiglitz 2000, p.3).

The standard Keynesian assumption regarding the determinants of output fluctuations is based on the flexibility of prices and employment. As presented in Easterly, Islam and Stiglitz (2000) once it is clear that countries which have flexible wages and prices still have high fluctuations in their output, the models that take into account the standard explanations of macroeconomic volatility become less convincing (Easterly, Islam and Stiglitz 2000, p.3). The realization that wage and price rigidities may not be the single or most important explanation of fluctuations in output has animated a new debate around the determinants of output volatility.

One of the main factors that have consistently been ignored in standard macroeconomic theory is the effect of financial institutions. This is because, as observed in Easterly, Islam and Stiglitz (2000), both in neoclassical and Keynesian models the liquidity needs of firms are not considered: anyone who has a good project will get funding for it. Credit and Equity rationing are therefore concepts that, while they are present in other theories, especially in corporate finance, were often disregarded when studying macroeconomic volatility, apart from the case of Matsuyama (2007), who explains that endogenous shifts in the composition of the credit pool can have large effects on macroeconomic volatility, including traps, collapses, cycles and miracles (Matsuyama 2007, p.515). Moreover, the extent to which the financial sector is integrated is also going to have an effect on the extent that output fluctuates, mainly because if there is domestic credit or equity rationing, firms would still be able to borrow from abroad (Easterly, Islam and Stiglitz 2000, p.4).

The dynamics that take place in the relationship between financial integration and macroeconomic volatility, as discussed in Prasad, Rogoff, Wei and Kose (2003) and Easterly, Islam and Stiglitz (2000) among others, are ambiguous as, on the one hand, integration will smooth shocks to the domestic economy while, on the other hand, it may increase contagion from one country to another.

Estimating which one of the two contradicting effects prevails is the main focus of empirical investigations addressing financial integration and instability. Recent papers such as Diamond and Rajan (2011), Lorenzoni (2008) and Martin and Ventura (2010) focus on the relationship between financial development, mainly in the form of credit, and volatility and look at the role of credit bubbles in determining the relationship. As explained in Martin and Ventura (2010) it is, however, difficult to include credit bubbles in the analysis, as "the role of bubbles in resource allocation remains an essentially unexplored topic" (Martin and Ventura 2010, p. 28). Furthermore, the inclusion of bubble episodes in the empirical analysis would be complex, and there is no agreement among academics on how to measure them.

One issue that is recognized in the literature is the problem of endogeneity for many of the variables analysed. Both the financial development literature and the financial integration literature stress the fact that it might be because a country is less prone to high macroeconomic volatility that it experiences higher levels of financial depth. On the other hand, not everything is endogenous, as policies that promote financial liberalization might be part of a policy strategy to come out of the vicious circle of higher macroeconomic volatility and lower investment (Easterly, Islam and Stiglitz, 2000). With regards to the welfare consequences of the liberalization policies, Topalova (2010) finds that in the case of India, the sudden liberalization policy that started in 1991 had an adverse effect on the poor. Using an natural experimental design, the finding is that compared to a district with no changes in tariff barriers, a district that changed its tariff barriers to the average values saw an increase in poverty of around 2percent, and an increase in poverty depth of 0.6percent (Topalova 2010, p.2).

1.3 Measuring Financial Integration

The traditional approach to measuring financial integration is to construct a de jure measure that takes into account the legal restrictions on cross border capital flows, derived from the IMF Annual Report on Exchange rate Arrangements and Exchange rate Restrictions which accounts for more than 60 different types of control (Kose, Prasad, Rogoff, and Wei 2006, p. 8).

According to Kose, Prasad, Rogoff, and Wei (2006, pp. 7-8) the most widely used de jure measures of financial integration which are constructed on the IMF "AREAER" report are:

1) "Share measures, reflecting the fraction of years in the sample in which the country's capital account was open (see Grilli and Milesi Ferretti, 1995; Rodrik, 1998; Klein and Olivei, 2006)
2) Quantitative measure of capital account openness (see Quinn, 1997, 2003)
3) Principal components measure extracted from disaggregated capital and current account restrictions (see Chinn and Ito, 2005; Mody and Murshid, 2005; Edwards, 2005)
4) Further refinements in earlier measures as constructed by Johnston and Tamirisa (1998) and Miniane (2004)" (Kose, Prasad, Rogoff and Wei 2006, pp. 7-8)

It is yet not clear if using a 0/1 measure is able to capture the effects of financial integration (see Rodrik, 1998), or whether a finer de jure measure (see Quinn, 1997) is better suited for analytical purposes (Kose, Prasad, Rogoff and Wei 2006, p. 7). Another question is whether it is possible to create a new measure that will serve analytical and methodological purposes better, or whether the existing consolidated measures are paying.

It is important to underline that the pool of available de jure measures is not as large as one might think, as most of them are based on the same report, the IMF Annual Report on Exchange rate

Arrangements and Exchange rate Restrictions (Kose, Prasad, Rogoff, Wei 2006, p. 8). Both de jure and de facto measures can be used when assessing financial integration, and while de jure measures are more readily available, it is sometimes preferable to use de facto measures which are more sophisticated. There are many shortcomings associated with de jure measures: first, "they do not accurately reflect the degree of openness of the capital account because they are partially based on various restrictions associated with foreign exchange transactions" (Kose, Prasad, Rogoff and Wei 2006, p. 8) , which may not in the end actually impede capital flows; second, they do not capture the actual level of restrictions, as the actual degree of enforcement might be very different from what is stated in paper, and therefore also the actual integration level may be different to some extent (Kose, Prasad, Rogoff and Wei 2006, p. 9). It is in fact crucial, whenever assessing the level of financial integration, to understand all the possible measurements fully and to choose what is most appropriate, as using one measure or another could lead to very different results.

De facto measures of financial integration can be constructed in many ways. According to Baltzer, Cappiello, De Santis and Manganelli (2008), there are three main types of financial integration measures which can be used to quantify financial integration in the different markets (e.g. money market, stock market, government bond market etc…). The first are Price Based Measures, which "capture discrepancies in asset prices across different national markets" (Baltzer, Cappiello, De Santis and Manganelli 2008, p.7). Price based measures are one of the most widely used methods. However, there are serious disadvantages when using these measures for emerging market economies and developing countries, as the multitude of risks and premiums that are attached to the return of financial instruments in these economies are very difficult to quantify (Kose, Prasad, Rogoff and Wei 2006, p.10). Furthermore, interpretation and the use of these measures for cross country panel data

analysis is challenging. The second type of financial market integration measures are news based, "which analyse the impact that common factors have on the return process of an asset" (Baltzer, Cappiello, De Santis and Manganelli 2008, p. 7). The third type of measures is quantity based, "which aim at quantifying the effects of frictions on the demand for the supply of securities" (Baltzer, Cappiello, De Santis and Manganelli 2008, p. 7). According to Kose, Prasad, Rogoff and Wei (2006), these measures provide the best available measure of cross country financial integration. Quantitative measures "use actual flows of funds to assess whether one country is integrated financially" (Baltzer, Cappiello, De Santis and Manganelli 2008, p.7). The main debate revolves around whether it makes more sense to use net or gross capital flows or stocks. Net flows are more accurate but gross flows are less volatile. Net flows, the sum of gross inflows and outflows as a ratio to national GDP, yield a nice symmetry with the traditional measures of trade openness, however, other than being very volatile, they are also prone to measurement errors which might affect the results to a great extent (Kose, Prasad, Rogoff, Wei 2006, p. 10). The sum of gross stocks of foreign assets and liabilities can be used to avoid the volatility and measurement issues while maintaining the spirit of measuring de facto integration, however, it is difficult to find data on gross stocks for large sets of countries.

For the Euro area, the European Central bank takes into account different indicators depending on the market segments analysed, which comprise the money market, bond market, equities market and banking market. Given the different legislation, meaning the different set of laws and regulations affecting the different markets, the European Central Bank has constructed 42 different indicators of de facto financial market integration (ECB, 2006).

For the banking sector there are four main indicators indicated by the ECB (2006), all of which are on a quarterly basis and try to calculate the extent of integration in the banking market by measuring the extent of cross border deposits, securities and loans (ECB, 2006). These measures are only available for the European countries and it is, therefore, difficult to use them for a large longitudinal analysis. For the banking industry, Claessens and Van Horen (2012) have developed a new database that describes movements in bank ownership and in ownership of total assets in national banking sectors. This new database has the advantage of covering 137 countries, while the other measures that have been presented before are restricted in size.

Microeconomic measures of financial integration have also been developed. Kalemli-Ozcan , Sorensen and Volosovych (2010) estimate the micro level financial integration using firm level ownership data, and measure financial integration based on how many firms have a majority or minority share of foreign ownership in the EU15.

1.4 Empirical Evidence on the relationship between Financial Integration, Consumption, Growth and Volatility

According to Kose, Prasad, Rogoff and Wei (2006, p.3), there is a widely held view that developing countries have gained less from access to financially integrated markets than industrial countries. This is why financial globalization has been at the centre of a wide debate among academics and policy-makers. The central point of the debate was whether financial integration brought the advances that neoclassical theory would predict, mainly in terms of international risk sharing, or whether there was something that empirical testing could prove, with regards to the relationship

between financial integration, consumption and output, the volatility of consumption and output, and inequality.

In order to quantify the possible gains from financial integration, London Economics (2002) has provided the European Commission with a report that tries to compute the benefits of financial markets integration at the EU level. The result of this exercise shows that the possible gains at the EU level are around 1.1percent of GDP (London Economics, 2002). However, as outlined in Altomonte and Nava (2005), these estimates are static and use conservative estimation methods. In fact, there are only two possible channels that are considered: a reduction of cost increasing barriers (i.e. a reduction in the cost of credit due to increases in liquidity) and an increased degree of market integration (Altomonte and Nava 2005, p. 80). As recognized in Kose, Prasad, Rogoff and Wei (2006), it is very likely that the main effects resulting from financial integration are indirect, collateral benefits, which are not necessarily connected to the principle of enhanced access to financing for domestic investment. For example, financial integration could have a positive effect on financial development, it could work towards improving macroeconomic discipline, it could expose domestic firms to foreign competition and increase efficiency, and force better government policies and better functioning corporate governance, therefore improving the functioning of institutions, all of which could result in higher growth and higher allocative efficiency (Kose, Prasad, Rogoff and Wei 2006, p.3).

According to the literature on financial development, an increase in financial market integration will have two positive effects on growth. One was analysed in detail by Goldsmith (1969), who looks at the effect of financial integration on efficiency in capital accumulation. The other was developed by McKinnon (1973) and Shaw (1973) who argue that on top of the effect on efficiency, financial development also increases the savings rate, and in turn the investment rate. Financial development

and financial integration are very closely related and there are many studies in the literature, such as Levine (1997) and Levine (2005) that discuss the causal relationship between financial development and growth, a question that to this date is still unanswered. The main problem that the two papers cited above discuss is whether research should be more concerned with the macroeconomic aspects of financial integration, such as its impact on growth, efficiency and economic welfare, or whether it should concentrate on the financial microstructure, which is concerned with capital allocation and the supply of financial services (Von Furstenberg 1998, p.54). Von Furstenberg (1998, p.54) argues that it is important to recognize that there exists both an internal and an external margin of financial integration that have to be considered.

With regards to the effects of financial integration on stability, Rosoi (2012, p.735) argues that financial integration increases the comovements in business cycles, thereby implying that both positive and negative shocks will be transmitted from one country to another. Rosoi (2012, p.735) argues that if a crisis occurs, economic and financial instability will increase, which confirms what was found by Mauro, Sussman and Yafeh (2002). Bolton and Jeanne (2011) find the same result when looking at the banking sector and at the portfolio choices of banks when the system is financially integrated. De Nicolò and Tieman (2006, p.5) arrive to the same conclusion, and argue that when convergence in business cycles takes place, then the pool of diversifiable risks available to the financial intermediaries may shrink. They also point to the fact that there may also be another effect in that financial market integration may increase diversification opportunities, which will translate into higher expected returns, and it is not clear which effect will prevail (De Nicolò and Tieman 2006, p.5). Eichengreen (2001) surveys empirical literature on this issue and arrives at the conclusion that there is no empirical paper that can demonstrate that neoclassical theory was right in predicting a

role for financial integration in affecting growth. Kose, Prasad, Rogoff and Wei (2006) arrive to the same conclusion, and further argue that little or no evidence has been shown a significant effect of financial integration on the volatility of output. On the other hand, the literature on the relationship between financial integration and consumption volatility is more consistent, showing that financial integration has a significant positive effect on consumption volatility, and therefore contradicting classical theory (Kose, Prasad, Rogoff and Wei 2006, p.4).

In theory, "financial integration allows capital poor countries to diversify away from their narrow production bases that are often agricultural or natural resource dependent, and this should reduce macroeconomic volatility" (Kose, Prasad, Rogoff and Wei 2006, p. 7). As countries develop, and specialise in specific industries, financial integration could work towards making them more vulnerable to industry specific shocks (Kose, Prasad, Rogoff and Wei 2006, p.7). Bekaert, Harvey and Lundblad (2006) find that financial liberalization can be associated with lower consumption growth volatility, however they mainly concentrate on equity markets and their results are less robust for emerging market economies.

From the economic history perspective, Schularick and Steger (2006) argue that there is a historically positive relationship between the level of financial integration and growth, but the significance can only be found when looking at the period before the Second World War. Easterly, Islam and Stiglitz (2000) demonstrate that when looking at the relationship between capital flows and macroeconomic volatility, the results are ambiguous. Their findings are that while financial depth may have beneficial effects on volatility, these are valid only up to a point. Furthermore, they also demonstrate that developments in the financial sector may aggravate periods of economic downturns (Easterly, Islam and Stiglitz 2000, p.11). Another interesting result presented in Easterly, Islam and Stiglitz (2000) is

that wage and price flexibility do not have an impact on output volatility. As noted by Banerjee (2000) however, the standard deviation of real wages may not be the best variable to control for wage flexibility, as it actually controls for wage rigidity. Nevertheless, the author still agrees with the general conclusions of the previous paper. Furthermore, Banerjee (2000) also notes that many of the results might be driven by selection bias, as the sample of countries used in Easterly, Islam and Stiglitz (2000) is mainly composed of rich countries.

Bonfiglioli (2008) discusses whether the effect of financial integration on growth runs mainly through total factor productivity, however, the results are not conclusive.

Albulescu (2011) argues that financial instability that comes as a result of the crisis might be affecting both financial integration and growth negatively, suggesting that this third factor might be the driving force behind the relationship between financial integration and growth. There are, however, problems with the measurement of financial stability, and the measurement issue is the factor that could be driving the results. One of the variables that might be used to measure financial instability is over borrowing that comes as a result of the liberalization of the capital account, which, as shown in McKinnon and Pill (1998) resulted in the boom and bust cycles experienced in Latin America in the 1980's and the real estate bubble in the United Kingdom in the early 1990's.

As described in Kose, Prasad and Terrones (2003) the question of whether financial integration has an impact on macroeconomic volatility, and the direction of the relationship is essentially an empirical question, as theory is unable to clearly guide us.

One last question is whether volatility is related to average growth rates. Ramey and Ramey (1995) find that there is a strong negative relationship between growth rates and volatility, therefore

implying that as growth increases, the volatility of growth rates decreases. Chatterjee and Shukayev (2006) however, demonstrate that this relationship is not significant, and the use of logarithmic difference as growth rates biases the relation towards being negative. As outlined in Kose, Prasad, Rogoff and Wei (2006, p. 32) there might be a threshold effect at work, whereby the full benefits of financial integration are reached only when certain conditions are met. The conditions are listed as "financial market development, institutional quality, governance, macroeconomic policies and trade integration" (Kose, Prasad, Rogoff and Wei 2006, p. 32). It is important to recognize that the list of conditions is the same as the list of collateral benefits, and therefore it is unclear whether a country should be meeting these set of conditions *ex-ante*, or whether it could suffer from the negative consequences of financial integration such as an increase in the risk of crises (Kose, Prasad, Rogoff and Wei 2006, p. 32), in order to reach those conditions and then be able to enjoy the full effects of financial integration.

1.5 Empirical Evidence on the relationship between Foreign Bank Presence, Growth and Stability

Economic theory predicts that the benefits deriving from foreign bank presence are higher than the costs. Ryan and Horsewood (2009) argue that there is some ambiguity with regards to the effect that an increased integration has on the borrowing and lending rate in the banking sector, and assert that the final outcome will ultimately depend on the single country and the characteristics of the banking industry in that country.

Clarke, Cull, Martinez Peria and Sanchez (2003), Claessens (2006), Chopra (2007) and Cull and Martinez Peria (2010) describe the benefits of foreign bank presence as an increase in domestic

competition, an increase in financial stability, better access to financial services and better conditions in terms of financial and economic performance for borrowers. Claessens, Demirguc-Kunt and Huizinga (2001) argue that an increase in foreign bank presence decreases the costs of financial services and intermediation, at the same time affecting negatively profitability for the banking system. Martinez Peria and Mody (2004) claim that increased foreign bank ownership leads to an improvement in the quality of the services provided in the financial sector.

Levine (1996), Dobson (2005) and Mishkin (2006) say that the possible factors that contribute to the beneficial effects of foreign bank ownership are the presence of new financial products, that might be better-suited to the customer's individual needs, the greater use of up to date technology advances, such as internet and phone banking, but also easier cross-border operations, the eventuality of know-how spillovers and the resulting pressure that is put on governments to reform the system. Volz (2004) argues that in the case of Central and Eastern European Countries, the large numbers of foreign banks have not translated into higher funding opportunities for small and medium enterprises, while foreign bank presence has been crucial for larger entities.

As described in Prasad, Rogoff, Wei and Kose (2003), Claessens and Van Horen (2012), Garcia-Herrero, Martinez Peria (2005) Dermirguc-Kunt, Laeven and Levine (2004) Clarke , Cull, Martinez Peria and Sanchez (2005) and Dages, Goldberg and Kinney (2000) among others, there might exists some threshold effects with regards to the benefits of financial integration. These threshold effects are often described as relating to barriers that limited development places on further achievements in the financial sector, the size of the country, and the size and health of the banks entering the foreign market. Given the fact that integration in the banking markets is generally on a regional level (Claessens and Van Horen, 2012) or it involves a north south relationship (Prasad, Rogoff, Wei and

Kose, 2003), it will be interesting to see if banks from high income countries will still dominate the scene in the aftermaths of the financial crisis, or if banks from emerging market economies, given their healthier status, will take advantage of the crisis in the European and North American banking markets.

Williamson (1989) argues that, studying the cases of the United States and Canada after the Great Depression of the 1920's, bank integration may stabilize the banking system but not necessarily output. Morgan, Rime and Strahan (2004) look at bank integration in the individual states of the U.S. and find that generally bank integration has made business cycles across states more similar, and therefore it has "stabilized growth fluctuations within states" (Morgan, Rime and Strahan 2004, p. 18). Ghironi and Stebunovs (2010, p.3) examine the consequences of deregulation in the US banking sector in the 1970's. Their findings are that increased integration in the banking sector leads to a decrease in firm level and aggregate output volatility, thus confirming the results obtained in the study of Correa and Suarez (2009), who looked at the effects of bank integration on firm level variability.

Other literature, such as Yilmaz, Kabasakal and Koyuncu (2009) have focused on the question of whether increased foreign bank presence increases or decreased the probability of a banking crisis. Using a multivariate LOGIT model, their findings show that increased foreign bank presence decreases the probability of a banking crisis, focusing mainly on transition economies (Yilmaz, Kabasakal and Koyuncu 2009, p.13). O'Sullivan and Ozsoz (2008) also support the previous statement and claim that the presence of foreign banks has a stabilizing effect on the national banking systems. Furthermore they find that, under certain conditions, increased foreign bank presence is associated with a decrease in the likelihood of a banking crisis (O'Sullivan and Ozsoz 2008, p.623). Bonfiglioli and

Mendicino (2004) prove that adverse effects of banking crisis seem to be smaller for countries with a more open capital account. Going back to the question of threshold effects, papers such as Bolton and Jeanne (2011) and Gennaioli, Martin and Rossi (2010) have argued that developments in the banking sectors are part of the threshold effect, and the higher presence of foreign banks, therefore the less developed is the domestic banking system, the more likely it will be for financial integration to lead to disappointing results.

1.6 Current Developments in the Banking Industry

As described in Claessens and Van Horen (2012) integration in the banking industry has been subjected to critical changes since 1995, with a shift from higher foreign bank presence in OECD countries towards higher presence in developing and emerging market economies. Central and Eastern Europe and Central Asia are at the centre of this pattern, as those regions are the ones where foreign bank presence is at the highest, but they are also the regions where domestic banks have expanded the most abroad (Claessens and Van Horen, 2012).

"The integration of the EU-12 Member States into the EU financial system occurred at a very fast pace, via two main channels — the growth of EU cross-border claims and the expanding role of local branches or subsidiaries set up by the old Member States' banking groups. The process unfolded against the background of buoyant market sentiment triggered by EU accession and record-low monetary interest rates. In both segments, the crisis triggered a sharp reduction of exposures, affecting domestic credit dynamics and growth in the Central and Eastern European Member States." (EC 2011, p. 27)

As outlined in Mejstrik, Pecena and Teply (2009) the development in the banking sector in the countries of Central and Eastern Europe and in the European Union in general has been affected by the Lamfalussy process, which regulates financial markets in the EU and got started in 2001. The banking industry in the EU has been affected by three different factors, namely consolidation, integration and internationalisation (Mejistrik, Pecena and Teply, 2009). Consolidation refers to the fact that the number of financial institutions in the European Union is on the decline, while the number of financial assets owned by banking institutions is increasing (Mejistrik, Pecena and Teply 2009, p. 399). Integration and internationalisation can be seen mainly in the past couple of years. For example since 2004 cross-country mergers and acquisitions are at least 50percent of total mergers and acquisitions (Mejistrik, Pecena and Teply 2009, p. 401). As outlined in the European Financial Stability and Integration report (2011) that trend was recently reversed: "In essence, financial integration in Europe followed the international pattern of strongly growing cross border capital flows during the boom years followed by subsequent sharp retrenchment since 2008" (EC 2011, p. 25). Furthermore, it is important to note that "The difference between some of the EU-12 countries and other non-European emerging markets from Asia or Latin America is that international capital inflows rebounded strongly as of the second half of 2009 in the latter" (EC 2011, p. 26), while emerging European markets are affected by the slow growth performance in the rest of the European Union and by the dangers of sovereign debt default (EC 2011, p. 26).

Foreign ownership is now more dispersed, and the five biggest investors (France, Germany, Netherlands, United Kingdom and United States) decreased their presence, which went from 45percent in 1995 to 38percent in 2009 (Claessens and Van Horen, 2012). Another pattern that can be observed is that banks are more regionally than globally focused, and this is most likely because

strategies will have to change from one region to another, and when a bank specializes in one region, then it has the right set of skills to continue its expansion to the rest of the region. Another striking fact is that there has been a surge in banking integration in the Middle East and North Africa, where the intraregional share of domestic banks is higher than 70percent, which reflects a South-South investment strategy (Claessens and Van Horen, 2012). The investment strategies change if we look at banks belonging to advanced countries or emerging markets, as the latter are usually more regionally focused while the first have for the most part a global strategy (Claessens and Van Horen, 2012).

As outlined in Claessens and Van Horen (2012) there are differences between domestic and foreign banks in terms of their balance sheet activities. What the data show is that foreign banks participate more intensively in the capital market and they have higher liquidity ratios. Furthermore, foreign banks in emerging market economies have a higher loan to deposits ratio, which "measures the degree to which a bank is active in traditional banking activities" (Claessens and Van Horen 2012, p. 14). Further findings are that foreign banks usually hold more equity than debt, meaning that their leverage is lower, especially when looking at cases in the OECD and in developing countries, while when they operate in emerging market economies they hold higher capital adequacy ratios, which reflects the fact that they carry on less risk than in the other cases (Claessens and Van Horen 2012, p. 14). In general it can be said that foreign banks are more conservative and on average less profitable (Claessens and Van Horen 2012, p. 15). A careful review of the data also suggests that for OECD and emerging markets, there is no significant relationship between foreign bank presence and credit supply, while for developing economies this relationship exists and it is negative (Claessens and Van Horen 2012, p. 15). Claessens and Van Horen (2012) argue that since foreign banks have imposed higher rates of credit rationing during the crisis, they have contributed to financial instability

(Claessens and Van Horen 2012, p. 19). A report of the European Bank for Reconstruction and Development (EBRD) presents the finding that in the case of Central and Eastern European countries, even if credit rationing has been imposed, foreign banks were relatively stable lenders, also thanks to the Vienna initiative, where foreign banks pledged to maintain exposure and continue supporting their subsidiaries in the CEE region (De Haas, Korniyenko, Loukoianova and Pivovarsky, 2012). Furthermore, as outlined by the European Financial Stability and Integration report (2011) large companies were still able to get the funds needed through alternative sources of funding.

2. Empirical Model and Data Description

2.1 Empirical Model

Central and Eastern European countries are a very interesting case study to assess the consequences of financial integration. Studies regarding the Central and Eastern European case have been conducted on a variety of issues. Podraza (1998) analyses the process of integration of CEECs into the EU and the main instruments used to get the integration process started. Other studies concentrate on specific features of financial integration, for example Di Mauro (2001) postulates that the main channel through which financial integration happens in CEE countries is through Foreign Direct Investment, while Ryan and Horsewood (2009) talk about the role of the banking industry in integration. De Benedictis and Tajoli (2007) find the key to integration in the trade structure, while Babecky, Komarek and Komarkova (2008) study stock markets integration. Albulescu (2011) studies instead both integration in the banking sector and the law of one price applied to interest rates, therefore assessing integration in monetary policy by looking at the correlations of the policy rates across countries.

This work uses panel data, or longitudinal data, for a set of 136 countries over the years 1996 to 2009. The decision to work with panel data originates from the fact that using a panel data model, rather a case study or a cross-section, gives the ability to control for unobserved differences across countries or time, and that the presence of a large number of countries and periods gives the analysis the power to exploit more information, and to study the dynamics of the processes that take place across entities. In the analysis of this large cross section of countries, special attention is given to the

countries of Central and Eastern Europe, however, the decision was to start with a larger cross section of countries in order to be able to fully understand the dynamics of integration.

As explained in Greene (2002) panel data models call for substantial stochastic specifications. Heterogeneity is in this case, as much as in general panel data analysis, an important feature of the data to be studied. Specifically, this work aims to understand how volatility, both in output growth rates and in private consumption growth rates, is affected by financial integration, and in particular by integration in the banking industry, and how these results change across countries, regions and income levels.

The analysis starts with a simple econometric model with fixed effects, which assumes that the differences across observations or units can be explained and captured by differences in the constant term (Greene 2002, p.287).

The general specification of the fixed effects model is the following:

$$y_{it} = X_{it}\beta + \alpha_i + \varepsilon_{it.} \quad (1)$$

Where X_{it} is the set of regressors, or independent variables, that make up the model, β is the slope of the population regression line and α are unknown parameters to be estimated, one for each entity; $\varepsilon_{it.}$is the error term. $\alpha_i$is therefore a group specific constant term, and it specifies an estimable conditional mean given the observable effects (Greene 2002, p.285).

Fixed effects are used when the individual effect that the regression wants to capture, which includes observed and unobserved characteristics that are taken as constant over time, are correlated with the regressors. This results in a biased least squares estimator of β, mainly as a consequence of omitted variable bias (Greene 2002, p.285). In other words, fixed effects regressions, when performed for a

time period larger than two, is a method for controlling for omitted variable bias, which might change over entities (Stock and Watson, 2007). The simplest form of fixed effects regression is one that takes into account changes in omitted variables from one entity to another, but that remain constant over time (Stock and Watson, 2007). In this case a set of *n* different intercepts are created for each country or entity. As described in Stock and Watson (2007) and in Greene (2002) among others, these intercepts absorb the effect of all different omitted variables. These omitted variables change from one entity to the next but not over time.

In general, entity fixed effects estimations can also be referred to as Least Square Dummy Variable model (LSDV), although, as outlined in Greene (2002) the least squares is the estimation technique, not the model itself. LSDV can also be used to allow for time fixed effects, which can be achieved through the inclusion of *T-1* dummy variables, whose inclusion is not conducted in totality because of collinearity. The second effect, time fixed effect, can be added to the first fixed effect (entity) by simply adding into any of the statistical packages *T-1* time dummy variables.

It is important to underline that theoretically these models are based on the assumption of equal group sizes. Modifications to allow for unequal group sizes have to take into account the fact that the full sample size is $\sum_{i=1}^{n} T_i$ instead of *nT* (Greene 2002, p.293). As described in Greene (2002), this calls for minor modifications of the calculations of the standard deviation and variance of the estimated coefficients, and of the F statistics. Still following Greene (2002) it is outlined how the group means must be based on T_i, which is not the same across groups. In general the overall means for the regressors change, as well as the moment matrix of the sum of squares, within groups, while the calculation of the other moments is unchanged (Greene 2002, p.290). Practically, the approach to unbalanced panels is to create a full set of *T* dummy variables, where one, most likely the last, is

dropped. Then, as described in Greene (2002, p.293) "..within each group any of the *T* periods represented is accounted for by using one of the dummy variables. Least squares using the LSDV approach for the group effects will then automatically take care of the messy accounting details".

The general equation for fixed time and group effects is the following (Greene 2002,p. 291):

$$y_{it} = x'_{it}\beta + \alpha_i + \gamma_t + \varepsilon_{it} \quad (2)$$

Where α_i and $\gamma_t$represent, respectively, the set of entity and time intercepts, $\varepsilon_{it}$is the error term and $x'_{it}\beta$ is the set of regressors or independent variables that make up the analysis. The dependent variables in my model are the Volatility of GDP growth rates, in the first specification, Volatility of Private Consumption annual growth, in the second specification, and Volatility of the ratio of Private Consumption Growth over GDP growth in the third specification. The approach will follow the one contained in Bekaert, Harvey and Lundblad (2006).

$$Volatility_{i,t} = StDev(GDP\ per\ capita\ growth_{i;\,t-1,t+1}) \quad (3)$$

$$Volatility_{i,t} = StDev(Private\ Consumption\ annual\ growth_{i;\,t-1,t+1}) \quad (4)$$

$$Volatility_{i,t} = StDev(Private\ Consumption\ annual\ growth\ /GDP\ growth_{i;\,t-1,t+1}) \quad (5)$$

In other words, volatility is calculated for each of the variables over three intersecting years, as shown in appendix V. As in Bekaert, Harvey and Lundblad (2006), a decision was taken to measure volatility in year *t* by calculating the standard deviation of growth rates in year *t*, *t-1* and *t+1*, in order to be able to smooth the pattern. I follow the work cited above, and compute the standard deviations over three years, so as to take into account the smaller time frame.

This paper is divided into three parts: the first part analyses the effects of financial integration on the volatility of GDP per capita growth, the second part ascertains the effect of financial integration on

the volatility of private consumption growth, and the third part discusses the impact of financial integration on the volatility of the ratio of private consumption growth to GDP growth.

The main challenge that this empirical analysis faces is with respect to the choice of variables that make up the Financial Integration measure. As discussed earlier, there are many different measures of financial integration that have been used in the literature, some are de jure, others are de facto.

2.2 Measuring Financial Integration: Bank Ownership and Foreign Direct Investment

Differently from the paper written by Bekaert, Harvey and Lundblad (2006), this thesis does not use a measure of de jure liberalization. The main explanatory variable used is the percentage of foreign banking institutions in any country at a given time. Other control variables are financial development, macroeconomic conditions and institutional quality.

Given the brief review of the literature contained in this paper, economic considerations regarding the properties of the data relative to the countries analysed, and the issue of data availability, the variables that are used to make up the measure of financial integration are the net inflows of Foreign Direct Investment, taken from the World Bank freely accessible database, and a new database on the ownership structure of banks developed by Claessens and Van Horen (2012) which has data available for 137 countries over the period 1995-2009. This analysis contains data for 136 countries[1], from 1996 to 2009.

[1] After careful consideration of the properties of the data, I have decided to exclude from the dataset the observations for Serbia and Montenegro. This is because in the dataset from Claessens and Van Horen (2012) the two variables are still coded together, while in the other data sources that I am using the two variables are always coded separately.

Clearly, the two variables that I have chosen to proxy financial integration contain different types of information regarding integration in the financial markets. By using this two variables, this paper hopes to be able to bridge the different results and interpret them accordingly.

Bank integration has been used in several works, most dealing with macroeconomic volatility and business cycles convergence, for example Morgan, Rime and Strahan (2004) assess the impact of bank integration on the convergence of business cycles in the US states over the past 30 years. Following their approach, this study assesses if bank integration across states has had an impact on macroeconomic volatility.

The conclusion focuses on whether the ownership structure of the banking industry, which is used as a proxy of financial integration, affects macroeconomic stability, in the sense of output volatility and volatility of private consumption, and if the results hold when looking at CEE and CIS countries.

2.3 Other Data

The choice of the other independent variables follows the direction taken by Kose, Prasad and Terrones (2003), by Easterly, Islam and Stiglitz (2000) and by Bekaert, Harvey and Lundblad (2006). The latter is the one where the most variables are used, to account not only for financial integration, but also for trade openness, political risk, conflict, institutional quality, the legal environment and macroeconomic and demographic variables and measures (Bekaert, Harvey, Lundblad, 2006). In Kose, Prasad and Terrones (2003), countries are divided according to their level of integration into the global capital market, with developing countries divided in two groups: More Financially Integrated

and Less Financially Integrated. This division is difficult to apply in this study, as the presence of many emerging market economies, as those of Central and Eastern Europe, makes the distinction blurry.

Apart from general variables denoting GDP , the authors cited above use a set of variables such as import and exports as a percentage of GDP to denote trade openness, capital inflows and outflows to denote financial openness, and a set of other macroeconomic variables for control, such as government expenditure, terms of trade, consumer price index, money and quasi money (M2) as a percentage of GDP, government revenues, the six month LIBOR interest rate, population growth, exchange rate arrangements and the weighted conflict index (Kose, Prasad and Terrones, 2003).

In Easterly, Islam and Stiglitz (2000), the authors underline the standard macroeconomic approach to output fluctuations, which states that output variability is driven by changes in inputs (e.g. Employment) and technology, and the relationship between input and output. The authors argue that traditional macroeconomics, in denying the importance of financial institutions in shaping the economy and affecting macroeconomic volatility have disregarded a very important determinant of macroeconomic fluctuations (Easterly, Islam, Stiglitz, 2000). Even if theory is unable to guide us when output volatility and its determinants are concerned, one possible starting point for the analysis provided by the literature is that capital account openness, and therefore financial integration, make countries less vulnerable to internal shocks, but exposes them to more shocks coming from the outside, however there are many effects that need to be taken into account and the overall result is that theory does not provide us with an unambiguous solution (Easterly, Islam, Stiglitz, 2000). This is one of the reasons why studying financial integration as a determinant of macroeconomic volatility is of interest for the economic community. Easterly, Islam and Stiglitz (2000) broadly divide the variables of interest into five categories. The first category is trade and financial openness, the second

is financial system development, the third is price variability and flexibility, the fourth is policy volatility and the fifth is an miscellaneous category comprising a dummy variable for the OECD and per capita growth.

Two papers are to be taken into account when a decision about the control variables has to be made. Sala-i-Martin, Doppelhofer and Miller (2004) use Bayesian Averaging of Classical Estimates (BACE) to determine the variables, over a number of 64 that they surveyed from the literature, that are significantly related to growth using a large cross section of countries. Their main finding is that the most important variables to be included in any growth analysis is the rate of school enrolment, the price of investment goods, and the level of initial income, which is related to the convergence literature (Sala-i-Martin, Doppelhofer, Miller, 2004). Other very significant variables are regional dummies, measures of human capital and health, religious dummies and sectorial variables. Fernandez, Ley and Steel (2001) use Bayesian Model Averaging and find that school enrolment is significant, but not as much as predicted by Sala-i-Martin Doppelhofer and Miller (2004). Instead, in the framework that they use, the most important variable is the one depicting convergence, and then the fraction of the population that is Confucian, which, as also analysed in Sala-i-Martin Doppelhofer and Miller (2004), is highly correlated with the East Asia Dummy variable. Third is life expectancy and then equipment investment. In conclusion, much of the analysis of the empirical literature related to growth and its variability does not have definite answers with regards to the best choice for control variables. Most of the studies include some elements of human capital, such as school enrolment, which is consistent with expanded versions of the neoclassical theories of growth, whereby only taking into account traditional sources of growth does not explain the recent developments in the growth of countries (Ray, 1998). Also, consistent with the conditional and unconditional theory of

convergence stemming from traditional growth models (see Ray, 1998), most studies include the initial income level. Other variables that are often used are with reference to legal, political and institutional risk or quality. The choice to include these variables derives from a new understanding of the importance of the system where the economy operates, thereby including in the analysis non only the inputs and outputs of economic activity, but also the framework where the economy exists.

2.4 Description of the Variables

For financial Integration this research uses a measure of bank integration from Claessens and Van Horen (2012) and a measure of FDI flows (World Bank databank).

The variables used from Claessens and Van Horen (2012) are the percentage of foreign banks among total banks by country, from 1996 to 2009. The second variable is the percentage of foreign bank assets among total bank assets, by country, from 2004 to 2009. It is important to underline that Claessens and Van Horen (2012) code a bank as foreign owned if at least 50percent of its shareholders are foreigners. See appendix XV for a detailed description of the two variables.

As measures of FDI flows this dissertation works with World Bank data on inflows, namely net inflows of foreign direct investment as a percentage of GDP.

For financial development, the present work uses a measure of credit market development, consistent with the choice of the banking system as the financial integration measure. Namely the variable that is included is private credit by deposit money banks and other financial institutions over GDP (Beck and Demirguc-Kunt, 2009). In the analysis a measure of financial deepening is included, such as M2, money or quasi money, over GDP, following the literature such as Denizer, Iyigun, and

Owen (2000) and Kose, Prasad and Terrones (2003). Other included variables are: bank deposits over GDP and two measures regarding the stock market, stock market turnover and stock market capitalization over GDP (Beck and Demirguc-Kunt, 2009). These variables are taken to account for financial development and deepening.

For institutional Quality, a broad measures of Democracy is used (contained in the QoG dataset and based on Freedom House and Polity IV) and Corruption (contained in the QoG dataset and based on Transparency International).

The main variables are corruption, as measured by the corruption perception index of Transparency International, which gives countries a score from 0 to 10 according to the level of corruption, with 10 meaning that the country is free from corruption. Additionally I include a measure of democracy, as calculated by freedom house and Polity IV. The scores are given from 0 to 10, with 0 least democratic and 10 most democratic. The values given to each country by freedom house and polity are transformed into the afore mentioned scale and averaged[2].

The human Capital measures that will be used are gross secondary school enrolment, population growth and life expectancy, all from the World Bank database.

Macroeconomic variables consist of a measure of trade over GDP, defined as the sum of imports and exports over GDP, and inflation (World Bank). Another control variable will be general government final consumption (World Bank). Furthermore I have decided to include in the regression for the volatility of private consumption the GDP per capita growth (World Bank) as one of the independent variables.

[2] Calculations are already done by the Quality of Government institute and are present in the dataset used.

The dependent variables will be based on GDP per capita growth (World Bank and Penn World Tables) and Household Final consumption data[3] (World Bank).

2.5 Preliminary Data Analysis

The data contained in this work are taken from different reliable and well established sources. The main difficulty encountered is the fact that the panel that will be used in the analysis is an unbalanced panel.

The only variables that do not have missing values for the period analysed are population growth and bank ownership. Of the other variables, the ones that present most are stock market turnover and stock market capitalization, because not many middle to low income countries have a stock market. These missing data are not missing at random, as for many of them there are specific data that are missing for one country or one year, and the pattern is quite consistent, as in the example of stock market measures, which are most likely correlated, for example, with the level of income. From the preliminary data analysis it looks like the variables are in order, the means and standard deviations observed are explainable, as portrayed in appendix III.

The correlation between bank ownership and FDI inflows is quite low, at around 0.21. When analysing the macroeconomic variables, the highest correlation is found between life expectancy and secondary school enrolment. For the purposes of analysis, these two variables will be kept in the initial regression stages, because they are important controls.

[3] Formerly known as private consumption, World Bank.

The correlation between the financial development variables, the measure of money growth (M2) over GDP and bank deposits over GDP, is high. The fact that the correlation coefficients are high is expected, as the variables measure financial development and depth, and the two concepts are related. The correlation matrix for the control variables regarding corruption and democracy shows very high correlations.

Looking at the frequency table showing the distribution of countries according to income and using the World Bank definition, the finding is that the dataset is composed of mainly high income countries, the next most important group of countries is upper middle income countries, followed by lower middle income and low income, as shown in appendix II.

With regards to the variability measures, two measures using GDP per capita are created, one using data from the World Bank and the other using data from the Penn world tables. Both calculations are kept because Penn world tables adjust their figures for inflation and PPP, while the World Bank does not.

Since volatility is calculated over a three year period, the GDP data start from one year earlier than the rest of the dataset, namely from 1995. Data coverage for the Penn World Tables only arrives until 2009. With the World Bank dataset 2010 can also be used to allow the calculation of volatility for the year 2009 to be complete.

In the Penn World Tables dataset three different measures of GDP per capita are extracted and three different measures of volatility are computed. The correlation is higher than 96percent in all cases. The correlation between the different measures of volatility is strong between the variables created using the Penn World Tables data.

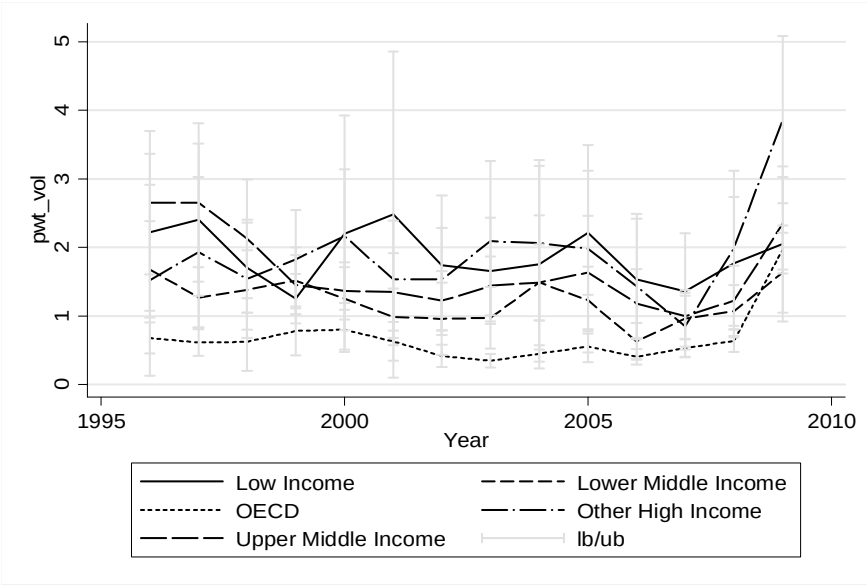
The following step is to look at the graphs of the different volatility measures to ascertain the pattern given the different income levels and regions. In theory, there should be heightened volatility in the current period, as a result of the financial crisis. Furthermore, economic theory suggests that as a country moves towards a higher income level, therefore as the country grows, the volatility should be lower. Fiaschi and Lavezzi (2011) argue that this is because as an economy develops, it will be less vulnerable to shocks related to volatile sectors such as agriculture. Furthermore, they also argue that the most likely explanation is in the increased number of sectors that make up the economy; a shock to one of the sectors will be cancelled out by an opposite shock in another sector, given the law of large numbers (Fiaschi and Lavezzi 2011, p.2).

A new variable denoting GDP growth is created, using the Penn World Tables, to account for GDP growth. In order to create the new variable the lagged version of GDP per capita is constructed, and the following Standard formula is used to compute GDP growth:

$$GDPgrowth = \left[{(GDP_t - GDP_{t-1})}/{GDP_{t-1}} \right] \times 100 \qquad (6)$$

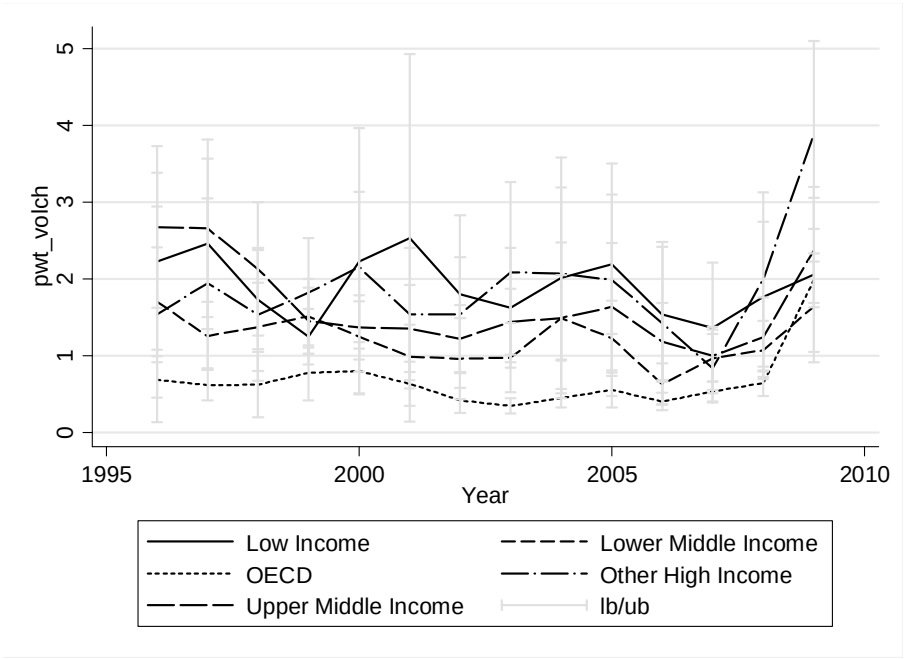
Once this measure of GDP growth has been created, the new volatility variable based on the growth rates extracted from the volume data present in the Penn World Tables can be created as well. The countries belonging to each of the income groups are shown in appendix II.

Figure 1: Volatility of GDP per Capita Growth (pwt_vol)



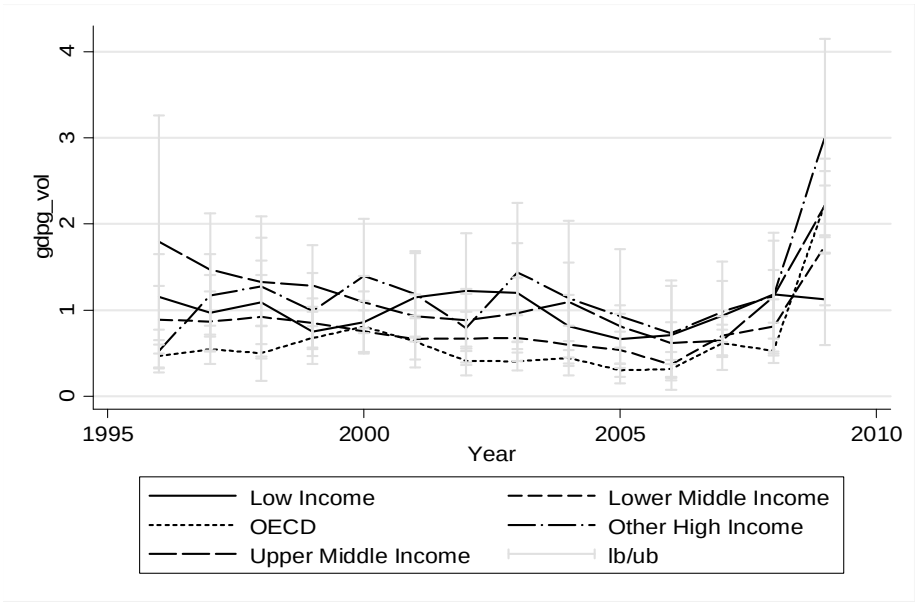
The first graph shows the volatility patterns, grouped with respect to income, using the calculated volatility of real GDP per capita growth from the Penn World Tables, which is computed using the Laspeyres method, at 2005 constant prices. This type of graph computes average values for the volatility for each group and shows the maximum and minimum points with respect to the computed average. The graph shows that the highest level of volatility in GDP growth is found for the income group of "Other High Income Countries" while the lowest, at least up until 2008, was found for OECD countries. In 2009 the lowest volatility is found for lower middle income countries. The same pattern exists when making a graph of volatility using GDP growth estimated from the Penn World Table data on Real GDP per capita (Chain Series) as shown below.

Figure 2: Volatility of GDP per Capita Growth (pwt_volch)



Using World Bank data, the situation is the following.

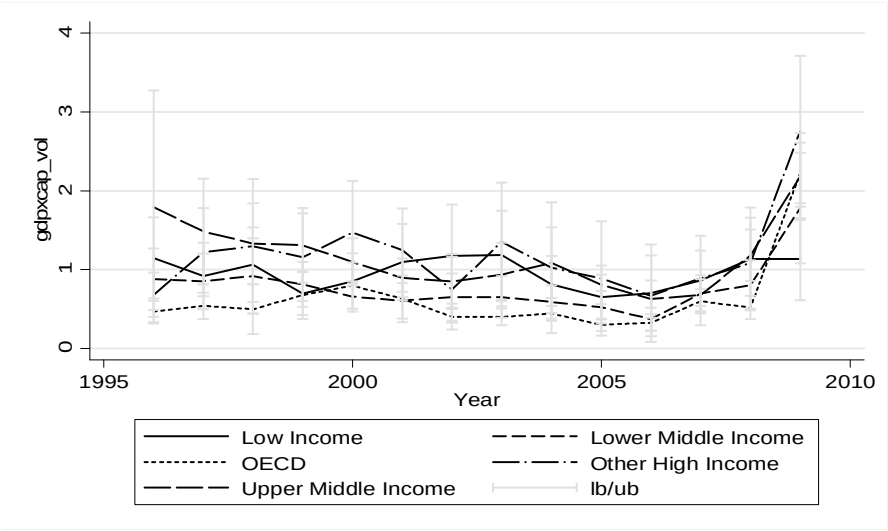
Figure 3: Volatility of GDP Growth (World Bank)



The picture above shows a slightly different story, with other high income countries still having the largest levels of volatility and low income countries showing the lowest levels of volatility in 2009.

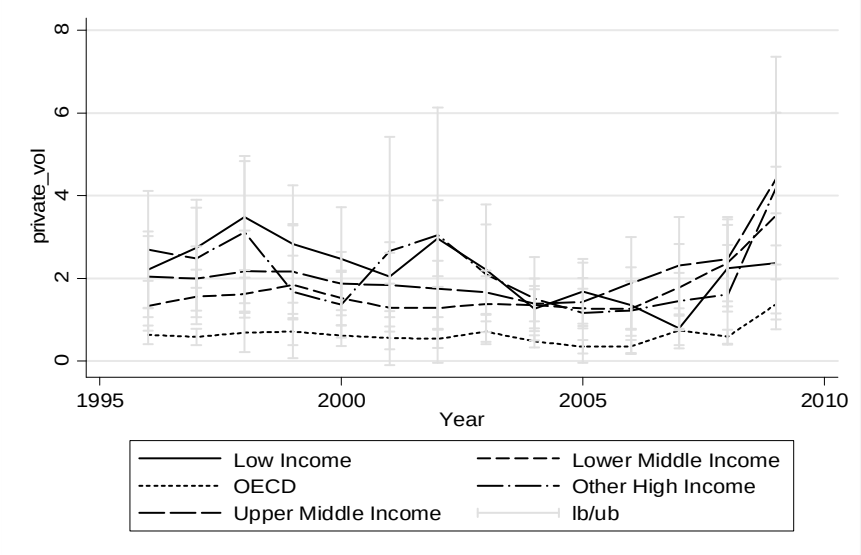
The same is true when GDP per capita growth volatility (World Bank) is used.

Figure 4: Volatility of GDP per capita growth (World Bank)



For private consumption, volatility in annual growth rates is used. The computed volatility shows the following pattern.

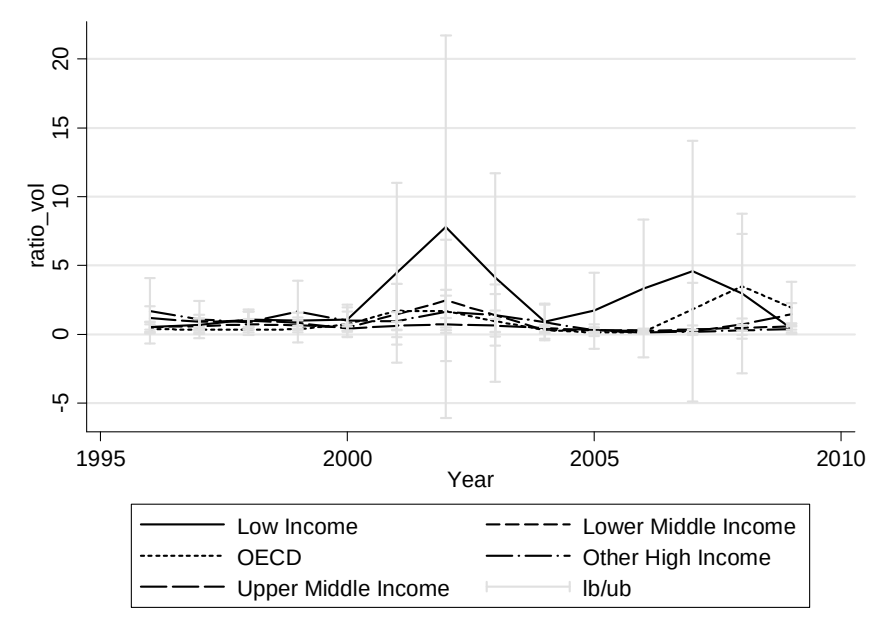
Figure 5: Volatility of Private Consumption Growth (World Bank)



Private consumption exhibits a very volatile pattern for low income and upper middle income countries, while OECD countries are at very low levels, with a spike over the last couple of years, which is most likely a result of the current financial crisis. The level of private consumption volatility for OECD countries is very low with respect to the other groups of countries. This is consistent with what has been found in the literature surveyed regarding threshold effects.

The following figure depicts the pattern of volatility of the ratio of private consumption growth and GDP growth.

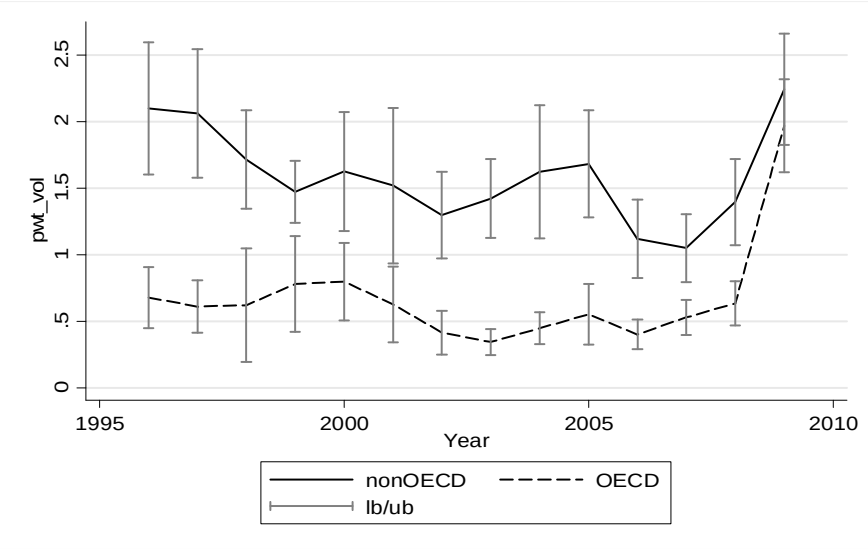
Figure 6: Volatility of the Ratio



The figure above shows that for the ratio the highest volatility is found for low income countries, at least until the recent crisis.

The next figure shows the volatility of GDP growth for OECD countries versus non OECD countries.

Figure 7: Volatility of GDP per Capita Growth (OECD vs non OECD)



The volatility measure for OECD countries is consistently lower than for non OECD countries, even though the volatility in OECD countries is increasing since 2008. The same is true if we look at the other two measures of volatility.

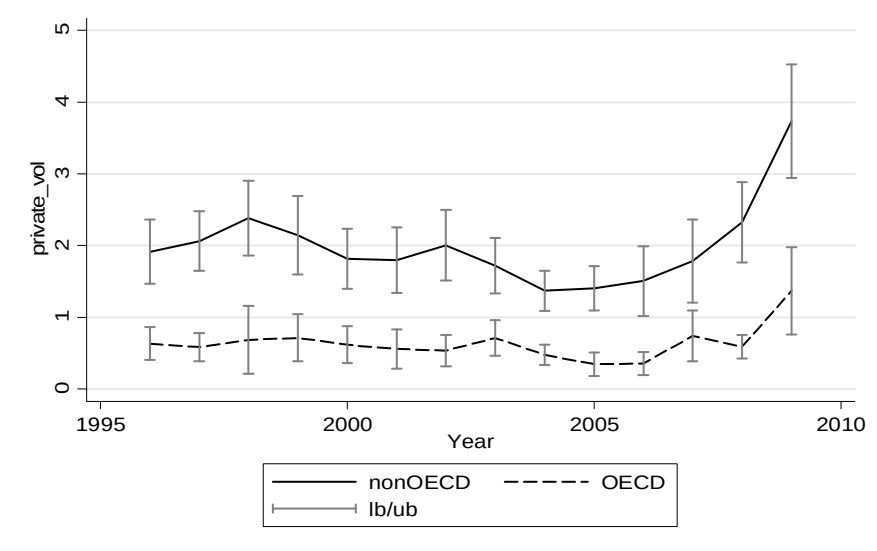
Cecchetti, Flores Lagunes and Krause (2006) survey the possible explanations for the decrease in output volatility since the 1970's, and the come to the following possible list of determinants of the drop in macroeconomic volatility:

1. "Improved inventory management
2. Better monetary policy
3. Financial innovation and improvements in risk sharing
4. Increased international commercial openness
5. Luck in the form of smaller shocks
6. Change in the composition of output

7. Changes in the methods used to construct the data" (Cecchetti, Flores Lagunes and Krause 2006, p.2)

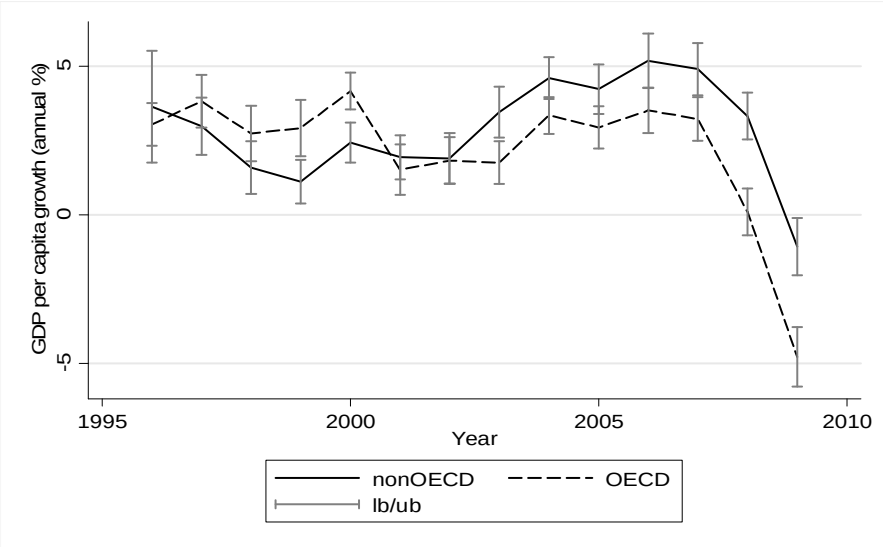
With regards to the volatility of private consumption, as shown in figure 8, the situation is slightly different. For non OECD countries volatility is consistently higher, and even if consumption volatility has been increasing in OECD countries, the extent is much lower than for output volatility.

Figure 8: Volatility of Private Consumption Growth (OECD vs non OECD)



With regards to GDP per capita growth, the figure below shows that OECD countries have been growing more than non OECD countries until the year 2000, which is when they were surpassed. Since 2007 both groups of countries have been experiencing a fall in their GDP per capita growth.

Figure 9: GDP per Capita Growth (OECD vs non OECD)



Additionally, I examine how the main independent variables with which this study is concerned are behaving within regions. Whenever possible, the World Bank definition to differentiate regions has been used. Nevertheless, given the fact that I want to concentrate on how the countries of Central and Eastern Europe and Commonwealth of Independent States behave in the sample, I have made a further distinction inside the "Europe and Central Asia" group, which is now divided into three subgroups, namely "Western Europe", "Central and Eastern Europe" and "Commonwealth of Independent States". The only issue encountered is with respect to the group where Turkey belongs, which has been placed under the Western Europe group. Since fixed effects do not work properly with variables that change slowly over time, it needs to be true that there is enough variation in the main independent variables to enable a meaningful analysis. In appendix IV, a series of figures showing the behaviour of the variable denoting foreign bank presence across regions is presented.

For countries belonging to the Central and Eastern Europe group, there is a common pattern towards greater foreign bank presence. The estimated means over the whole sample period for the entire

Central and Eastern Europe group are just below 50percent. The average percentage of foreign bank presence according to the measure developed by Claessens and Van Horen (2012) for the last year of available data, 2009, has increased to around 67percent for the entire sample of countries. The pattern is much flatter now than it was at the beginning of the 21st century. The only case where there is negative growth is Estonia for the year 2003, when there is a decrease in the percentage of foreign banks from 50percent in 2002 to 43percent in 2003. Slovenia is the country where foreign bank presence is the lowest across the sample, with an average of 26percent.

For the Commonwealth of Independent States the situation is very different, as many of them have not opened up to foreign bank presence. Azerbaijan, with an average of 12percent, and Russia, whose percentage is below 12.5percent for the whole period are examples of countries that have not experienced a take-over from foreign banks. Also Uzbekistan shows relatively lower percentages of foreign bank presence, with an average of 21percent over the whole period. On the other hand, countries like Georgia and Armenia show very high levels of foreign bank presence; their respective percentage of foreign bank presence in the year 2009 is 67percent and 80percent.

Countries in western Europe constitute a very heterogeneous sample. For example there are virtually no foreign banks in Norway while all banks in Luxembourg are coded as foreign banks. Even when looking at countries that are members of the European Union, there are large differences, as in the case of Ireland, with an average over the period 1996 to 2009 of foreign bank presence around 80percent, and Spain, with average foreign bank presence around 5percent.

The patterns shown in foreign bank presence in the East Asia and Pacific region is very heterogeneous, with very low levels for Vietnam and Japan and very high levels for New Zealand, Hong Kong and Singapore.

For Latin American and Caribbean countries, the sample shows a high level of heterogeneity. As for Iceland, Luxembourg, Norway and Sweden, also Cuba and Haiti show an almost flat line. Since this might be problematic when running a country fixed effects model, the present study runs a regions fixed effects model, also avoiding the risk of having the unobserved time invariant variables being correlated across individual entities.

For North African and Middle Eastern countries, the data show that countries like Iran and Saudi Arabia have virtually no foreign banks, while countries like Bahrain and Algeria experience very high percentages of foreign owned banks.

The Sub-Saharan African group is composed of more than 30 countries, it is therefore very heterogeneous, and shows both very high and very low levels of foreign bank presence, with both flat lines and increasing patterns.

For North America, which is composed of the United States and Canada, figures are around 30percent and 40percent respectively. The countries that are grouped under the South Asia region, percentages are also around 40percent maximum, with a mean of 10percent.

In order to assess the direction of the relationship between the volatility of GDP per capita growth and the presence of foreign banks, a scatter diagram is used to be able to graphically assess their relationship.

Figure 10: Foreign Bank Presence and Volatility of GDP per Capita Growth (CEE)

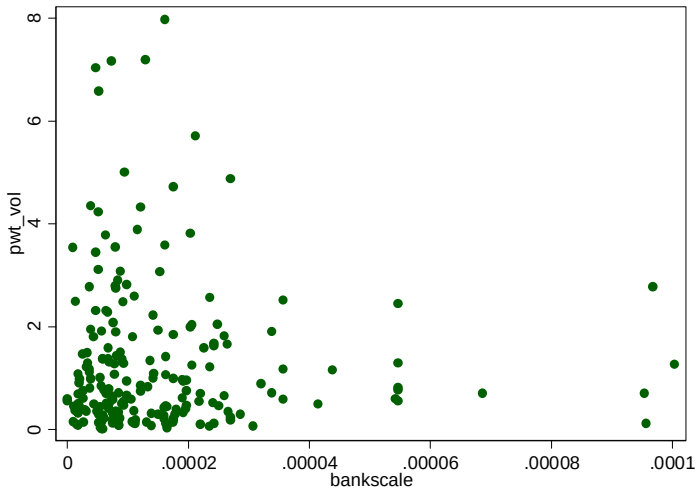


Figure 10 shows the relationship between the scaled version of the bank variable and the volatility of output for the countries belonging to the Central and Eastern Europe group. As we can see the relationship is not perfectly linear. However the trend is generally negative.

Figure 11: Foreign Bank Presence and the Volatility of GDP per capita Growth (CIS).

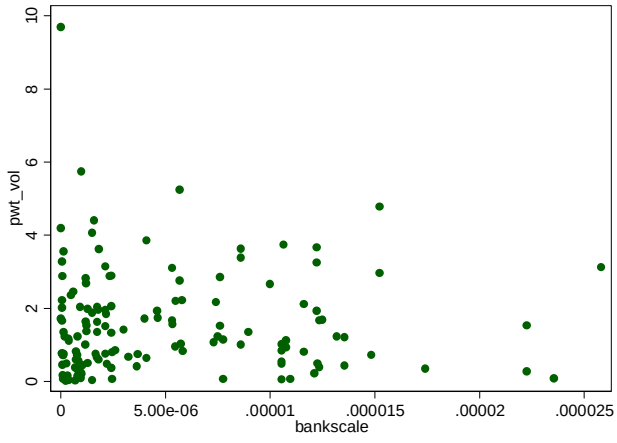


Figure 11 shows the same relationship, but this time with respect to the countries of the Commonwealth of Independent States. The relationship is not perfectly linear, and shows a negative

trend. In principle the relationship does look weak, and the correlation between the two variables is never above 10percent. A weak correlation does not necessarily mean that the relationship is not existent, which is what regression analysis tests.

The next tables show the correlation between GDP per capita growth and the volatility of GDP growth per capita. As outlined in the literature review, it is important to understand the association between GDP growth and its volatility, the tables below show that the correlation coefficients between GDP per capita growth and the volatility of GDP per capita growth is consistently negative.

Table 1: Correlation matrix of GDP per capita with the Volatility of Output, by Income level.

CORR GDP per capita	Low Income	Lower Middle Income	Other High Income	Upper Middle Income	OECD
pwt_vol	-0.2294	-0.1112	-0.0808	-0.0207	-0.3355
pwt_vol2	-0.2302	-0.1355	-0.0935	-0.0222	-0.3245
pwt_volch	-0.2399	-0.1122	-0.0801	-0.0162	-0.3365

When looking at the correlation coefficients as grouped by region the situation is the following:

Table 2: Correlation matrix of GDP per capita with the Volatility of Output, by Region.

CORR GDP per capita	CEE	CIS	East Asia & the Pacific	Latin America & Caribbean	Middle East and North Africa
pwt_vol	-0.002	-0.1323	-0.4107	-0.1198	-0.0485
pwt_vol2	0.0126	-0.2638	-0.4157	-0.1411	-0.0662
pwt_volch	0.0087	-0.1362	-0.4112	-0.1204	-0.046
	North America	South Asia	Sub-Saharan Africa	Western Europe	
pwt_vol	-0.5848	-0.2485	-0.1293	-0.4427	
pwt_vol2	-0.5823	-0.2438	-0.1278	-0.4389	
pwt_volch	-0.5851	-0.247	-0.1376	-0.4438	

This table shows a consistent correlation between the three different measures of output volatility, with the exception of the second and third measure for countries of Central and Eastern Europe, where the correlation coefficients are positive.

3. Empirical Results: Foreign Bank Presence

3.1 The Effect of Financial Integration on the Volatility of the Growth of Real GDP per Capita

In order to capture the effect of foreign bank presence on the volatility of GDP, this dissertation presents regression analyses using the standard fixed effects regression, with entity only effects, and fixed effects regression with both entity and time fixed effects. In all cases robust standard errors have been computed in order to correct for heteroskedasticity. The four different regressions are shown in order to be transparent about the methodology used, and in order to show the extent of changes in the output of the regression analysis once one method or the other is used.

The measure of volatility of GDP per capita growth has been calculated from the Real Per Capita GDP (Laspeyres) using the data available in the Penn World Tables. In order to calculate the rate of growth of Real GDP per Capita the standard formula has been used (see appendix V). The volatility of Real Per Capita GDP growth has then been calculated over three intersecting years in order to smooth the pattern, following Bekaert, Harvey and Lundblad (2006). In the following table the Volatility of Real GDP per Capita Growth is referred to as PWT_VOL, which is the dependent variable.

Table 3: Foreign Bank Presence and the Volatility of Output (PWT)

VARIABLES	(1) LSDV_Reg pwt_vol	(2) LSDV_YearReg pwt_vol	(3) FE_Country pwt_vol	(4) FE_CountryYear pwt_vol
Net FDI inflow	0.00662	0.00676	0.00678	0.00498
	(0.00499)	(0.00554)	(0.00558)	(0.00616)
Foreign Bank Presence	-0.00419**	-0.00316	-0.00843	-0.00207
	(0.00203)	(0.00200)	(0.00766)	(0.00818)
Trade (X-M/GDP)	0.00271**	0.00285**	0.00158	0.00360
	(0.00138)	(0.00136)	(0.00556)	(0.00530)

Government Consumption	0.0159	0.0163	0.0685	0.0583
	(0.0135)	(0.0136)	(0.0514)	(0.0497)
Inflation	0.0223****	0.0209****	0.0195**	0.0190**
	(0.00611)	(0.00599)	(0.00894)	(0.00874)
Population Growth	0.172*	0.161	0.284**	0.207
	(0.0978)	(0.0980)	(0.137)	(0.130)
Life Expectancy	-0.0321**	-0.0275*	-0.111	-0.0313
	(0.0152)	(0.0161)	(0.0701)	(0.0905)
Secondary School Enrolment (gross)	-0.00165	-0.000637	0.00163	0.00848
	(0.00304)	(0.00302)	(0.00687)	(0.00735)
Private Credit (GDP)	0.0608	0.0625	1.348**	1.323**
	(0.228)	(0.217)	(0.660)	(0.611)
Deposits (GDP)	0.227	0.157	-0.876	-0.698
	(0.293)	(0.310)	(1.072)	(1.116)
Turnover ratio	-0.0315	-0.0344	-0.101	-0.0604
	(0.0729)	(0.0744)	(0.117)	(0.139)
Stock Market Cap. (GDP)	-0.0231	-0.00138	0.0745	0.0934
	(0.0947)	(0.100)	(0.165)	(0.232)
M2 (GDP)	-0.00342	-0.00283	-0.00380	-0.00167
	(0.00212)	(0.00214)	(0.00503)	(0.00474)
Democracy (FH_POLIV)	0.00570	0.00457	-0.0123	-0.0134
	(0.0331)	(0.0329)	(0.0612)	(0.0604)
Corruption (TI)	0.0141	-0.00995	-0.0680	-0.0674
	(0.0364)	(0.0402)	(0.131)	(0.133)
dum_CEE	0.276	0.209		
	(0.275)	(0.278)		
dum_CIS	0.486*	0.461*		
	(0.272)	(0.277)		
dum_EAP	0.567***	0.561***		
	(0.203)	(0.205)		
dum_LAC	0.522**	0.483**		
	(0.204)	(0.212)		
dum_MENA	0.259	0.252		
	(0.269)	(0.265)		
dum_SA	0.0416	0.140		
	(0.254)	(0.272)		
dum_SSA	0.0348	0.108		
	(0.311)	(0.320)		
dum_WE	0.123	0.151		
	(0.135)	(0.144)		
1996b.year		0		0
		(0)		(0)
1997.year		-0.101		-0.168
		(0.380)		(0.401)
1998.year		0.316		0.347

		(0.408)		(0.454)
1999.year		0.226		0.226
		(0.342)		(0.408)
2000.year		0.0670		0.0383
		(0.319)		(0.416)
2001.year		-0.129		-0.222
		(0.321)		(0.457)
2002.year		-0.303		-0.413
		(0.308)		(0.446)
2003.year		-0.0938		-0.215
		(0.323)		(0.446)
2004.year		-0.0381		-0.171
		(0.318)		(0.480)
2005.year		0.120		-0.0821
		(0.332)		(0.496)
2006.year		-0.293		-0.491
		(0.312)		(0.510)
2007.year		-0.196		-0.456
		(0.311)		(0.552)
2008.year		-0.0506		-0.308
		(0.345)		(0.596)
Constant	2.392**	2.109**	7.721	1.204
	(0.990)	(1.070)	(5.105)	(6.497)
R-squared	**0.171**	**0.195**	**0.110**	**0.152**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of real GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0). The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the corruption perception index of transparency international.

The results shown in table 3 show that the only regression that is able to capture the effects of foreign bank presence is the one that takes into account region dummy variables. The coefficient for foreign bank presence is negative, around -0.004, and it is significant at the 95percent confidence level. This model estimates that the theoretical paradigm postulating a role for financial integration in decreasing macroeconomic volatility was right. The direct extent to which foreign bank presence decreases macroeconomic volatility is numerically small. Additionally, foreign bank presence might have an effect on macroeconomic volatility through different channels, as outlined in the literature

review. Foreign bank presence makes the industry more competitive, it allows for gains to be made thanks to innovation, and it increases the performance of borrowers (see pp.24-25). Some of the papers surveyed in the present dissertation do find a role for the banking industry in affecting stability. Notably, Morgan, Rime and Strahan (2004) and Ghironi and Stebunovs (2010), find that increased integration in the banking sector decreases aggregate output volatility and firm-level volatility. Nevertheless, the different calculations of the volatility measure and the regional focus of many of the studies on the subject, which are for the most part concerned with liberalization in the banking industry in the United States, might be the driving force behind the results. Furthermore, the relative development of the foreign owned credit institutions with respect to the domestic credit institutions is seldom included, and it is not captured appropriately by current measures of integration in the banking industry. In the present study, private credit by deposit money banks and other financial institutions is included to account for the development of the domestic financial sector, however no such measure exists that computes those values for foreign owned banks. Matters are made even more complicated by the legal status of foreign credit institutions, which might be established as either branches or subsidiaries. The legal status will then affect the way in which those institutions will be accounted for in national accounts.

Once time fixed effects are included in the analysis, they are partly able to capture a positive bias in the first regression; the result is that foreign bank presence is not significant anymore. This finding confirms what is found in a large set of studies on financial integration, including Williamson (1989); Kose, Prasad, Rogoff and Wei (2006) and Eichengreen (2001) who argue that it is not necessarily true that financial integration has a direct role to play when macroeconomic stability is concerned, because the effects might be collateral and indirect. This finding is further confirmed by specifications

three and four, which do not find a significant association between foreign bank presence and output volatility. These two models take into account country fixed effects (3) and country and time fixed effects (4), correcting both for heteroskedasticity and for autocorrelation, using the robust and cluster options.

In all regressions trade has a positive coefficient. In particular, when regional dummy variables and time fixed effects are included in the analysis, trade has a positive coefficient significant at the 95percent level, implying that a one unit increase in trade will have a positive effect on output volatility. This is in line with the work of Easterly, Islam and Stiglitz (2000) who find trade, defined as imports and exports over GDP, to be positively associated with macroeconomic volatility ,however this result is not confirmed by other studies such as Cecchetti, Flores Lagunes and Krause (2006) who find that the evidence on the relationship between an increase in international trade and output volatility is weak. Once country fixed effects are used in the analysis, the relationship between trade and output volatility is not statistically significant anymore, showing that Cecchetti, Flores Lagunes and Krause (2006) might be right in expecting a weak relationship between the two variables. This might be the case because flows between countries might be less important than flows between regions. The fixed effects regression does not work properly when there is not enough variation across countries, and this might be yet another explanation of why the effect is captured when regional differences are accounted for, but not when country level differences are included. Furthermore, the last two specifications account for autocorrelation between the years analysed, which might be correlated. In this sense, regressions three and four might be able to capture the positive bias present in the first two specifications, which makes the robust standard errors lower than they would otherwise be.

Inflation is significant in all of the four specifications and its coefficient is always positive, therefore an increase in inflation will result in heightened output volatility. In the literature surveyed, the main explanation provided on the positive relationship between inflation and the volatility of output is that it is the lower volatility of inflation, which is connected with the adoption of an inflation targeting scheme and a more independent central bank, that is associated with more stable real growth (Cecchetti, Flores Lagunes and Krause 2006, p. 4). It is important to highlight that the causality could also go the other way, with higher output volatility contributing to higher inflation volatility, as shown in Brunner (1993) and Ungar and Zilberfarb (1993). The coefficient of inflation could also be capturing the effect of monetary stability, which affects uncertainty and macroeconomic volatility. To verify this hypothesis I have used M2 (*money or quasi money*) over GDP to account for monetary stability, however, M2 is found not to be significant. The role that uncertainty and monetary and fiscal credibility play in determining macroeconomic stability in a country should not be underplayed. In spite of that, it is often difficult, especially when addressing cross-country data, to capture the effect of credibility, and often proxies are used to account for the credibility of the central bank and the political leadership of a country. In the present case, apart from inflation and M2 money growth which are used as proxies of credibility of the monetary authorities, government expenditure is used to delineate fiscal performance and credibility. Government expenditure is not statistically and significantly associated with the volatility of output in any of the regressions conducted on real GDP per capita growth, which might indicate that it is not the best measure of fiscal performance and credibility, but it might also indicate that the effect is weak and it is difficult to find.

Population growth is significant and positive in regressions one and three, implying that demographic patterns do have a positive effect on output volatility, and an increase in population growth will result

in increased macroeconomic volatility. This result is in line with theories focusing on the spatial persistence of demographic shocks, that argue that population growth shocks will contribute to macroeconomic volatility, and in particular output volatility (Azomahou, Diebolt and Mishra, 2009). When time fixed effects are included in the regression analysis, in specifications two and four, they are party able to capture the bias for population growth, resulting in the latter not being statistically significant.

Life expectancy is significant with a negative coefficient, meaning that the higher the life expectancy the lower macroeconomic volatility. The significance is only present when regional variation is accounted for, while when country fixed effects are used it becomes not significant. The literature on the demographic component of output volatility is not clear on the relationship between the change in age structures and macroeconomic stability. For example, an increase in life expectancy could put extra pressure on the pension system, which could contribute to political and economic instability, but it could also put pressure on the government to pursue reforms that make the labour market more flexible and therefore, in theory, reducing economic volatility. Endogeneity might also be an issue here, as the causality could run both ways.

Of the variables denoting financial development, private credit is the only one that is shown to be significantly associated with output volatility, when country fixed effects are used (specification three and four). The coefficient for private credit is positive, and with respect to the coefficients displayed for the other variables that are significantly associated with volatility, it is the largest, at around 1.3.

Of the included dummy variables, the significant ones are the one for the Commonwealth of Independent States, the one of East Asia and the Pacific and the Latin America and Caribbean dummy.

They all enter the regression with positive coefficients, and the slopes are approximately 0.5. These three dummy variables contribute to the model's explanatory power; knowing if a country belongs to the CIS, East Asia and Pacific or Latin America and Caribbean regions will help explain more variance in output volatility.

In order to check the results the present study has estimated the same regressions using other measures of growth volatility, including the one created using the real GDP per capita growth obtained from the Penn World Table that is derived from the growth rates of domestic absorption at 2005 constant prices[4]. In general, these further regression confirm the results obtained in the first set of regressions.

The table showing the new results can be found in appendix VI. Foreign bank presence is significant only when using the LSDV technique with regional dummy variables (specification 1), at the 90percent confidence level, confirming the results presented before. The coefficient is still negative and slightly smaller. Inflation is significant in all specifications, with the same confidence levels as in table 3. The main difference is that in the first three specifications the coefficient is slightly larger. Population growth is significant in the second specification therefore taking into account the years dummy variables and the regions dummy variables, population growth has a positive impact on macroeconomic volatility, at the 90percent confidence level. Life expectancy is significant in the first two specifications, although the confidence level in the second one is 90percent. The coefficient is still negative and slightly smaller than in table 3. Private credit is significant in specifications three and four, with the same sign but with slightly smaller coefficients. The dummy variable for the

[4] The variable is denoted as RGDPL2 in the PWT 7.0 data. The name of the variable that has been used in the previous analysis is RGDPL in the PWT 7.0 data.

Commonwealth of Independent States is not significant in the second specification anymore. East Asia and the Pacific and Latin America and the Caribbean are significant with positive coefficients.

In appendix VII the results of the regression using as macroeconomic volatility the volatility of Real GDP per capita growth estimated using Chain Series, instead of the Laspeyres method, at 2005 constant prices, are shown. Foreign bank presence is significant at the 95percent confidence level, and the coefficient is very similar to the first two cases. Trade is significant in the first two specifications, with a positive coefficient that changes slightly from the one presented in table 3. Population growth is significant in regressions one to three with a positive coefficient. The dummy variable for the Commonwealth of Independent States is only significant in the first specification. The remaining results are consistent with what is found in table 3. This results show how the decision made around what variable is most appropriate when measuring the volatility of growth rates is very important.

Appendix VIII contains the table with the regression results for the volatility of GDP per capita growth (World Bank). The results shown vary greatly from what has been shown for the Penn World Tables data. This is probably because the two variables are diverse in two main ways: the Penn World Tables adjust their GDP figures for PPP, while the World Bank does not; GDP per capita growth figures in the World Bank data are not in real terms, while Penn World Tables data are. It must be noted that, in order for international comparisons of cross country data to make sense, it is better to use PPP adjusted measures. "Using PPPs instead of market exchange rates to convert currencies makes it possible to compare the output of economies and the welfare of their inhabitants in real terms (that is, controlling for differences in price levels)" (International Comparison Programme, 2005). Using

GDP per capita growth (World Bank) as the dependent variable the results vary greatly with respect to the first analysis.

Net FDI inflows become significant in the first specification, while in the other cases it was foreign bank presence to be significant in the first specification. The coefficient on FDI is positive, and around 0.006. Foreign bank presence and trade are not significant in any of the specifications for GDP per capita growth (World Bank). Government consumption becomes significant at the 95percent confidence level with a positive coefficient, meaning that as government consumption increases, so will GDP per capita growth volatility. Inflation is significant at the 99.9percent confidence level, and it coefficient is positive, confirming the consistency of the result found before. Life expectancy is significant and positive, meaning that an increase in life expectancy will also increase macroeconomic volatility as measured by the volatility of GDP per capita growth, and this result is somewhat counter-intuitive. School enrolment becomes significant at the 90percent confidence level and the coefficient is negative, meaning that an increase in enrolment in secondary school is likely to decrease macroeconomic volatility. In this first specification, the growth of M2 (*money or quasi money*) over GDP is significant and negative, at the 95percent confidence level. This result is not consistent with what is found in Easterly, Islam and Stiglitz (2000) who instead show a significant and positive coefficient. On the one hand this might be because they take narrow money (M1 growth) and in the regression they use the standard deviation of M1 money growth, in order to account for monetary policy changes. The democracy variable is significant and negative. Democracy, as measured by Freedom House and Polity IV, gives higher scores to more democratic countries. The maximum denotes the most democratic countries, which are given a score of ten . The interpretation of the negative coefficient is therefore that the more a country is democratic, the less macroeconomic

volatility it will experience. Almost all of the dummy variables are significant, with the exception of Middle East and North Africa and South Asia, and all of the coefficients are positive. The results obtained in this last regression analysis have to be carefully considered, as they show particularly controversial values.

The specifications that use country and time fixed effects find private credit to be significant and positive, while life expectancy, M2 money growth and democracy lose their significance.

The following table summarises the results of the regression analysis that use the volatility of real GDP per capita growth, estimated from the data in the Penn World Tables, and the volatility of GDP per capita growth, estimated from the data in the World Bank databank. The main explanatory variable is foreign bank presence.

Table 4: Summary of the Regressions for GDP per capita growth Volatility

Variables	PWT_VOL	PWT_VOL2	PWT_VOLCH	GDPXCAP_VOL
Foreign Bank Presence	-0.00419 (1)	-0.003 (1)	-0.004 (1)	
Secondary School Enrl.	-	-	-	-0.0035 (1)
Trade	0.0028 (1) (2)	0.002 (2)	0.002 (1) (2)	
Government Consumption	-	-	-	0.02-0.08 (1) (2) (3) (4)
Inflation	0.02 (1) (2) (3) (4)	0.02 (1) (2) (3) (4)	0.02 (1) (2) (3) (4)	0.02 (1) (2) (3) (4)
Population Growth	0.2 (1) (3)	0.2 (1) (2) (3)	0.2 (1) (2) (3)	-
Life Expectancy	-0.3 (1) (2)	-0.3 (1) (2)	-0.3 (1) (2)	0.02 (1) (2)
Private Credit (GDP)	1.3 (3) (4)	1.2 (3) (4)	1.3 (3) (4)	1.2 (3) (4)
M2 (GDP)	-	-	-	-0.003 (1) (2)
Democracy	-	-	-	-0.04 (1) (2)
CIS	0.4 (1) (2)	0.0485 (1)	0.475 (1)	*

EAP	0.56 (1) (2)	0.5 (1) (2)	0.5 (1) (2)	*
LAC	0.5 (1) (2)	0.4 (1) (2)	0.5 (1) (2)	*

* When the dependent variable is GDP per capita growth volatility (World Bank) all the dummy variables in this regression are significant apart from the one for Middle East and North Africa. **The numbers in brackets indicate the type of regression where the variable was found to be significant. (1) is the least square dummy variable model with only regional dummy variables. (2) is the least squared dummy variable model with regional and time dummy variables. (3) is the fixed effect model with only country fixed effects. (4) is the fixed effects model with both country and time fixed effects. ***the table indicates the coefficients for each variable, in most cases it is the average value found in the set of regressions, depending on which type of dependent variable is used. In the case of government consumption in the last column, I have decided to report maximum and minimum values because of the relatively large range of the coefficients.****refer to the previous tables and the tables contained in the appendix for standard errors and the rest of the regression output.

Table four displays the summary of results for the dependent variables used in the analysis. A detailed inspection of the findings shows that depending on which measure of volatility is used, some variables are identified to be significantly associated with output volatility. The independent variables that are most consistently estimated to have an effect on macroeconomic volatility are inflation, life expectancy and private credit. For private credit and inflation, the coefficient is very similar in all cases and it carries the same sign, which is in both cases positive, meaning that an increase in either of them, *ceteris paribus*, will increase volatility in output. For life expectancy, the situation is more complex, as it shows a positive coefficient in the first three cases, but a negative coefficient when the World Bank measure of GDP per capita is used to measure volatility. The result might be ambiguous because of a combination of factors, including the different calculation of the fourth measure, which takes into account the year 2010, and the fact that the World Bank figures are not in real terms and are not adjusted for purchasing power parity. It needs to be stressed, however, that when life expectancy is estimated as an explanatory variable of the dependent variables measured from the Penn World Tables data, the coefficient is consistent both in sign and in magnitude.

The variables that account for trade and foreign bank presence are only significant when using real GDP per capita growth. Furthermore, time fixed effects seem to be able to capture a positive bias, as foreign bank presence is never significant when time fixed effects are present. The growth of M2

(*money or quasi money*) is only significant when using the fourth dependent variable, and the same is true for the democracy measure. Furthermore, the sign of the coefficient for money growth is not consistent with what has been found in the literature, which uses the growth of different money concepts (M1 and M2) to account for the extent of changes in monetary policy (Easterly, Islam and Stiglitz, 2001). Government consumption is found to be significant when using the World Bank measure of GDP per capita. The sign of the coefficient is the expected one, and is positive. A more expansive fiscal policy, which will increase government consumption, will result in heightened volatility of output. The coefficient for government consumption, even if it has an explainable sign, increases by four times, going from 0.02 to 0.08.

When income levels are taken into account for the same regression, as shown in appendix XII, foreign bank presence becomes significant also in the presence of time fixed effects. The coefficient is negative, meaning that an increase in foreign bank presence decreases output volatility.

3.2 The Effect of Financial Integration on the Volatility of Private Consumption

The following table displays the results of the estimation of the determinants of private consumption growth volatility. The four specifications displayed are the same, and in the same order, as the ones used for output volatility. Regression one includes region dummy variables, regression two adds time fixed effects. Regression three uses country fixed effects, and regression four adds time fixed effects. All four regressions use robust standard errors to correct for heteroskedasticity, and regressions three and four correct for autocorrelation using the cluster option.

Table 5: Financial Integration and the Volatility of Private Consumption Growth.

VARIABLES	(1) LSDV_Reg private_vol	(2) LSDV_YearReg private_vol	(3) FE_Country private_vol	(4) FE_CountryYear private_vol
Net FDI Inflow	0.00266	0.00102	0.00224	-0.00333
	(0.00751)	(0.00789)	(0.00709)	(0.00767)
Foreign Bank Presence	-0.00130	-0.000321	0.00407	0.0124
	(0.00237)	(0.00238)	(0.00824)	(0.00838)
GDP per capita	-0.0433	-0.0275	-0.0850***	-0.0724**
	(0.0311)	(0.0341)	(0.0296)	(0.0322)
trade	0.00816****	0.00822****	0.00156	0.00666
	(0.00184)	(0.00181)	(0.00651)	(0.00632)
Government Consumption	0.00287	0.00565	-0.00627	-0.0280
	(0.0169)	(0.0173)	(0.0564)	(0.0529)
Inflation	0.0183***	0.0181***	0.0112	0.00984
	(0.00678)	(0.00686)	(0.00736)	(0.00667)
Population Growth	-0.230*	-0.222*	-0.0233	-0.143
	(0.119)	(0.118)	(0.326)	(0.334)
Life Expectancy	-0.0576**	-0.0514**	-0.0574	0.109
	(0.0228)	(0.0230)	(0.0756)	(0.143)
Secondary School Enrolment (Gross)	0.000859	0.000549	0.00280	0.00723
	(0.00330)	(0.00354)	(0.00728)	(0.00955)
Private Credit (GDP)	-0.0772	-0.0541	1.010*	1.022*
	(0.238)	(0.235)	(0.568)	(0.558)
Deposits (GDP)	0.424	0.315	-0.372	-0.689
	(0.352)	(0.352)	(0.963)	(0.995)
Turnover Ratio	0.133	0.114	-0.0721	-0.0566
	(0.0831)	(0.0845)	(0.104)	(0.132)
Stock Market Cap. (GDP)	-0.0640	-0.0412	0.0771	0.171
	(0.139)	(0.157)	(0.255)	(0.349)
M2 (GDP)	-0.00610***	-0.00527**	-0.00794	-0.00137
	(0.00234)	(0.00231)	(0.00730)	(0.00573)
Democracy (FH_POLIV)	0.0349	0.0299	0.0172	0.0387
	(0.0445)	(0.0454)	(0.0493)	(0.0469)
Corruption (TI)	-0.00182	-0.0131	-0.0415	-0.0329
	(0.0533)	(0.0556)	(0.144)	(0.141)
dum_CEE	-0.543	-0.606*		
	(0.333)	(0.335)		
dum_CIS	1.574****	1.515****		
	(0.457)	(0.447)		
dum_EAP	0.507**	0.512**		
	(0.209)	(0.218)		
dum_LAC	0.537	0.511		
	(0.328)	(0.341)		

dum_MENA	0.724**	0.666**		
	(0.311)	(0.316)		
dum_SA	0.827***	0.894***		
	(0.318)	(0.332)		
dum_SSA	0.0951	0.147		
	(0.384)	(0.395)		
dum_WE	-0.124	-0.0993		
	(0.151)	(0.159)		
1996b.year		0		0
		(0)		(0)
1997.year		0.202		0.266
		(0.268)		(0.318)
1998.year		0.328		0.409
		(0.317)		(0.367)
1999.year		0.323		0.185
		(0.244)		(0.307)
2000.year		0.144		0.000689
		(0.222)		(0.294)
2001.year		0.0519		-0.325
		(0.275)		(0.414)
2002.year		0.269		-0.127
		(0.282)		(0.422)
2003.year		0.304		-0.185
		(0.223)		(0.403)
2004.year		-0.0483		-0.538
		(0.191)		(0.460)
2005.year		-0.285		-0.769
		(0.180)		(0.488)
2006.year		-0.194		-0.778
		(0.216)		(0.546)
2007.year		0.231		-0.509
		(0.228)		(0.564)
2008.year		0.144		-0.637
		(0.244)		(0.650)
Constant	4.397***	3.846***	5.174	-7.739
	(1.473)	(1.465)	(5.350)	(10.14)
R-squared	**0.231**	**0.250**	**0.096**	**0.142**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of private consumption growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the World Bank databank. The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

The variables denoting financial integration are not significantly associated with the volatility of private consumption growth. This result is not consistent with what has been gauged from the literature review. Kose, Prasad, Rogoff and Wei (2006) find that it is more likely to find studies that associate financial integration with changes in the volatility of consumption, rather than with changes in the volatility of output. Yet this study finds that in the case of foreign bank presence, this relationship is weak and cannot be shown to be statistically significant. Nevertheless, the fact that findings differ is simply explained by the measures of financial integration that are used.

The innovation of this study is that it does not use a general measure of financial integration, as most studies, but it uses an innovative measure focused on the integration at the banking industry. It is possible that integration in the money, bond and equities market has a larger effect on private consumption growth volatility, even if integration in the banking industry is more likely to affect everyday activities. The way in which a consumer might benefit from the presence of foreign banks has been outlined previously, mainly in terms of better economic performance. In spite of that, firms are the ones that are most likely to be affected by foreign bank presence. The lending and borrowing rates applied to individual customers, whose relationship with the presence of foreign banks is unclear, as shown in Ryan and Horsewood (2009); might be very similar across domestic and foreign banks, while the main change could be applied to business accounts. Furthermore, it is likely that, as explained in Kose, Prasad, Rogoff and Wei (2006), the way in which financial integration affects the volatility of consumption is through collateral and indirect channels.

The traditional view of financial integration says that there is a negative relationship between financial globalization and macroeconomic volatility, as financial globalization increases capital efficiency, it promotes capital deepening and it increases international risk sharing, therefore

decreasing, or smoothing, consumption volatility relative to a situation of autarky (Kose, Prasad, Rogoff and Wei 2006, p. 30). The same literature also points to the fact that there are indirect channels through which financial globalization affects both growth and consumption volatility, namely in terms of institutional and financial development, but also in terms of discipline and governance (Kose, Prasad, Rogoff and Wei 2006, p.30). This study finds that integration in the banking industry does not affect consumption volatility directly, which is a further confirmation that there are other indirect channels that must be considered in future studies. Additionally, this study does not take into account the possible threshold effects, which is described in Kose, Prasad, Rogoff and Wei (2006, p.18):

"…the relative volatility of consumption growth increases with the degree of financial openness, but only up to a certain threshold level of integration. At higher levels of financial integration, countries do seem to accrue the benefits of financial integration in terms of improved risk sharing and better consumption smoothing relative to autarky. Most emerging market economies are, however, below this threshold level of financial integration while most industrial economies are above it."

Therefore, apart from the fact that this study might not be able to find a significant association between the two variables because of the fact that most benefits are indirect; the problem might also be that there is a threshold effect that is not captured appropriately in the regression analysis, which should take into consideration the starting level of financial integration. This further distinction was not made because of the problem that many of the countries analysed are emerging market economies and transition economies, which are often difficult to place when a binary distinction is made between more financially integrated and less financially integrated economies, as was done in Prasad, Rogoff, Wei and Kose (2003).

The GDP per capita level is significant only when using country fixed effect and country and time fixed effects. The coefficient is negative in both cases, meaning that an increase in the GDP per capita will decrease macroeconomic volatility, by a factor of approximately 0.08. The trade variable is significant only in the first two specifications, therefore when we take into account regional differences. The coefficient is positive and approximately 0.008. Opening the market to foreign products is found to increase consumption growth volatility.

Inflation is significant and positive at the 99percent confidence level only when using regional dummy variables, and the same is true for population growth and life expectancy, which have a negative coefficient. Private credit is significant when using country fixed effects, the coefficient is positive at the 90percent confidence level. M2 money growth is significant only when accounting for regional differences, and it exhibits a negative coefficient, which is controversial, as outlined also for the previous regressions. The dummy variable for Central and Eastern European Countries is significant only when including time fixed effects, and even then the confidence level is 90percent. The dummy variables for Commonwealth of Independent States and East Asia and Pacific is significant in both cases, as well as the dummy for Middle East and North Africa and South Asia. The R-squared is around 0.25 for the first two specifications, while it drops when using country fixed effects, implying that regressions with regional dummies are better at capturing the effects of interest with respect to regressions using country dummies.

Foreign bank presence is never significant when income levels are included in the analysis, as shown in appendix XIII.

3.3 The Effect of Financial Integration on the Volatility of the Ratio of Private Consumption growth over GDP growth.

The following table displays the regression results for the volatility of the ratio of private consumption growth and GDP growth. This ratio is therefore a more precise measure of macroeconomic volatility, as it takes into account not only the volatility in private consumption, but also the volatility in GDP growth.

Table 6: Financial Integration and the Volatility of the ratio

VARIABLES	(1) LSDV_Reg ratio_vol	(2) LSDV_YearReg ratio_vol	(3) FE_Country ratio_vol	(4) FE_CountryYear ratio_vol
Net FDI Inflow	-0.0403 (0.0296)	-0.0405 (0.0295)	-0.00540 (0.0241)	-0.00779 (0.0247)
Foreign Bank Presence	0.0291** (0.0118)	0.0292*** (0.0111)	0.0304 (0.0283)	0.0342 (0.0307)
Trade (X-M/GDP)	-0.00467 (0.00448)	-0.00429 (0.00451)	-0.0576* (0.0314)	-0.0464 (0.0298)
Government Consumption	0.161*** (0.0501)	0.152*** (0.0469)	0.0831 (0.0800)	0.00277 (0.0980)
Inflation	-0.00199 (0.00826)	-0.00425 (0.00862)	0.0167 (0.0127)	0.0109 (0.0123)
Population Growth	0.435 (0.378)	0.442 (0.370)	-0.419 (0.885)	-0.571 (1.072)
Life Expectancy	0.0188 (0.0316)	0.0265 (0.0430)	0.280 (0.255)	0.529 (0.366)
Secondary School Enrolment (Gross)	-0.0138 (0.00937)	-0.0151 (0.00947)	0.0255 (0.0249)	0.0180 (0.0219)
Private Credit (GDP)	1.362 (1.031)	1.384 (0.980)	1.919 (1.397)	1.950 (1.350)
Deposits (GDP)	-1.463 (1.172)	-1.620 (1.285)	-1.067 (3.589)	-2.475 (3.597)
Turnover Ratio	0.654** (0.302)	0.608** (0.277)	0.659 (1.024)	0.552 (1.020)
Stock Market Cap. (GDP)	-0.516* (0.274)	-0.529 (0.460)	0.00328 (0.490)	0.0244 (0.740)
M2 (GDP)	0.0123 (0.0116)	0.0130 (0.0121)	0.000339 (0.0283)	0.0164 (0.0297)

Democracy (FH_POLIV)	0.0673	0.0554	-0.382	-0.359
	(0.153)	(0.154)	(0.297)	(0.316)
Corruption (TI)	-0.316	-0.300	-0.240	-0.173
	(0.202)	(0.186)	(0.596)	(0.596)
dum_CEE	0.0993	0.130		
	(0.799)	(0.772)		
dum_CIS	3.670*	3.737**		
	(1.880)	(1.877)		
dum_EAP	0.371	0.352		
	(0.672)	(0.570)		
dum_LAC	0.778	0.740		
	(0.755)	(0.682)		
dum_MENA	0.817	0.802		
	(1.531)	(1.475)		
dum_SA	-0.206	-0.163		
	(0.750)	(0.665)		
dum_SSA	-0.313	-0.204		
	(0.865)	(0.723)		
dum_WE	0.901	0.883		
	(0.967)	(0.939)		
1996b.year		0		0
		(0)		(0)
1997.year		0.180		0.0328
		(0.455)		(0.643)
1998.year		-0.00960		-0.375
		(0.385)		(0.768)
1999.year		-0.0804		-0.360
		(0.380)		(0.845)
2000.year		0.0625		-0.311
		(0.484)		(1.384)
2001.year		0.498		0.110
		(0.751)		(1.508)
2002.year		0.853		0.248
		(0.926)		(1.495)
2003.year		0.689		-0.141
		(0.761)		(1.333)
2004.year		-0.663		-1.519
		(0.439)		(1.403)
2005.year		-0.570		-1.516
		(0.475)		(1.530)
2006.year		-0.309		-1.444
		(0.597)		(1.581)
2007.year		-0.0653		-1.275
		(0.672)		(1.381)
2008.year		0.822		-0.304

		(1.254)		(1.201)
Constant	-3.235	-3.587	-15.66	-32.77
	(2.423)	(3.203)	(13.48)	(21.60)
R-squared	**0.063**	**0.075**	**0.027**	**0.047**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of the ratio of private consumption to GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the World Bank databank. The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

Foreign bank presence is a significant determinant of the volatility of the ratio when region dummy variables are included in the analysis. The coefficient is positive, determining that an increase in the presence of foreign banks will increase the volatility of the ratio of private consumption growth to GDP growth. The effect is lost, as in the case of output volatility, when the country fixed effects are used instead of the region fixed effects. This might also be the case because the regressions in specifications three and four are corrected for autocorrelation, which might have biased the standard errors in the first two cases.

Trade is significant at the 90percent confidence level only when using country fixed effects, and the coefficient is negative, implying that the an increase in trade will decrease the volatility of the ratio. Government consumption is significant and positive in regression one and two. Inflation is never significant, while the stock market turnover ratio and stock market capitalization are significant in the first regression, with a positive and negative coefficient respectively. The turnover ratio is also significant in the second model, with the same sign. The dummy variable for the CIS countries is also significant. As we can see from the table above, the R-squared for these models is very low.

4. Empirical Results: Foreign Bank Assets

4.1 Foreign Owned Bank Assets and Macroeconomic Volatility

To further deepen the understanding on the relationship between integration in the banking industry and macroeconomic volatility, another set of regressions is estimated to take into account the amount of foreign owned bank assets over total national assets, collected in a dataset by Claessens and Van Horen (2012). The full tables regarding the regression can be found in appendix IX, X and XI. Following are the results for real GDP per capita volatility and private volatility. It is important to highlight the fact that the data on bank assets only start from 2004, so the panel regressions only take into account the years from 2004 to 2009. Appendix XVII shows the behaviour of the variable.

Table 7: Bank Assets and the Volatility of Real GDP per capita Growth.

VARIABLES	(1) LSDV_Reg pwt_vol	(2) LSDV_YearReg pwt_vol	(3) FE_Country pwt_vol	(4) FE_CountryYear pwt_vol
Net FDI Inflow	0.0115	0.0162**	0.00170	0.00508
	(0.00808)	(0.00820)	(0.00880)	(0.00753)
Bank Foreign Assets	0.00260	0.00306	0.0112	0.0181
	(0.00367)	(0.00365)	(0.0115)	(0.0127)
Trade (X-M/GDP)	-0.00375*	-0.00406**	0.00151	0.00836
	(0.00204)	(0.00205)	(0.00794)	(0.00921)
Government Consumption	-0.000248	-0.00331	0.0474	0.000618
	(0.0204)	(0.0217)	(0.0576)	(0.0574)
Inflation	0.0332	0.0315	0.0501	0.0372
	(0.0271)	(0.0301)	(0.0330)	(0.0406)
Population Growth	0.284***	0.274***	0.227	0.0749
	(0.101)	(0.0999)	(0.282)	(0.282)
Life Expectancy	-0.0384	-0.0354	-0.0686	0.345
	(0.0237)	(0.0249)	(0.164)	(0.245)
Secondary School Enrolment (Gross)	-0.00692	-0.00648	-0.0247	-0.0164
	(0.00512)	(0.00508)	(0.0396)	(0.0337)
Private Credit (GDP)	-0.117	-0.0658	1.012	1.936**
	(0.189)	(0.194)	(0.828)	(0.810)

Deposits (GDP)	-0.101	-0.157	-3.602***	-4.436***
	(0.325)	(0.329)	(1.235)	(1.510)
Turnover Ratio	-0.240*	-0.265**	0.0439	-0.0396
	(0.130)	(0.127)	(0.151)	(0.166)
Stock Market Cap. (GDP)	0.0348	0.0506	-0.126	-0.00299
	(0.121)	(0.139)	(0.459)	(0.477)
M2 (GDP)	0.00240	0.00254	0.00933	0.0121
	(0.00231)	(0.00235)	(0.00994)	(0.00779)
Democracy (FH_POLIV)	0.0211	0.0147	-0.0566	-0.0726
	(0.0462)	(0.0459)	(0.0852)	(0.0830)
Corruption (TI)	0.100	0.0949	-0.0467	0.0420
	(0.0650)	(0.0658)	(0.227)	(0.218)
dum_CEE	0.823**	0.812**		
	(0.364)	(0.373)		
dum_CIS	0.697**	0.672*		
	(0.353)	(0.357)		
dum_EAP	0.391*	0.436*		
	(0.218)	(0.234)		
dum_LAC	0.378	0.367		
	(0.313)	(0.315)		
dum_MENA	0.355	0.352		
	(0.356)	(0.347)		
dum_SA	-0.112	-0.0617		
	(0.337)	(0.340)		
dum_SSA	0.00658	0.0881		
	(0.408)	(0.402)		
dum_WE	0.364**	0.397**		
	(0.171)	(0.181)		
2004b.year		0		0
		(0)		(0)
2005.year		0.108		-0.111
		(0.210)		(0.188)
2006.year		-0.336*		-0.687***
		(0.172)		(0.256)
2007.year		-0.193		-0.670*
		(0.170)		(0.344)
2008.year		-0.0240		-0.631
		(0.280)		(0.437)
Constant	3.029*	2.974*	7.693	-23.29
	(1.559)	(1.676)	(11.62)	(16.92)
R-squared	**0.248**	**0.271**	**0.057**	**0.131**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of real GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0). The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as

computed by the CPI of transparency international. The variable foreign bank assets has been taken from Claessens and Van Horen (2012).

When taking into account country fixed effects, specification three and four, the only variable that appears to be significant is deposits over GDP, with a negative coefficient, as well as the years 2006 and 2007. Private credit is significant when time fixed effects are present, and it displays a positive and large coefficient. In specification two, net FDI inflows become significant at the 95percent confidence level. The coefficient for FDI is positive, meaning that an increase in foreign direct investment will increase output volatility. Trade is significant and negative, while population growth is significant and positive. The result for trade contradicts what was previously found when analyzing the entire panel dataset, as before the coefficient for trade was positive. The stock market turnover ratio is significant and negative, meaning that an increase in the ratio will decrease macroeconomic volatility. Furthermore, the dummy variable representing Central and Eastern European countries is significant at the 95percent confidence level, and the dummies for CIS, Western Europe and East Asia and the Pacific are also significant.

In appendix IX and X, the tables are provided showing the results with the other measures of Real GDP per capita volatility. Using the volatility of growth rates estimated using real GDP per capita growth derived from the growth rate of domestic absorption at 2005 constant prices, the results are slightly different from the ones above. The only year that appears to be significant is 2006. Corruption is significant in specification one, with a positive coefficient. The rest of the results are consistent with those presented in the previous table. When using the volatility of real GDP per capita growth using the estimated measure with chain series from Penn World Tables the results change slightly again. Net foreign direct investment is significant and positive in specification two, while trade is significant and negative in specification one and two. The same is true for the turnover ratio, which is significant

and negative. The dummy variables for CEE, CIS, East Asia and the Pacific and Western Europe are also significant. In specification three the only significant independent variable is deposits, with a negative coefficient. While in specification four private credit and the years 2006 and 2007 are also significant, the first with a positive coefficient and the other two with a negative coefficient. Using the volatility measure constructed using the GDP per capita growth measure of the World Bank the findings differ. Inflation becomes positive and significant in specification one and three. Private credit is never significant, while corruption becomes significant both in specifications one and two. All of the regional dummy variables become significant. The year 2006 is significant and negative.

The following table shows the result of the regression using private consumption volatility as the dependent variable and foreign bank assets instead of foreign bank ownership as the dependent variable of interest.

Table 8: Foreign Bank Assets and Private Consumption Volatility

VARIABLES	(1) LSDV_Reg private_vol	(2) LSDV_YearReg private_vol	(3) FE_Country private_vol	(4) FE_CountryYear private_vol
Net FDI Inflow	0.0127	0.00942	0.0143	0.0128
	(0.0127)	(0.0132)	(0.00940)	(0.0107)
Bank Assets	0.00620**	0.00578*	0.00556	0.00730
	(0.00294)	(0.00296)	(0.00990)	(0.00988)
Trade (X-M/GDP)	0.00338	0.00365	-0.0215*	-0.0184*
	(0.00226)	(0.00224)	(0.0108)	(0.0109)
Government Consumption	-0.00698	-0.00828	0.0111	0.0122
	(0.0203)	(0.0204)	(0.112)	(0.112)
Inflation	0.0600**	0.0512*	0.0344	0.0298
	(0.0242)	(0.0270)	(0.0394)	(0.0438)
Population Growth	-0.00144	0.0156	1.159**	1.168**
	(0.0974)	(0.0957)	(0.529)	(0.503)
Life Expectancy	-0.0622**	-0.0689**	0.0173	0.0135
	(0.0294)	(0.0305)	(0.264)	(0.409)
Secondary School Enrolment (Gross)	0.00773	0.00767	0.0573*	0.0591*
	(0.00598)	(0.00573)	(0.0315)	(0.0310)

Private Credit (GDP)	-0.132	-0.176	-0.913	-1.045
	(0.242)	(0.243)	(0.948)	(0.798)
Deposits (GDP)	0.526	0.566*	2.359	2.394
	(0.346)	(0.339)	(2.013)	(2.022)
Turnover Ratio	0.0969	0.0725	0.0393	0.0241
	(0.117)	(0.128)	(0.151)	(0.196)
Stock Market Cap. (GDP)	-0.0136	-0.0760	0.684*	0.619
	(0.173)	(0.193)	(0.409)	(0.513)
M2 (GDP)	-0.00309	-0.00336	0.00526	0.00443
	(0.00236)	(0.00235)	(0.0119)	(0.0120)
Democracy (FH_POLIV)	0.0429	0.0430	-0.000580	0.0140
	(0.0753)	(0.0747)	(0.0736)	(0.0796)
Corruption (TI)	-0.0389	-0.0273	-0.0588	-0.0335
	(0.0550)	(0.0560)	(0.252)	(0.244)
dum_CEE	-0.442	-0.520		
	(0.522)	(0.518)		
dum_CIS	0.865	0.793		
	(0.615)	(0.595)		
dum_EAP	0.377	0.286		
	(0.269)	(0.268)		
dum_LAC	-0.232	-0.316		
	(0.425)	(0.425)		
dum_MENA	0.508	0.394		
	(0.443)	(0.443)		
dum_SA	0.515	0.398		
	(0.445)	(0.447)		
dum_SSA	-0.705	-0.847		
	(0.591)	(0.592)		
dum_WE	0.0797	0.0483		
	(0.209)	(0.204)		
2004b.year		0		0
		(0)		(0)
2005.year		-0.326*		-0.219
		(0.167)		(0.163)
2006.year		-0.291		-0.309
		(0.199)		(0.318)
2007.year		0.131		-0.00860
		(0.207)		(0.405)
2008.year		0.0581		-0.0982
		(0.256)		(0.538)
Constant	3.784**	4.548**	-6.454	-6.592
	(1.882)	(1.994)	(18.77)	(29.71)
R-squared	**0.282**	**0.310**	**0.126**	**0.153**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of private consumption growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the

World Bank databank. The dependent variable used is computed from values published in the World Bank databank. The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

Foreign owned bank assets become significant and positive when using regional dummy variables, specification one, and regional dummy variables and years, specification two. The coefficient is significant at the 95percent confidence level in specification one, and at the 90percent confidence level in specification two. Therefore, using a measure of foreign owned bank assets, the relationship between financial integration and private consumption growth volatility is significant, contrary with what was estimated for foreign bank presence. The relationship that has been estimated is a positive one. Therefore, contrary to what theoretical paradigms predict, financial integration increases volatility of private consumption growth, which is in line with the findings supported by the studies surveyed in the literature review.

Inflation and life expectancy become significant in the first two specifications, the first with a positive coefficient and the second with a negative coefficient. Deposits over GDP becomes positive and significant in specification two, and the year 2005 is significant with a negative coefficient. Trade, population growth and secondary school enrolment become significant when taking into account country fixed effects and time fixed effects. The first has a negative coefficient, while the other two have a positive coefficient. Stock market capitalization becomes significant in the third specification with a positive coefficient. The R-squared is around 0.3 in the first two cases, while it is lower in the last two regressions. The results for the regression using the ratio of private consumption growth volatility over GDP growth show that the only significant variable is foreign bank assets in specification one, the table is shown in appendix XIV.

The following table summarizes the results for the regressions using foreign bank assets as the main explanatory variable.

Table 9: Summary of the relationship between foreign bank assets and macroeconomic volatility.

Variables	PWT_VOL	PRIVATE_VOL
Net FDI inflow	0.0162 (2)	-
Foreign Bank Assets	-	0.006 (1) (2)
Trade	-0.004 (1) (2)	-0.02 (3) (4)
Inflation	-	0.06 (1) (2)
Population growth	0.28 (1) (2)	1.2 (3) (4)
Life Expectancy	-	-0.07 (1) (2)
Secondary School Enrolment	-	0.058 (3) (4)
Private Credit (GDP)	1.936 (4)	-
Deposits (GDP)	-4 (3) (4)	0.566 (2)
Turnover ratio	-0.265	-
Stock Market Cap.	-	0.684 (3)
CEE	0.8 (1) (2)	-
CIS	0.6 (1) (2)	-
EAP	0.4 (1) (2)	-
WE	0.4 (1) (2)	-

*The numbers in brackets indicate the type of regression where the variable was found to be significant. (1) is the least square dummy variable model with only regional dummy variables. (2) is the least squared dummy variable model with regional and time dummy variables. (3) is the fixed effect model with only country fixed effects. (4) is the fixed effects model with both country and time fixed effects. **the table indicates the coefficients for each variable, in most cases it is the average value found in the set of regressions, depending on which type of dependent variable is used. .***refer to the previous tables and the tables contained in the appendix for standard errors and the rest of the regression output. ****the panel used here runs from 2004 to 2009.

As displayed above, the results for the two measures of macroeconomic volatility show different determinants. Foreign bank assets is only significant when studying private consumption volatility, and the coefficient is positive. Trade and population growth are the only independent variables that are significant in both cases. Trade exhibits a negative relationship with both output volatility and private consumption volatility, meaning that an increase in trade will decrease volatility. This result is

very different from what found in the regressions in the other sections. However, the panel used in this case runs from 2004 to 2009, while in the previous sections it ran from 1996 to 2009. Population growth has a positive relationship with the two volatility measures, meaning that higher population growth will result in higher macroeconomic volatility. Deposits over GDP is also significant in both regressions, and the direction of the relationship with volatility is the same. However, the coefficient itself is quite different in the two regressions. The dummy variable for Central and Eastern European countries is significant in the study of output volatility, and the coefficient is positive. Also the dummy variables for the CIS countries, East Asia and the Pacific and Western Europe are positive.

5. Empirical Results: Foreign Bank Presence in CEE and CIS

5.1 Foreign Bank Presence and Macroeconomic Volatility in CEE and CIS

The countries belonging to the CEE[5] and CIS[6] group have undergone some important changes since the end of the Cold War and the liberalization phase of the early nineties. As discussed in Mickiewicz (2010) there are two main phases that a country in transition from a central planning system to a capitalist economy will have to be subjected to: the first is liberalisation, which is relatively easier and faster to implement, and the second is the set of reforms of the institutional and legal framework, which is time consuming and more complex. More than ten years after the liberalization programme started, the ownership structure in transition countries is markedly similar and is dominated by foreign investors, with the notable exception of Russia and some of the countries of the Commonwealth of Independent States (Mickiewicz, 2010). How the change in ownership structure

[5] Central and Eastern Europe.
[6] Commonwealth of Independent States.

has affected the growth performance and the macroeconomic stability of countries is a question that to this date needs to be answered. As outlined in chapter two, the ownership structure portrayed by the data collected by Claessens and Van Horen (2012) on foreign bank ownership shows that Central and Eastern European Countries have a very high level of foreign bank ownership, while the CIS group of countries shows a more heterogeneous result. The next set of regressions will look at the question of whether foreign bank ownership is significantly related to the macroeconomic volatility in this set of countries, using country and time fixed effects and robust standard errors. The dependent variables are the volatility of real GDP per capita growth (1), the volatility of private consumption growth (2) and the volatility of the ratio of private consumption growth to GDP growth (3).

Table 10: Foreign bank presence and Stability in CEE and CIS countries.

VARIABLES	(1) pwt_vol	(2) private_vol	(3) ratio_vol
Net FDI Inflow	0.0161	-0.00903	0.166**
	(0.0119)	(0.0171)	(0.0743)
Foreign Bank Presence	-0.0208*	0.0217	-0.110
	(0.0108)	(0.0173)	(0.0705)
Trade (X-M/GDP)	-0.00979	-0.0108	-0.0686*
	(0.00931)	(0.0125)	(0.0409)
Government Consumption	-0.0217	-0.0660	-0.187
	(0.0433)	(0.0776)	(0.183)
Inflation	0.00298	0.0106	-0.00493
	(0.00656)	(0.0106)	(0.0147)
Population Growth	0.143	-0.544	-1.000
	(0.163)	(0.518)	(0.932)
Life Expectancy	0.153	0.245	0.888
	(0.151)	(0.273)	(0.675)
Secondary School Enrolment (gross)	0.0450	0.0929***	0.0380
	(0.0292)	(0.0336)	(0.0527)
Private Credit (GDP)	0.827	1.158	-4.505
	(0.777)	(1.389)	(3.710)
Deposits (GDP)	0.777	-0.642	12.29
	(2.044)	(3.317)	(10.52)
Turnover Ratio	-0.280	-0.160	-3.701
	(0.204)	(0.315)	(2.304)

Stock Market Cap.	0.226	0.646	2.354
	(1.099)	(1.507)	(2.474)
M2 (GDP)	-0.0294***	0.00739	-0.0797
	(0.0111)	(0.0189)	(0.0606)
Democracy (FH&POLIV)	0.149	0.180	-3.509
	(0.208)	(0.327)	(2.592)
Corruption (TI)	-0.211	-0.498	2.188
	(0.249)	(0.361)	(1.591)
1996b.year	0	0	0
	(0)	(0)	(0)
1997.year	-0.516	0.595	-0.841
	(0.395)	(0.476)	(1.643)
1998.year	-0.977**	0.553	0.265
	(0.406)	(0.543)	(2.182)
1999.year	-0.731*	1.196**	0.108
	(0.415)	(0.601)	(1.972)
2000.year	-1.019**	-0.0973	0.581
	(0.497)	(0.841)	(2.369)
2001.year	-1.440***	-1.236	-0.263
	(0.535)	(0.962)	(2.221)
2002.year	-1.454***	-1.116	0.267
	(0.539)	(0.934)	(2.554)
2003.year	-1.327**	-0.463	2.668
	(0.645)	(0.993)	(3.657)
2004.year	-1.189*	-0.945	-0.0634
	(0.643)	(1.046)	(2.549)
2005.year	-0.654	-1.349	1.750
	(0.723)	(1.134)	(3.098)
2006.year	-0.906	-1.219	1.445
	(0.741)	(1.253)	(3.154)
2007.year	-0.898	-0.746	-0.159
	(0.799)	(1.258)	(2.777)
2008.year	-0.565	-0.333	0.424
	(0.843)	(1.401)	(2.951)
GDP per Capita		0.0189	
		(0.0735)	
Constant	-11.43	-22.89	-42.32
	(11.58)	(20.24)	(39.94)
R-squared	**0.405**	**0.607**	**0.676**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. The volatility of real GDP per capita growth, private consumption growth and the ratio computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0) and the World Bank databank. The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

Foreign bank presence is only significant when looking at the volatility of real GDP per capita growth, and the coefficient is negative, implying that an increase in foreign bank presence is associated with lower output volatility. For private consumption growth volatility and for the ratio, foreign bank presence is not significant. Net FDI inflows is significant when looking at the volatility of the ratio of private consumption growth to GDP growth. The coefficient is positive implying that an increase in foreign direct investment has destabilizing effects in this set of economies. For the ratio, trade is significant and negative, meaning that an increase in trade will decrease volatility. Secondary school enrolment is significant when looking at the volatility of private consumption and the coefficient is positive, which is a controversial result, as it means that an increase in schooling will lead to higher consumption volatility. M2 growth is significantly associated with lower output volatility, which is also controversial, while the other variables denoting financial development are not significant. Interestingly, the first regression shows that the years between 1998, which is the year of the Russian financial crisis, and 2004, which is the year of accession of many transition economies into the European Union, are significantly related to output volatility, all of them with a negative coefficient. Notably, the R-squared is never lower than 0.4 in these regressions, and arrives to a level of 0.67 when looking at the volatility of the ratio. The table showing the regressions for the other set of dependent variables denoting the volatility of GDP per capita growth is shown in appendix XVI. When using the second measure of the volatility of real GDP per capita growth (pwt_vol2) and the measure of output volatility estimated from the World Bank data, foreign bank presence stops being significant, while for the volatility of real GDP per capita growth estimated with chain series from the Penn World Tables, foreign bank presence is again significant at the 10percent level. This confirms the results found for the larger panel data study. Foreign bank presence here is shown to be significant

only for output volatility, however contrary to what was found in section 3.1, it is significant when using country fixed effects and time fixed effects, which shows that for the countries of CEE and CIS, the entry of foreign banks in the domestic economy has had a significant effect, and the relationship between foreign bank presence and output volatility is negative, implying that an increase in the presence of foreign banks in this specific set of countries can be associated with a decrease in real GDP per capita growth volatility. This finding seems to suggest that theory was right in predicting a role for financial integration in decreasing macroeconomic volatility. The results might be driven by the fact that, as shown in previous parts of the present thesis, most of the countries analysed here have a high share of foreign banks in their economic system, and might therefore have surpassed the threshold level described in Prasad, Rogoff, Wei and Kose (2003), making them enjoy the full benefits of financial globalization.

6. Discussion

The results provided so far can be summarized as follows:

- The choice of which measure to use when estimating macroeconomic volatility is of great importance and it will influence the results
- Foreign bank presence is only significant when using real GDP per capita growth volatility, an increase in foreign bank presence decreases output volatility.
- Foreign bank presence does not have an effect on the volatility of private consumption, while it has a positive coefficient when analysing the volatility of the ratio of private consumption growth to GDP growth. This is probably a result of the scaling of the private consumption variable by GDP growth.
- Foreign bank presence is significant when the regression is estimated using only regional dummy variables, while it loses its significance once country fixed effects are used and when time dummy variables are included in the analysis. This is probably because the regional distribution of shocks is similar, and country variation is not large enough to be detected.
- The dummy variable representing CEE countries is never significant when the dependent variable is the volatility of real GDP per capita growth. It is significant and positive when analysing private consumption volatility. The dummy variable for CEE countries is also significant when analysing the effect of foreign bank assets on the volatility of real GDP per capita growth, and the coefficient is positive.
- The dummy variable for the CIS countries is almost always significant and positive.

- The regression carried out on a sample of CEE and CIS countries shows that foreign bank presence is significantly and negatively associated with output volatility, while the effect is not significant for private consumption growth volatility and the volatility of the ratio.
- Foreign Bank Assets have been shown to be significant only when analysing private consumption volatility. The coefficient is positive, meaning that an increase in assets, over total national assets, owned by foreign credit institutions will increase private consumption volatility.

These results are mostly in line with what has been found in the literature, as reported by Prasad, Rogoff, Wei and Kose (2003) and Eichengreen (2001) among others. Even if some new significance has been found for the foreign bank variables, the result holds only when regional dummy variables are included in the analysis, while it never holds when country fixed effects are used. This particular form of financial integration is shown not to have an effect on private consumption volatility, and this results goes against the evidence provided in Prasad, Rogoff, Wei and Kose (2003), Kose, Prasad, Rogoff and Wei (2006) and Kose, Prasad and Terrones (2003). This is probably a result of the fact that, while the presence of foreign banks matters for non-financial corporate institutions, it might matter less for individuals. It would therefore be necessary to extend this study in order to take into account firm-level volatility, and see if the presence of foreign banks affects it. On the other hand, the analysis has shown that the amount of foreign held bank assets does have an impact on private consumption volatility. In this case the coefficient is positive, meaning that an increase in the number of assets owned by foreign credit institutions increases private consumption volatility. The result is again only significant when using regional fixed effects, and it disappears when country fixed effect are used and when time fixed effects are included in the analysis. When using income levels as dummy variables,

foreign bank presence is significant and positive for the volatility of output also when year fixed effect are included, while for private consumption volatility the situation is the same, and foreign bank presence is never significant. When the regression is performed for a group of CEE and CIS countries, the results are similar, with foreign bank presence being significantly and negatively associated with volatility only in the case of real GDP per capita growth.

Foreign bank presence is rarely significantly related to the volatility measures, and when it is it might be the result of a positive bias resulting from the non-inclusion of time fixed effects, country fixed effects and autocorrelation corrected standard errors. Furthermore, the simple methodological framework that has been used in the analysis might not able to capture the dynamic effect of foreign bank ownership on the volatility of output and consumption, or it might simply be that the relationship is weak and it is hard to capture without further specifications.

The decision to study the effect of foreign bank presence using yearly data was not only dictated by issues of data availability. The process of financial integration can be seen as ultimately static, at least in the phase that requires a political and strategic policy initiative. The difficulty to find a significant relationship between financial integration and macroeconomic volatility could then be due to the fact that there are a number of costs associated with cross border integration, which makes the process more difficult to capture using yearly dummy variables. Therefore, future extensions of this work could consider the inclusion of time variables that capture a longer time span, for example three years. On the other hand, and as outlined in previous parts of this study, once integration reaches a certain threshold, the pace at which it develops is faster. Using data with higher frequencies might then enable the analysis to capture a subsequent effect of financial integration on stability that is not captured in this study.

Further extensions of this dissertation can also consist of an extension of the methodological approach to control for the dynamic effects and to control for another set of independent variables, which may increase the explanatory power of the model. The robust option has been used in all specifications of the model in order to correct for heteroskedasticity and the cluster option has been used to correct for autocorrelation.

Another problem that might be affecting the results is the possible presence of endogeneity, which makes the causal relationship between the variables difficult to establish. Therefore, it is more appropriate to talk about association between the two variables rather than about a causal relationship. As described in previous parts of this dissertation, there might be reverse causality, whereby it is higher macroeconomic stability that makes integration more likely. Furthermore, other independent variables that have been excluded from the analysis because of measurement and other issues, such as financial stability and banking crisis, but also bubbles and credibility, could be added in the future to contribute to the explanatory power of the model. These variables were not utilized in this work because of measurement issues and issues of definition. Selection bias might be at work, as for the main part the dataset is composed of high income countries.

Conclusion

This dissertation performed an empirical study on the determinants of the volatility of output and private consumption, defined as the standard deviation of the related measures over three intersecting years. Specifically, this dissertation has looked at the relationship between the volatility measures, which have been computed using a novel approach, and financial integration, which has been measured with a new dataset. Foreign bank presence and foreign bank assets have been used separately to proxy for financial integration, taking advantage of a new database published in 2012 by Claessens and Van Horen. Integration in the banking industry has been often overlooked because of the problem of data availability. This study takes advantage of the publication of a new dataset by Claessens and Van Horen (2012) that has observations for 137 countries between 1995 and 2009 and builds a completely new dataset. Furthermore, this dissertation looks at the question of whether economic theory was right in predicting that financial integration will decrease macroeconomic volatility.

The results show that it is unyielding to find definite results about the relationship between financial integration and the volatility of output and consumption. Foreign bank presence, which has been used to proxy for financial integration, is never significantly related to private consumption volatility, while it is significantly related to the volatility of output, but only when regional differences are taken into account, and the sign of the relationship is negative. The amount of assets in the national banking system that are foreign owned has showed to be significantly and positively related to the volatility of private consumption, however, it is not significantly related to the volatility of output. The dummy variable denoting Central and Eastern European countries is never significant when analysing the effect of foreign bank presence on output volatility and private consumption volatility. It is significant

when studying the relationship between foreign owned assets and output volatility. The dummy variable denoting countries of the Commonwealth of Independent States is almost always significant and positive. The methodology that has been used to find these results is based on regional and country fixed effects, correcting for heteroskedasticity with the use of the robust standard errors option and correcting for autocorrelation. The data used on foreign bank presence and foreign owned assets (Claessens and Van Horen, 2012) are new, and they represent one of the first attempts to collect a large scale dataset to map the evolution of the banking industry and its level of integration. The original contribution of this work has been to empirically analyse data on foreign bank presence as proxies of financial integration, and to relate them to the volatility of output and private consumption.

Further extensions of this work should go in the direction of refining the methodology, using a dynamic approach and taking into account the possible endogeneity between the dependent and independent variables. Furthermore, a test of whether foreign bank presence and foreign owned assets have an effect on firm level volatility would be of interest for the purposes of better understanding the process of financial integration. Companies could be affected by the entry of a foreign bank into their domestic economy, and a test of how these results change for small and medium or large enterprises could prove to be appealing not only for the economic research community, but also for the other parties involved.

Summary

Integration in the banking industry is rarely included in studies looking at the effects of financial integration on macroeconomic volatility. This dissertation contributes to the literature by constructing a new database which takes advantage of new data on foreign bank presence and foreign bank assets, published in Claessens and Van Horen (2012). The present study computes the measure of macroeconomic volatility by taking the standard deviation of real GDP per capita growth, private consumption growth and the ratio of private consumption growth to GDP growth, over three intersecting years, following the work of Bekaert, Harvey and Lundblad (2006). The methodology used is regression analysis with fixed effects, corrected for heteroskedasticity and autocorrelation using the robust and cluster options. Recognizing that the distribution of economics shocks might be similar within the same area, this thesis uses both country fixed effects and region fixed effects as to allow for the possibility that variation across countries in the same region might be too small to be detected properly in country fixed effects analysis. Time fixed effects are also included.

The results show that financial integration, as measured by foreign bank presence, is significantly negatively associated with output volatility, this relationship being captured only when using regions fixed effects. Foreign bank presence is shown not to be significantly related to consumption growth volatility. When analysing more in details the set of countries of Central and Eastern Europe and the Commonwealth of Independent States, the previous findings are confirmed, and foreign bank presence is found to be significantly related to the volatility of real GDP per capita growth, but not to the volatility of private consumption. Furthermore, foreign bank assets are significantly and positively associated with the volatility of private consumption growth, implying that an increase in foreign bank assets will increase the volatility of private consumption growth.

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Appendix I

The countries included in the analysis are the following:

1. Albania
2. Algeria
3. Angola
4. Antigua & Barbuda
5. Argentina
6. Armenia
7. Australia
8. Austria
9. Azerbaijan
10. Bahrain
11. Bangladesh
12. Barbados
13. Belarus
14. Belgium
15. Benin
16. Bolivia
17. Bosnia-Herzegovina
18. Botswana
19. Brazil
20. Bulgaria
21. Burkina Faso
22. Burundi
23. Cambodia
24. Cameroon
25. Canada
26. Chile
27. China
28. Colombia
29. Congo
30. Costa Rica
31. Cote d'Ivoire
32. Croatia
33. Cuba
34. Cyprus
35. Czech Republic
36. Denmark
37. Dominican Rep.
38. Ecuador
39. Egypt
40. El Salvador
41. Estonia
42. Ethiopia
43. Finland
44. France
45. Georgia
46. Germany
47. Ghana
48. Greece
49. Guatemala
50. Haiti
51. Honduras
52. Hong Kong
53. Hungary
54. Iceland
55. India
56. Indonesia
57. Iran
58. Ireland
59. Israel
60. Italy
61. Jamaica
62. Japan
63. Jordan
64. Kazakhstan
65. Kenya
66. Korea (South)
67. Kuwait
68. Kyrgyzstan
69. Latvia
70. Lebanon
71. Libya
72. Lithuania
73. Luxembourg
74. Macedonia
75. Madagascar
76. Malawi
77. Malaysia
78. Mali
79. Mauritania
80. Mauritius
81. Mexico
82. Moldova
83. Mongolia
84. Morocco
85. Mozambique
86. Namibia
87. Nepal
88. Netherlands
89. New Zealand
90. Nicaragua
91. Niger
92. Nigeria
93. Norway
94. Oman
95. Pakistan
96. Panama
97. Paraguay
98. Peru
99. Philippines
100. Poland
101. Portugal
102. Qatar
103. Romania
104. Russia
105. Rwanda
106. Saudi Arabia
107. Senegal
108. Seychelles
109. Singapore
110. Slovakia
111. Slovenia
112. South Africa
113. Spain
114. Sri Lanka
115. Sudan
116. Swaziland
117. Sweden
118. Switzerland
119. Tanzania
120. Thailand
121. Togo
122. Trinidad & Tobago
123. Tunisia
124. Turkey
125. Uganda
126. Ukraine
127. United Arab Emirates
128. United Kingdom
129. United States
130. Uruguay
131. Uzbekistan
132. Venezuela
133. Vietnam
134. Yemen
135. Zambia
136. Zimbabwe

Appendix II

Composition of the Dataset

Table 11: Composition of the Dataset, Regions

Regions	Frequency	Percent	Cumulative
Central and Eastern Europe	196	10.29	10.29
Commonwealth of Independent States	140	7.35	17.65
East Asia and Pacific	196	10.29	27.94
Latin America and Caribbean	336	17.65	45.59
Middle East and North Africa	224	11.76	57.35
North America	28	1.47	58.82
South Asia	70	3.68	62.50
Sub-Saharan Africa	434	22.79	85.29
Western Europe	280	14.71	100.00

Table 12: Composition of the Dataset, Income Level

Income Level	Frequency	Percent	Cumulative
Low Income	336	17.65	17.65
Lower Middle Income	462	24.26	41.91
Upper Middle Income	448	23.53	65.44
Other High Income	182	9.56	75.00
OECD	476	25.00	100.00

Table 13: Region Composition, Europe and Central Asia

Central and Eastern Europe	Commonwealth of Independent States	Western Europe
Albania	Armenia	Austria
Bosnia Herzegovina	Azerbaijan	Belgium
Bulgaria	Belarus	Cyprus
Croatia	Georgia	Denmark
Czech Republic	Kazakhstan	Finland
Estonia	Kyrgyz Republic	France
Hungary	Moldova	Germany
Latvia	Russian Federation	Greece
Lithuania	Ukraine	Iceland
Macedonia, FYR	Uzbekistan	Ireland
Poland		Italy
Romania		Luxembourg
Slovak Republic		Netherlands
Slovenia		Norway
		Portugal
		Spain
		Sweden
		Switzerland
		Turkey
		United Kingdom

Table 14: Income Levels, by country.

OECD	Other High Income	Upper Middle Income	Lower Middle Income	Low Income
Australia	Bahrain	Albania	Angola	Bangladesh
Austria	Barbados	Algeria	Armenia	Benin
Belgium	Croatia	Antigua and Barbuda	Bolivia	Burkina Faso
Canada	Cyprus	Argentina	Cameroon	Burundi
Chile	Hong Kong	Azerbaijan	China	Cambodia
Czech Republic	Kuwait	Belarus	Cote d'Ivoire	Congo, Dem. Rep.
Denmark	Latvia	Bosnia and Herzegovina	Ecuador	Ethiopia
Estonia	Oman	Botswana	Egypt	Ghana
Finland	Qatar	Brazil	El Salvador	Haiti
France	Saudi Arabia	Bulgaria	Georgia	Kenya
Germany	Singapore	Colombia	Guatemala	Kyrgyz Republic
Greece	Trinidad and Tobago	Costa Rica	Honduras	Madagascar
Hungary	United Arab Emirates	Cuba	India	Malawi
Iceland		Dominican Republic	Indonesia	Mali
Ireland		Iran	Jordan	Mauritania
Israel		Jamaica	Moldova	Mozambique
Italy		Kazakhstan	Mongolia	Nepal
Japan		Lebanon	Morocco	Niger
South Korea		Libya	Nicaragua	Rwanda
Luxembourg		Lithuania	Nigeria	Tanzania
Mexico		Macedonia	Pakistan	Togo
Netherlands		Malaysia	Paraguay	Uganda
New Zealand		Mauritius	Philippines	Zambia
Norway		Namibia	Senegal	Zimbabwe
Poland		Panama	Sri Lanka	
Portugal		Peru	Sudan	
Slovak Republic		Romania	Swaziland	
Slovenia		Russian Federation	Thailand	
Spain		Seychelles	Tunisia	
Sweden		South Africa	Ukraine	
Switzerland		Uruguay	Uzbekistan	
Turkey		Venezuela	Vietnam	
United Kingdom			Yemen	
United States				

Appendix III

Table 15: Summary of the data

Variable	Mean	Standard Deviation	Min	Max	Observations
GDP per capita	2.697	4.671	-17.545	-17.545	N = 1891
Net FDI Inflow	6.401	29.922	-15.028	564.916	N = 1888
Trade	86.226	52.643	14.933	445.911	N = 1865
Inflation	27.212	584.639	-9.798	24411.03	N = 1803
Population G	1.438	1.627	-3.820	18.588	N = 1904
Life Exp.	68.403	10.233	33.976	82.931	N = 1887
School Secondary Enr. (gross)	77.210	31.0166	5.169	162.349	N = 1504
Private Consumption Growth	3.581	25.164	-89.123	959.206	N = 1540
Democracy	6.520	3.089	0	10	N = 1668
Corruption (TI)	4.493	2.310	-4	10	N = 1471
Private Credit	.505	.476	.001	2.69	N = 1642
Deposits (GDP)	.486	.463	.001	4.724	N = 1644
Turnover ratio	.515	.868	.000	16.781	N = 1329
Stock market Cap.	.564	.699	.000	7.425	N = 1327
M2 (GDP)	57.964	59.978	0	636.51	N = 1784
Foreign Bank Presence	35.527	26.677	0	100	N = 1904
Foreign Bank Assets	37.483	32.765	0	100	N = 710
GDP per capita volatility	.888	1.161	.000	23.754	N = 1891
Real GDP per capita growth volatility (1)	1.362	1.879	.001	28.306	N = 1904
Real GDP per capita growth volatility (2)	1.330	1.874	.001	25.126	N = 1904
Real GDP per capita growth volatility (3)	1.370	1.890	.001	28.519	N = 1904
Consumption growth volatility	1.582	2.035	.001	19.466	N = 1589
Volatility Ratio	1.057	4.743	.000	105.350	N = 1540

The evolution of foreign bank ownership and Foreign Bank Assets in Central and Eastern Europe, Commonwealth of Independent States and Western Europe, average values

Table 16: Foreign Bank Ownership

Foreign Bank Presence	CEE	CIS	WE
1996	25.642	13	23.8
2000	47.929	24.7	24.9
2005	62.285	34	27.7
2009	68.214	44.6	30.25

Table 17: Foreign Bank Assets

Foreign Bank Assets	CEE	CIS	WE
2004	69.923	20	18.1
2009	77.385	34.571	21.6

Appendix IV

The following figures show the behaviour of the variable bank (derived from Claessens and Van Horen, 2012) in the dataset. For convenience I have separated the graphs by region.

Figure 12: Central and Eastern Europe

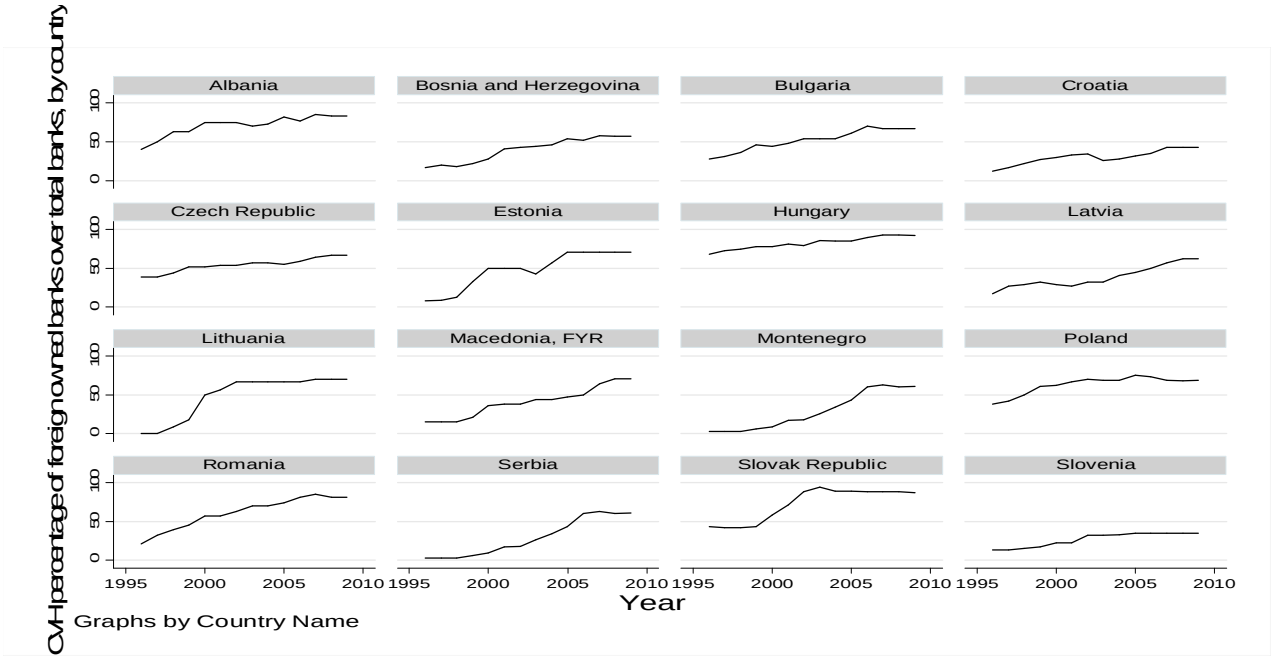


Figure 13: Commonwealth of Independent States

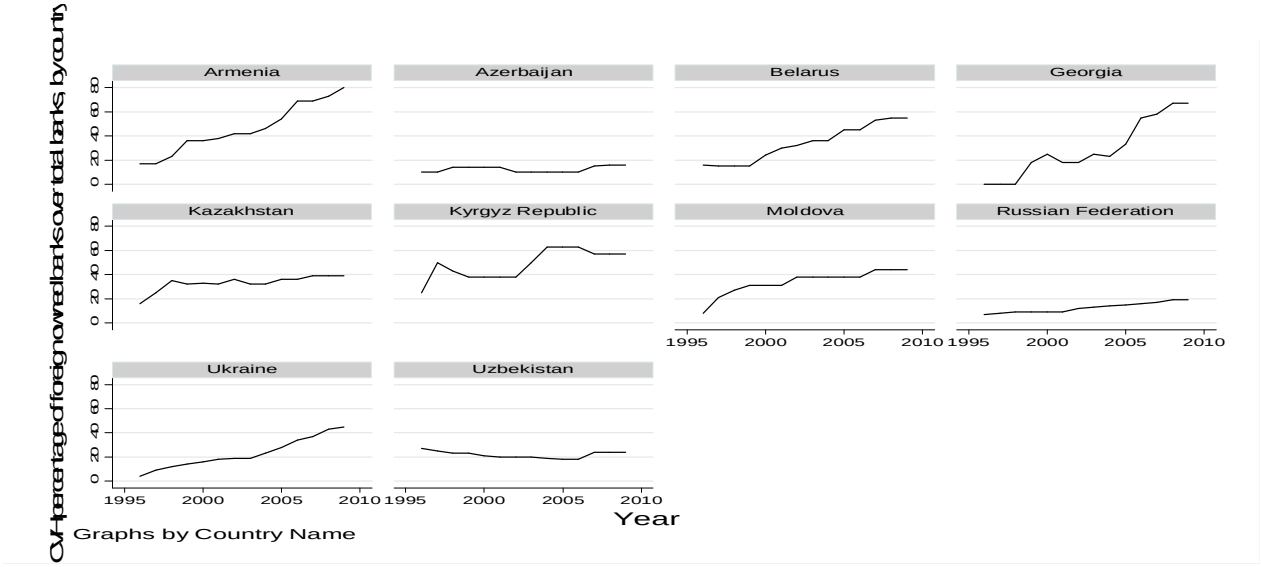


Figure 14: Western Europe

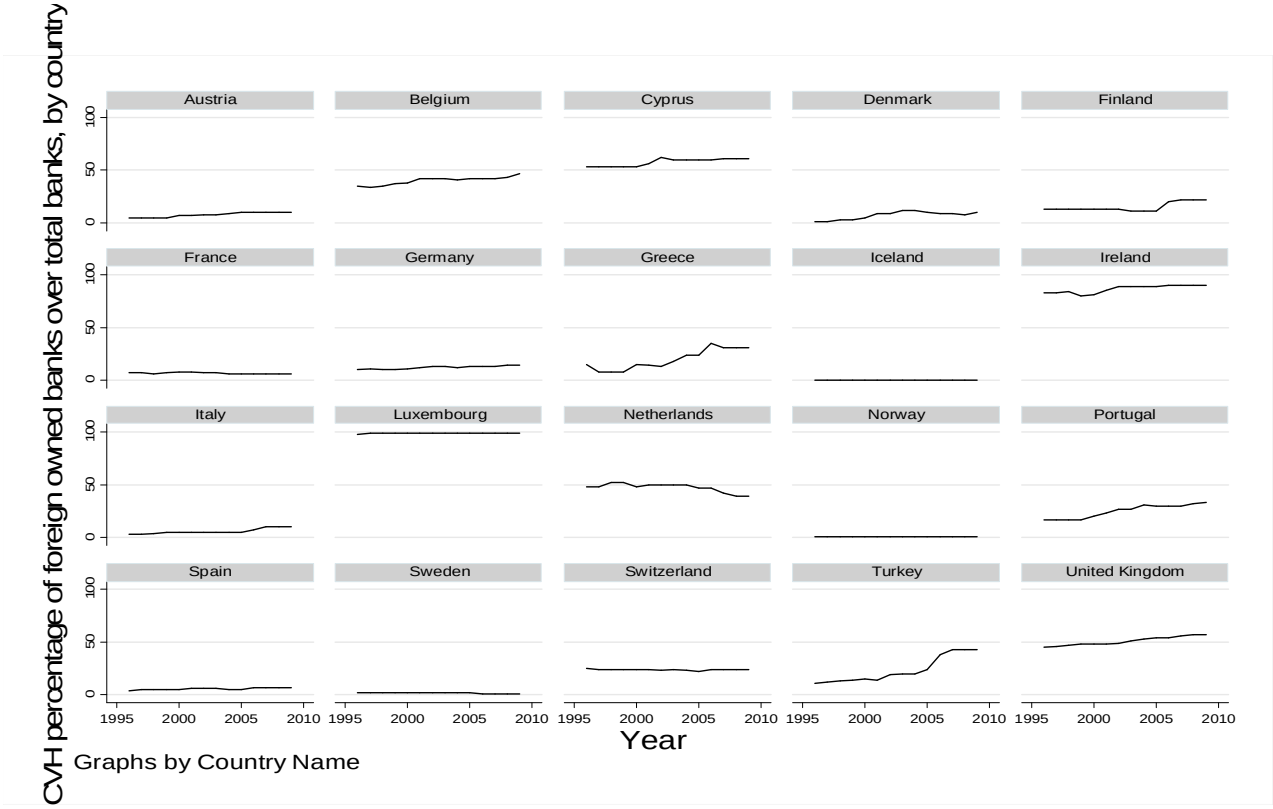


Figure 15: East Asia and Pacific

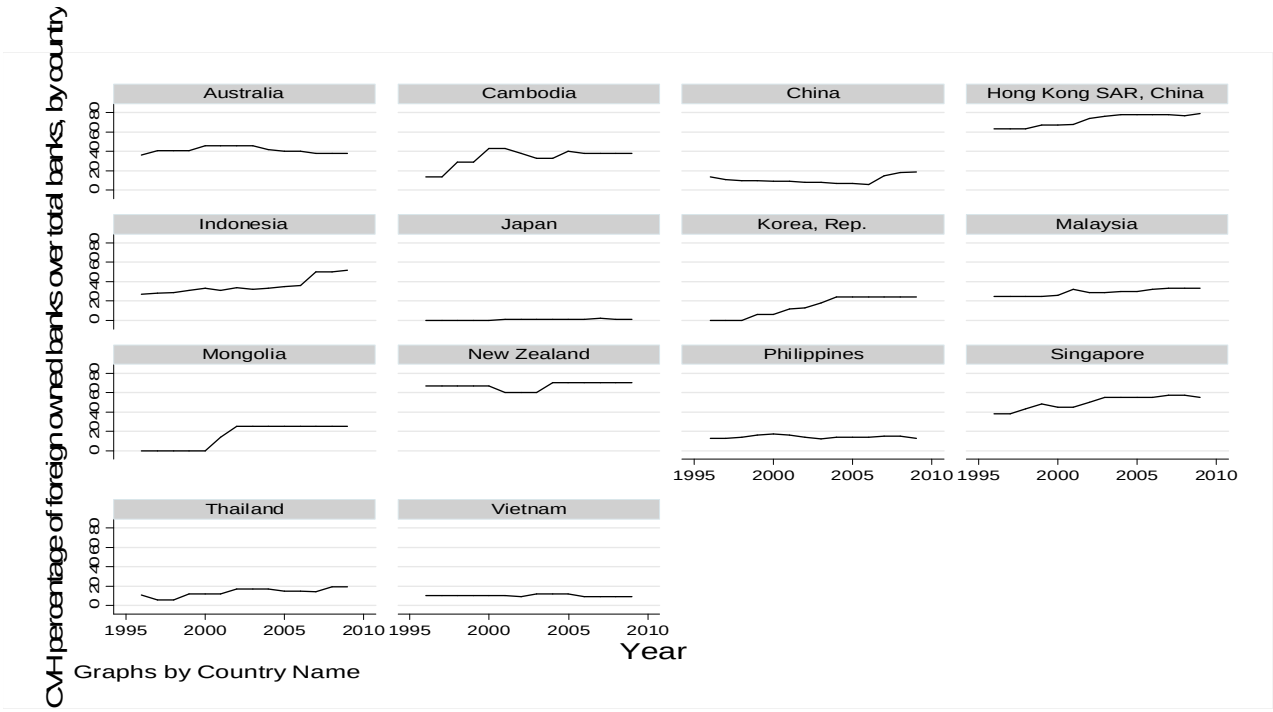


Figure 16: Latin America and Caribbean

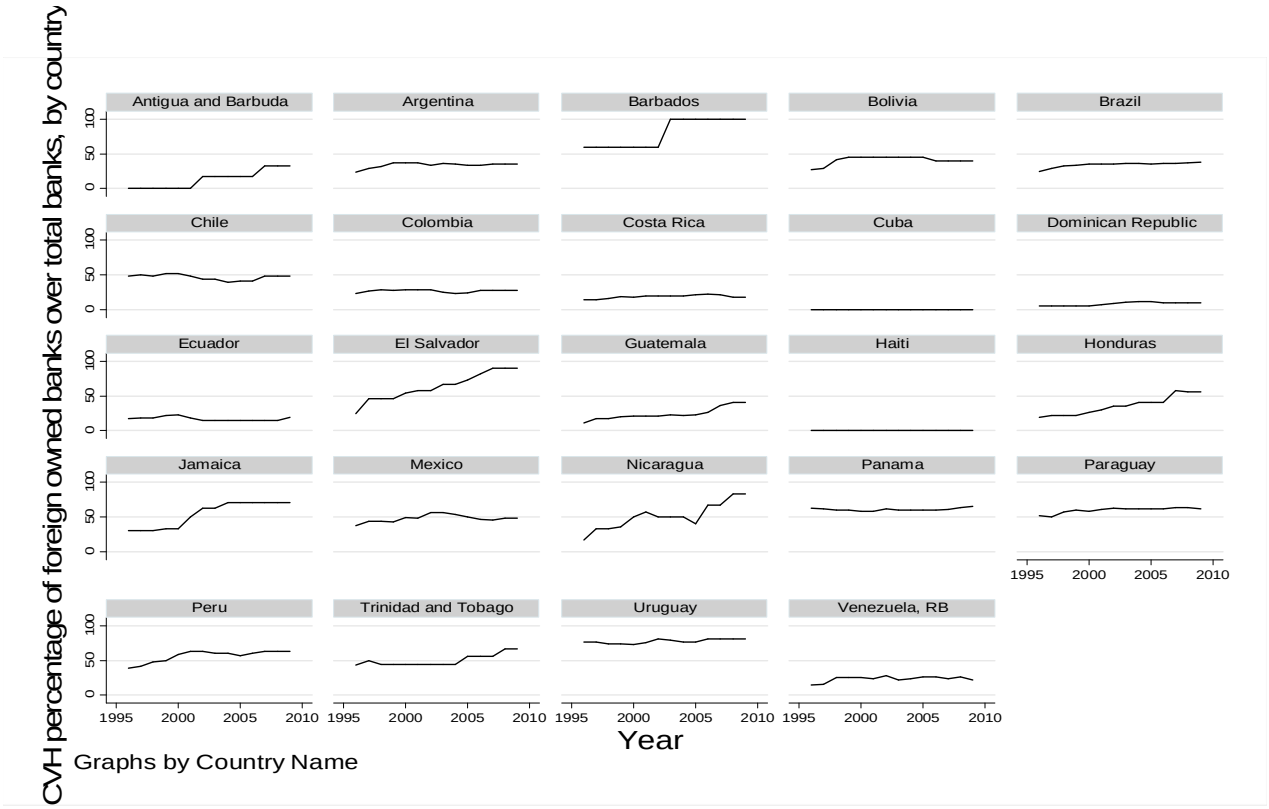


Figure 17: Middle East and North Africa

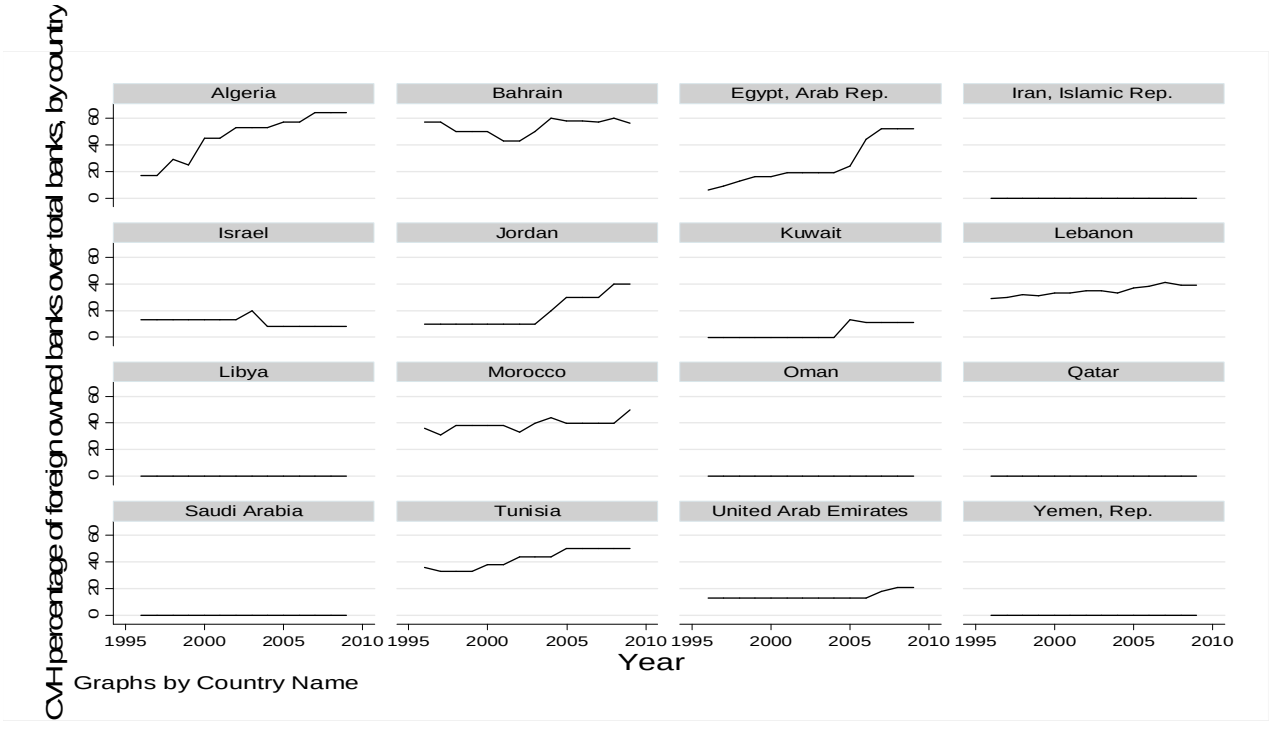


Figure 18: Sub-Saharan Africa

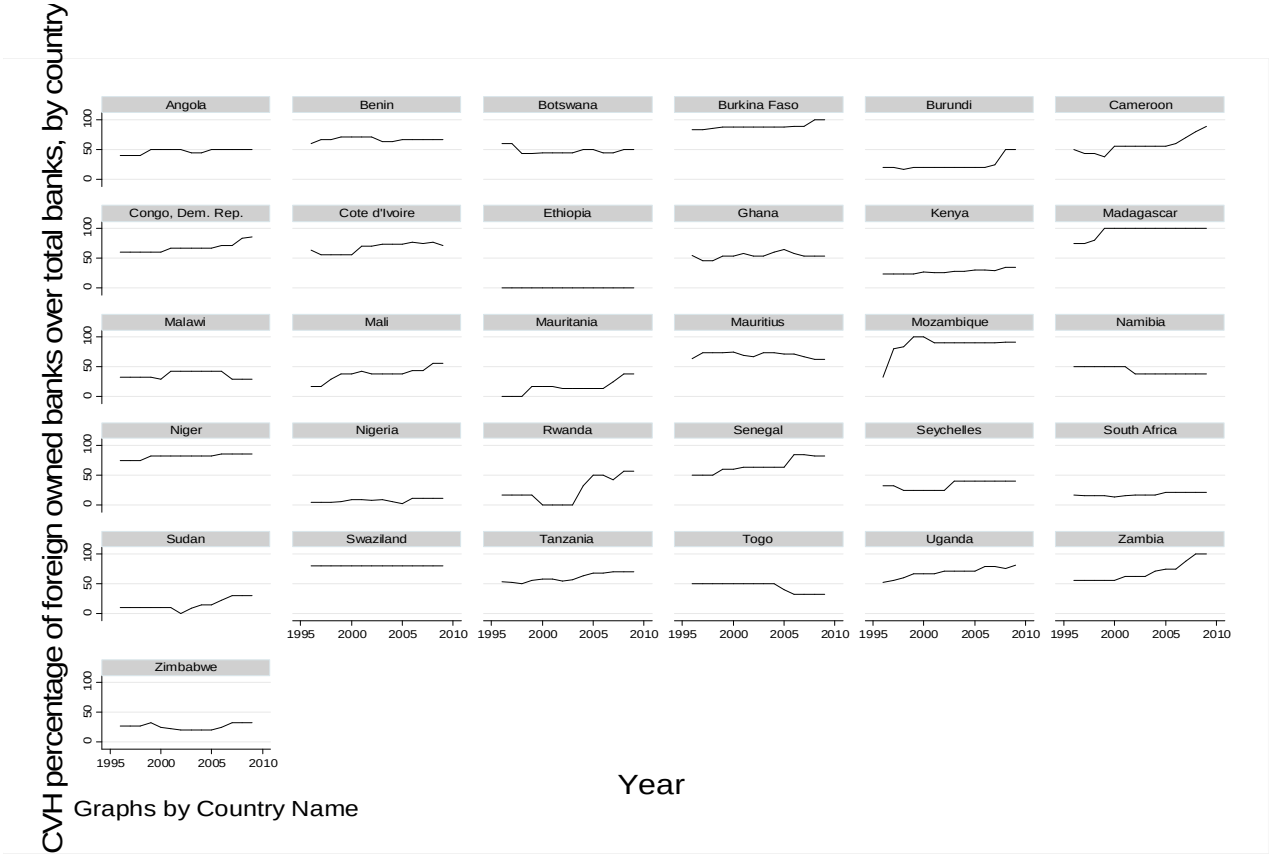


Figure 19: North America

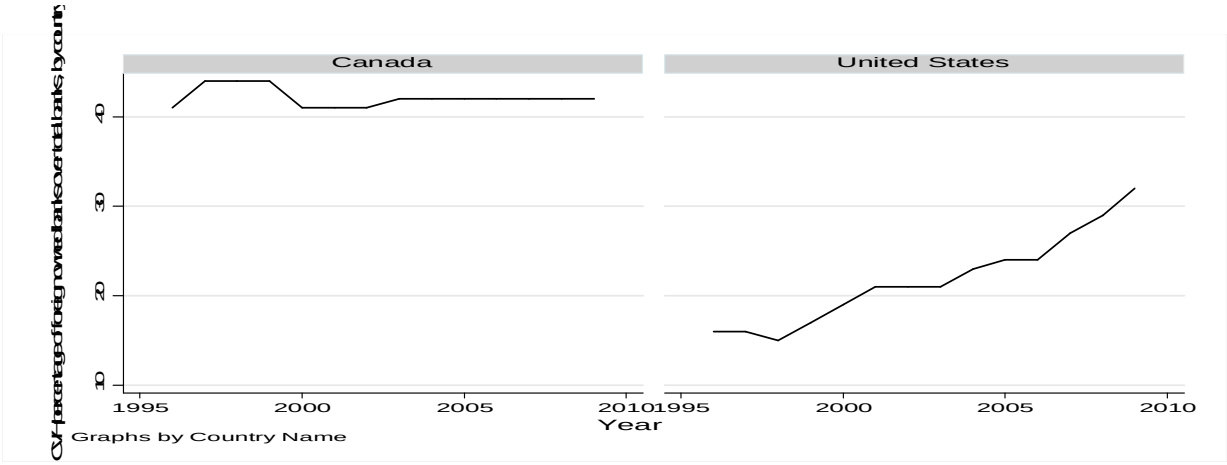
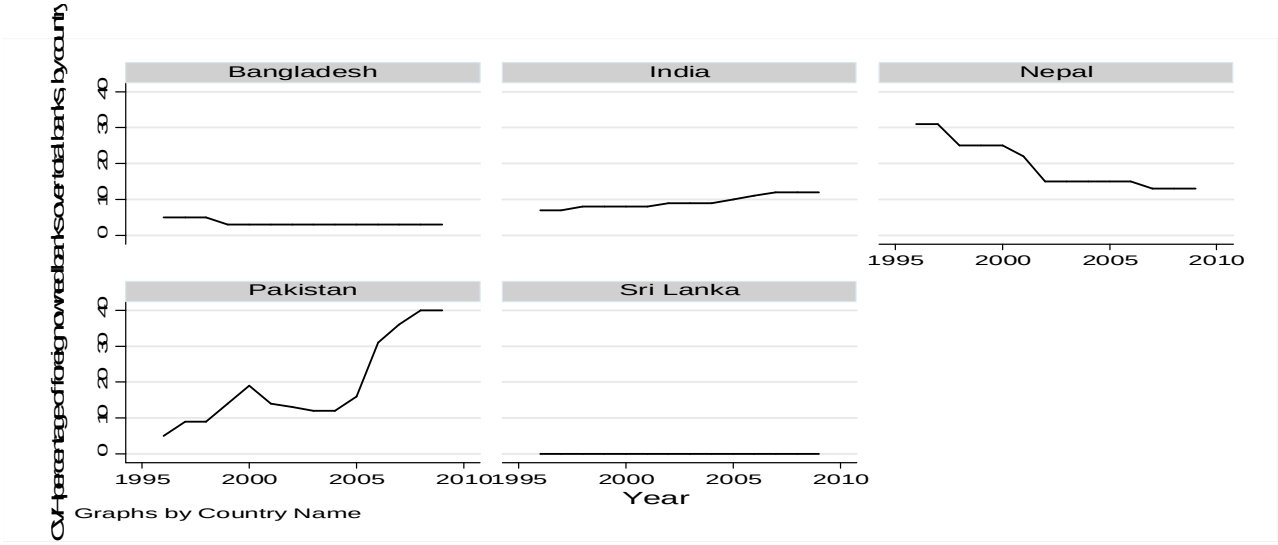


Figure 20: South Asia



Appendix V

The construction of the Volatility Variables

In order to construct the volatility variables I have done the following:

1. For the Real GDP per capita variables (Penn World Tables) I have applied the standard formula to compute the growth rates:

$$GDPgrowth = \left[{(GDP_t - GDP_{t-1})}/{GDP_{t-1}} \right] \times 100$$

2. I have created the two variables, $GDPg_{t-1}$ and $GDPg_{t+1}$
3. I have created the mean values of GDP growth over $GDPg_{t-1}$, $GDPg_t$ and $GDPg_{t+1}$ for every year.
4. Then I have created the variance measure using the following formula:

$$\frac{[(GDPg_t - Mean)\text{^}2]}{N}$$

5. I have then computed the standard deviation measure by taking the square root of the equation above.

It is important to notice that while for the World Bank data I was able to use also the values for 1995 and 2010 to make the computation before complete, for the GDP data from the Penn World Tables the data on 2010 are yet not available. Therefore the computation of the mean is only over two years, and the same is true for the variance, where therefore the N=2 instead of N=3.

For the ratio I have created a new variable composed of the private consumption growth over GDP growth, and then I have applied the same steps as above.

Appendix VI

Results of the regression using the Volatility of Growth rates estimated using RGDPL2, real GDP per capita growth derived from the growth rate of domestic absorption at 2005 constant prices, from Penn World Tables.

Table 18: Regression using volatility of RGDPL2

VARIABLES	(1) LSDV_Reg pwt_vol2	(2) LSDV_YearReg pwt_vol2	(3) FE_Country pwt_vol2	(4) FE_CountryYear pwt_vol2
Net FDI inflow	0.00492	0.00475	0.00554	0.00317
	(0.00482)	(0.00519)	(0.00524)	(0.00579)
Foreign Bank Presence	-0.00371*	-0.00286	-0.00887	-0.00112
	(0.00200)	(0.00198)	(0.00775)	(0.00787)
Trade (X-M/GDP)	0.00206	0.00220*	0.000902	0.00397
	(0.00133)	(0.00132)	(0.00513)	(0.00506)
Government Consumption	0.0104	0.0102	0.0745	0.0601
	(0.0138)	(0.0140)	(0.0534)	(0.0483)
Inflation	0.0226****	0.0210****	0.0199**	0.0189**
	(0.00622)	(0.00607)	(0.00905)	(0.00889)
Population Growth	0.236*	0.230*	0.307**	0.207
	(0.126)	(0.126)	(0.151)	(0.132)
Life Expectancy	-0.0352**	-0.0314**	-0.0866	0.0223
	(0.0151)	(0.0157)	(0.0721)	(0.115)
Secondary School Enrolment (Gross)	-0.000977	8.92e-05	0.000839	0.00831
	(0.00296)	(0.00296)	(0.00651)	(0.00699)
Private Credit (GDP)	0.00192	-0.00148	1.252**	1.219**
	(0.217)	(0.206)	(0.591)	(0.537)
Deposits (GDP)	0.183	0.126	-0.533	-0.421
	(0.287)	(0.302)	(1.019)	(1.037)
Turnover Ratio	-0.000709	-0.00851	-0.0642	-0.0194
	(0.0732)	(0.0744)	(0.104)	(0.126)
Stock Market Cap. (GDP)	-0.0338	-0.0249	0.111	0.152
	(0.0914)	(0.0972)	(0.159)	(0.228)
M2 (GDP)	-0.00266	-0.00215	-0.00627	-0.00295
	(0.00206)	(0.00208)	(0.00575)	(0.00483)
Democracy (FH_POLIV)	0.00906	0.00822	0.00355	0.00741
	(0.0330)	(0.0328)	(0.0606)	(0.0602)
Corruption (TI)	0.0252	0.00415	-0.0513	-0.0513
	(0.0361)	(0.0392)	(0.127)	(0.129)
dum_CEE	0.430	0.360		
	(0.304)	(0.312)		
dum_CIS	0.485*	0.455		
	(0.290)	(0.295)		
dum_EAP	0.511***	0.496**		
	(0.190)	(0.193)		
dum_LAC	0.496**	0.444**		

	(0.193)	(0.206)		
dum_MENA	0.154	0.138		
	(0.263)	(0.262)		
dum_SA	0.0426	0.125		
	(0.254)	(0.272)		
dum_SSA	-0.0127	0.0366		
	(0.296)	(0.306)		
dum_WE	0.138	0.161		
	(0.130)	(0.141)		
1996b.year		0		0
		(0)		(0)
1997.year		-0.0265		-0.124
		(0.383)		(0.401)
1998.year		0.424		0.379
		(0.402)		(0.428)
1999.year		0.317		0.226
		(0.339)		(0.387)
2000.year		0.139		-0.0247
		(0.315)		(0.424)
2001.year		-0.0278		-0.275
		(0.314)		(0.447)
2002.year		-0.193		-0.442
		(0.304)		(0.440)
2003.year		-0.0203		-0.297
		(0.318)		(0.452)
2004.year		0.0442		-0.284
		(0.313)		(0.495)
2005.year		0.164		-0.255
		(0.328)		(0.527)
2006.year		-0.192		-0.6
		(0.309)		(0.551)
2007.year		-0.0938		0.588
		(0.305)		(0.589)
2008.year		0.111		-0.437
		(0.337)		(0.632)
Constant	2.516**	2.211**	5.766	-2.968
	(1.001)	(1.074)	(5.300)	(8.312)
R-squared	**0.178**	**0.200**	**0.105**	**0.150**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of real GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0). The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

Appendix VII

Results of the regression using the Volatility of Growth rates estimated using RGDPCH, real GDP per capita growth estimated with Chain Series, instead of Laspeyres, at 2005 constant prices, from Penn World Tables.

Table 19: Regression using RGDPCH

VARIABLES	(1) LSDV_Reg pwt_volch	(2) LSDV_YearReg pwt_volch	(3) FE_Country pwt_volch	(4) FE_CountryYear pwt_volch
Net FDI Inflow	0.00655	0.00671	0.00678	0.00504
	(0.00500)	(0.00554)	(0.00556)	(0.00614)
Foreign Bank Presence	-0.00420**	-0.00318	-0.00850	-0.00212
	(0.00203)	(0.00200)	(0.00767)	(0.00820)
Trade (X-M/GDP)	0.00274**	0.00289**	0.00165	0.00371
	(0.00138)	(0.00136)	(0.00556)	(0.00530)
Government Consumption	0.0157	0.0160	0.0676	0.0573
	(0.0135)	(0.0137)	(0.0515)	(0.0497)
Inflation	0.0223****	0.0209****	0.0194**	0.0189**
	(0.00612)	(0.00601)	(0.00894)	(0.00875)
Population Growth	0.172*	0.161*	0.286**	0.207
	(0.0977)	(0.0978)	(0.138)	(0.131)
Life Expectancy	-0.0323**	-0.0277*	-0.110	-0.0294
	(0.0153)	(0.0162)	(0.0702)	(0.0908)
Secondary School Enrolment (Gross)	-0.00157	-0.000561	0.00168	0.00850
	(0.00304)	(0.00303)	(0.00691)	(0.00738)
Private Credit (GDP)	0.0583	0.0599	1.348**	1.324**
	(0.229)	(0.217)	(0.661)	(0.613)
Deposits (GDP)	0.239	0.169	-0.864	-0.693
	(0.294)	(0.311)	(1.077)	(1.120)
Turnover Ratio	-0.0302	-0.0330	-0.0991	-0.0572
	(0.0728)	(0.0744)	(0.118)	(0.139)
Stock Market Cap. (GDP)	-0.0228	-0.00155	0.0770	0.0985
	(0.0950)	(0.101)	(0.167)	(0.233)
M2 (GDP)	-0.00350	-0.00291	-0.00389	-0.00170
	(0.00213)	(0.00215)	(0.00505)	(0.00476)
Democracy (FH_POLIV)	0.00557	0.00438	-0.0128	-0.0141
	(0.0332)	(0.0330)	(0.0614)	(0.0605)
Corruption (TI)	0.0139	-0.00997	-0.0676	-0.0669
	(0.0365)	(0.0403)	(0.131)	(0.134)
dum_CEE	0.273	0.206		
	(0.276)	(0.279)		
dum_CIS	0.475*	0.451		
	(0.272)	(0.277)		
dum_EAP	0.562***	0.556***		
	(0.204)	(0.206)		
dum_LAC	0.522**	0.483**		
	(0.204)	(0.213)		

dum_MENA	0.256	0.249		
	(0.270)	(0.266)		
dum_SA	0.0304	0.128		
	(0.255)	(0.274)		
dum_SSA	0.0317	0.105		
	(0.312)	(0.321)		
dum_WE	0.123	0.152		
	(0.135)	(0.144)		
1996b.year		0		0
		(0)		(0)
1997.year		-0.111		-0.179
		(0.384)		(0.404)
1998.year		0.311		0.339
		(0.411)		(0.456)
1999.year		0.216		0.213
		(0.346)		(0.412)
2000.year		0.0596		0.0255
		(0.324)		(0.421)
2001.year		-0.129		-0.227
		(0.326)		(0.461)
2002.year		-0.307		-0.421
		(0.312)		(0.450)
2003.year		-0.0982		-0.223
		(0.327)		(0.449)
2004.year		-0.0436		-0.183
		(0.323)		(0.484)
2005.year		0.113		-0.0951
		(0.336)		(0.500)
2006.year		-0.298		-0.506
		(0.317)		(0.514)
2007.year		-0.200		-0.470
		(0.316)		(0.556)
2008.year		-0.0522		-0.321
		(0.350)		(0.601)
Constant	2.405**	2.130**	7.691	1.088
	(0.994)	(1.075)	(5.123)	(6.523)
R-squared	**0.170**	**0.194**	**0.109**	**0.150**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of real GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0). The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

Appendix VIII

Results of the regression using the Volatility of Growth rates estimated from GDP per Capita from the World Bank.

Table 20: Regression using GDP per capita growth (WB)

VARIABLES	(1) LSDV_Reg gdpxcap_vol	(2) LSDV_YearReg gdpxcap_vol	(3) FE_Country gdpxcap_vol	(4) FE_CountryYear gdpxcap_vol
Net FDI Inflow	0.00648*	0.00396	0.00817	0.00473
	(0.00378)	(0.00389)	(0.00583)	(0.00581)
Foreign Bank Presence	-0.000266	0.000857	-0.00362	-0.000308
	(0.00162)	(0.00153)	(0.00589)	(0.00594)
Trade (X-M/GDP)	-0.000261	-1.08e-05	0.00288	0.00402
	(0.00104)	(0.000997)	(0.00373)	(0.00359)
Government Consumption	0.0232**	0.0245***	0.0808***	0.0709**
	(0.00905)	(0.00939)	(0.0287)	(0.0308)
Inflation	0.0204****	0.0183****	0.0152*	0.0137
	(0.00523)	(0.00525)	(0.00845)	(0.00869)
Population Growth	0.0885	0.101	0.0965	0.0989
	(0.0713)	(0.0717)	(0.128)	(0.120)
Life Expectancy	0.0167*	0.0226**	-0.109**	-0.0742
	(0.00994)	(0.0103)	(0.0498)	(0.0656)
Secondary School Enrolment (Gross)	-0.00352*	-0.00267	0.000586	0.00396
	(0.00214)	(0.00203)	(0.00403)	(0.00452)
Private Credit (GDP)	0.225	0.220	1.202**	1.138**
	(0.179)	(0.164)	(0.522)	(0.505)
Deposits (GDP)	0.120	0.0272	-0.167	-0.227
	(0.234)	(0.231)	(0.731)	(0.746)
Turnover Ratio	0.0292	0.00246	-0.0740	-0.112
	(0.0574)	(0.0583)	(0.0677)	(0.0732)
Stock Market Cap. (GDP)	0.0585	0.0781	0.148	0.0639
	(0.0823)	(0.0883)	(0.214)	(0.282)
M2 (GDP)	-0.00373**	-0.00304*	-0.00916**	-0.00636
	(0.00170)	(0.00163)	(0.00459)	(0.00401)
Democracy (FH_POLIV)	-0.0423*	-0.0445**	-0.0718	-0.0594
	(0.0236)	(0.0225)	(0.0547)	(0.0556)
Corruption (TI)	-0.0224	-0.0447	-0.0194	-0.00186
	(0.0268)	(0.0291)	(0.0813)	(0.0772)
dum_CEE	0.526**	0.441**		
	(0.205)	(0.202)		
dum_CIS	0.618***	0.596***		
	(0.229)	(0.224)		
dum_EAP	0.592****	0.561****		
	(0.170)	(0.164)		

dum_LAC	0.642****	0.557****		
	(0.149)	(0.149)		
dum_MENA	0.306	0.252		
	(0.212)	(0.204)		
dum_SA	0.291	0.380**		
	(0.188)	(0.192)		
dum_SSA	0.408*	0.435*		
	(0.228)	(0.226)		
dum_WE	0.368***	0.371***		
	(0.115)	(0.116)		
1996b.year		0		0
		(0)		(0)
1997.year		0.284		0.257
		(0.216)		(0.247)
1998.year		0.534**		0.538*
		(0.239)		(0.278)
1999.year		0.437***		0.482**
		(0.151)		(0.218)
2000.year		0.403***		0.452**
		(0.143)		(0.226)
2001.year		0.254*		0.300
		(0.132)		(0.238)
2002.year		0.123		0.166
		(0.128)		(0.227)
2003.year		0.187		0.218
		(0.137)		(0.227)
2004.year		0.123		0.190
		(0.135)		(0.268)
2005.year		0.00870		0.0528
		(0.113)		(0.276)
2006.year		-0.126		-0.0691
		(0.112)		(0.307)
2007.year		0.203		0.258
		(0.125)		(0.346)
2008.year		0.255		0.339
		(0.161)		(0.371)
Constant	-0.856	-1.438**	7.416**	4.108
	(0.692)	(0.720)	(3.288)	(4.496)
R-squared	**0.142**	**0.186**	**0.143**	**0.194**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the World Bank databank. The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is from from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

Appendix IX

Results of the regression using the Volatility of Growth rates estimated using RGDPL2, real GDP per capita growth derived from the growth rate of domestic absorption at 2005 constant prices, from Penn World Tables; and the measure of Foreign Bank Assets from Claessens and Van Horen (2012).

Table 21: Regression using RGDPL2 and Foreign Bank Assets

VARIABLES	(1) LSDV_Reg pwt_vol2	(2) LSDV_YearReg pwt_vol2	(3) FE_Country pwt_vol2	(4) FE_CountryYear pwt_vol2
Net FDI Inflow	0.00729	0.0113	0.00247	0.00570
	(0.00799)	(0.00786)	(0.00874)	(0.00758)
Bank Assets	0.00188	0.00224	0.00999	0.0152
	(0.00366)	(0.00365)	(0.0107)	(0.0117)
Trade (X-M/GDP)	-0.00469**	-0.00495**	-0.00357	0.00175
	(0.00195)	(0.00198)	(0.00786)	(0.00879)
Government Consumption	-0.00776	-0.0107	0.0269	-0.0132
	(0.0207)	(0.0219)	(0.0570)	(0.0578)
Inflation	0.0509*	0.0485	0.0628*	0.0479
	(0.0291)	(0.0323)	(0.0366)	(0.0463)
Population Growth	0.372***	0.364***	0.124	0.0182
	(0.131)	(0.130)	(0.312)	(0.290)
Life Expectancy	-0.0340	-0.0318	-0.0356	0.267
	(0.0223)	(0.0239)	(0.158)	(0.250)
Secondary School Enrolment (Gross)	-0.00859	-0.00819	-0.0185	-0.0125
	(0.00554)	(0.00560)	(0.0341)	(0.0295)
Private Credit (GDP)	-0.0419	0.000115	0.900	1.538**
	(0.181)	(0.187)	(0.781)	(0.764)
Deposits (GDP)	-0.175	-0.222	-2.689**	-3.201**
	(0.329)	(0.329)	(1.193)	(1.487)
Turnover Ratio	-0.207	-0.231*	0.0166	-0.0748
	(0.130)	(0.127)	(0.153)	(0.171)
Stock Market Cap. (GDP)	0.0689	0.0778	-0.0965	-0.0426
	(0.120)	(0.136)	(0.402)	(0.420)
M2 (GDP)	0.00303	0.00314	0.00558	0.00719
	(0.00230)	(0.00231)	(0.00815)	(0.00706)
Democracy (FH_POLIV)	0.00561	0.000172	-0.0441	-0.0572
	(0.0458)	(0.0464)	(0.0784)	(0.0767)
Corruption (TI)	0.113*	0.109	-0.0790	-0.00480
	(0.0667)	(0.0678)	(0.216)	(0.213)
dum_CEE	1.260****	1.246***		
	(0.377)	(0.388)		
dum_CIS	0.726**	0.699*		
	(0.353)	(0.359)		

dum_EAP	0.475**	0.508**		
	(0.200)	(0.219)		
dum_LAC	0.484	0.468		
	(0.302)	(0.305)		
dum_MENA	0.210	0.203		
	(0.347)	(0.344)		
dum_SA	-0.0663	-0.0285		
	(0.343)	(0.348)		
dum_SSA	-0.0543	0.00884		
	(0.392)	(0.391)		
dum_WE	0.497***	0.524***		
	(0.159)	(0.171)		
2004b.year		0		0
		(0)		(0)
2005.year		0.0876		-0.0948
		(0.206)		(0.192)
2006.year		-0.304*		-0.557**
		(0.177)		(0.257)
2007.year		-0.164		-0.501
		(0.171)		(0.329)
2008.year		-0.000378		-0.415
		(0.280)		(0.447)
Constant	2.737*	2.737*	5.433	-17.15
	(1.515)	(1.650)	(11.02)	(17.47)
R-squared	**0.274**	**0.292**	**0.057**	**0.111**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of real GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0). The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank assets has been taken from Claessens and Van Horen (2012).

Appendix X

Results of the regression using the Volatility of Growth rates estimated using RGDPCH, real GDP per capita growth estimated with Chain Series, instead of Laspeyres, at 2005 constant prices, from Penn World Tables; and the measure of Foreign Bank Assets from Claessens and Van Horen (2012).

Table 22: Regression using RGDPCH and foreign bank assets.

VARIABLES	(1) LSDV_Reg pwt_volch	(2) LSDV_YearReg pwt_volch	(3) FE_Country pwt_volch	(4) FE_CountryYear pwt_volch
Net FDI Inflow	0.0116	0.0162*	0.00151	0.00494
	(0.00813)	(0.00824)	(0.00886)	(0.00757)
Bank Assets	0.00257	0.00302	0.0114	0.0183
	(0.00368)	(0.00366)	(0.0116)	(0.0128)
Trade (X-M/GDP)	-0.00374*	-0.00404*	0.00166	0.00856
	(0.00205)	(0.00206)	(0.00794)	(0.00922)
Government Consumption	-0.000643	-0.00378	0.0460	-0.00125
	(0.0205)	(0.0217)	(0.0578)	(0.0575)
Inflation	0.0329	0.0309	0.0497	0.0366
	(0.0273)	(0.0304)	(0.0332)	(0.0408)
Population Growth	0.284***	0.274***	0.230	0.0774
	(0.101)	(0.0999)	(0.281)	(0.282)
Life Expectancy	-0.0388	-0.0359	-0.0681	0.347
	(0.0238)	(0.0250)	(0.165)	(0.247)
Secondary School Enrolment (Gross)	-0.00680	-0.00636	-0.0253	-0.0170
	(0.00513)	(0.00509)	(0.0400)	(0.0340)
Private Credit (GDP)	-0.120	-0.0697	1.020	1.947**
	(0.190)	(0.195)	(0.836)	(0.819)
Deposits (GDP)	-0.0961	-0.152	-3.610***	-4.442***
	(0.327)	(0.330)	(1.237)	(1.512)
Turnover Ratio	-0.239*	-0.264**	0.0475	-0.0372
	(0.130)	(0.127)	(0.151)	(0.167)
Stock Market Cap. (GDP)	0.0353	0.0500	-0.119	0.00385
	(0.122)	(0.139)	(0.463)	(0.480)
M2 (GDP)	0.00237	0.00250	0.00929	0.0120
	(0.00232)	(0.00236)	(0.00999)	(0.00783)
Democracy (FH_POLIV)	0.0224	0.0161	-0.0586	-0.0747
	(0.0464)	(0.0460)	(0.0858)	(0.0832)
Corruption (TI)	0.100	0.0949	-0.0509	0.0387
	(0.0652)	(0.0660)	(0.227)	(0.219)
dum_CEE	0.823**	0.810**		
	(0.365)	(0.375)		
dum_CIS	0.692*	0.665*		
	(0.354)	(0.357)		

dum_EAP	0.390*	0.433*		
	(0.219)	(0.235)		
dum_LAC	0.379	0.367		
	(0.314)	(0.316)		
dum_MENA	0.363	0.359		
	(0.358)	(0.348)		
dum_SA	-0.116	-0.0667		
	(0.339)	(0.342)		
dum_SSA	0.00549	0.0855		
	(0.409)	(0.404)		
dum_WE	0.365**	0.397**		
	(0.171)	(0.181)		
2004b.year		0		0
		(0)		(0)
2005.year		0.107		-0.113
		(0.211)		(0.189)
2006.year		-0.337*		-0.692***
		(0.173)		(0.257)
2007.year		-0.193		-0.674*
		(0.171)		(0.347)
2008.year		-0.0187		-0.632
		(0.281)		(0.440)
Constant	3.050*	3.005*	7.748	-23.35
	(1.566)	(1.683)	(11.66)	(17.04)
R-squared	**0.246**	**0.270**	**0.056**	**0.131**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of real GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0). The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank assets has been taken from Claessens and Van Horen (2012).

Appendix XI

Results of the regression using the Volatility of Growth rates estimated from GDP per Capita from the World Bank and the measure of Foreign Bank Assets from Claessens and Van Horen (2012).

Table 23: Regression using GDP per capita growth (WB) and foreign bank assets.

VARIABLES	(1) LSDV_Reg gdpxcap_vol	(2) LSDV_YearReg gdpxcap_vol	(3) FE_Country gdpxcap_vol	(4) FE_CountryYear gdpxcap_vol
Net FDI Inflow	0.00660	0.00495	0.0101	0.00890
	(0.00647)	(0.00604)	(0.00723)	(0.00641)
Bank Assets	0.00115	0.000815	0.00113	0.00389
	(0.00192)	(0.00177)	(0.00711)	(0.00828)
Trade (X-M/GDP)	-0.00213*	-0.00199*	-0.00711	-0.00362
	(0.00113)	(0.00109)	(0.00461)	(0.00446)
Government Consumption	0.00558	0.00290	0.0628	0.0542
	(0.0122)	(0.0133)	(0.0571)	(0.0551)
Inflation	0.0522**	0.0441	0.0672*	0.0641
	(0.0251)	(0.0295)	(0.0349)	(0.0416)
Population Growth	0.173**	0.189***	-0.269	-0.215
	(0.0697)	(0.0685)	(0.352)	(0.330)
Life Expectancy	0.0212	0.0160	0.0446	0.110
	(0.0128)	(0.0142)	(0.136)	(0.215)
Secondary School Enrolment (Gross)	-0.00387	-0.00383	-0.00627	-0.00492
	(0.00340)	(0.00334)	(0.0244)	(0.0223)
Private Credit (GDP)	0.0544	0.0248	1.345**	1.352**
	(0.114)	(0.111)	(0.600)	(0.611)
Deposits (GDP)	-0.156	-0.135	-0.716	-0.961
	(0.206)	(0.182)	(1.200)	(1.466)
Turnover Ratio	-0.0452	-0.0777	-0.123	-0.153
	(0.0580)	(0.0606)	(0.106)	(0.148)
Stock Market Cap. (GDP)	0.0269	-0.0263	0.279	0.271
	(0.0729)	(0.0685)	(0.322)	(0.344)
M2 (GDP)	0.000752	0.000552	-0.00127	-0.000578
	(0.00164)	(0.00147)	(0.00801)	(0.00784)
Democracy (FH_POLIV)	-0.000927	8.15e-05	0.00485	0.0160
	(0.0236)	(0.0250)	(0.0481)	(0.0542)
Corruption (TI)	0.0663**	0.0761**	0.0215	0.0462
	(0.0308)	(0.0314)	(0.174)	(0.170)
dum_CEE	0.954****	0.895****		
	(0.265)	(0.260)		
dum_CIS	1.186****	1.132****		
	(0.265)	(0.256)		
dum_EAP	0.504****	0.441***		
	(0.138)	(0.140)		

dum_LAC	0.645****	0.571***		
	(0.193)	(0.200)		
dum_MENA	0.448**	0.376		
	(0.227)	(0.236)		
dum_SA	0.410**	0.327*		
	(0.192)	(0.183)		
dum_SSA	0.611**	0.505*		
	(0.275)	(0.278)		
dum_WE	0.365****	0.345***		
	(0.106)	(0.106)		
2004b.year		0		0
		(0)		(0)
2005.year		-0.118		-0.178
		(0.130)		(0.136)
2006.year		-0.264**		-0.379*
		(0.128)		(0.199)
2007.year		0.115		-0.0876
		(0.140)		(0.231)
2008.year		0.146		-0.187
		(0.244)		(0.370)
Constant	-1.972**	-1.400	-3.361	-8.496
	(0.939)	(1.052)	(9.680)	(15.10)
R-squared	**0.223**	**0.270**	**0.180**	**0.238**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in World Bank databank. The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

Appendix XII

Results of the regression using the Volatility of Growth rates estimated using RGDPL, real GDP per capita growth at 2005 constant prices, from Penn World Tables; and the measure of Foreign Bank Assets from Claessens and Van Horen (2012), using income level dummy variables.

Table 24: Regression using income fixed effects and RGDPL.

VARIABLES	(1) LSDV_Income pwt_vol	(2) LSDV_YearIncome pwt_vol
Net FDI Inflow	0.00697 (0.00458)	0.00679 (0.00509)
Foreign Bank Presence	-0.00500*** (0.00190)	-0.00435** (0.00180)
Trade (X-M/GDP)	0.00281** (0.00123)	0.00297** (0.00120)
Government Consumption	-0.00822 (0.0123)	-0.00946 (0.0123)
Inflation	0.0201**** (0.00590)	0.0179*** (0.00583)
Population Growth	0.197*** (0.0602)	0.190*** (0.0603)
Life Expectancy	-0.0271** (0.0105)	-0.0250** (0.0109)
Secondary School Enrolment (Gross)	-0.00225 (0.00279)	-0.000878 (0.00281)
Private Credit (GDP)	0.000138 (0.210)	-0.00907 (0.195)
Deposits (GDP)	0.359 (0.220)	0.239 (0.223)
Turnover Ratio	-0.0129 (0.0668)	-0.00364 (0.0679)
Stock Market Cap. (GDP)	-0.152 (0.0980)	-0.128 (0.0997)
M2 (GDP)	-0.00392** (0.00182)	-0.00255 (0.00168)
Democracy (FH_POLIV)	-0.00559 (0.0233)	-0.00523 (0.0232)
Corruption (TI)	0.0147 (0.0364)	-0.000491 (0.0384)
LI_dum	-1.180*** (0.410)	-0.486* (0.255)
LMI_dum	-1.058*** (0.345)	-0.472**** (0.136)
OECD_dum	-0.780**	-0.234

	(0.330)	(0.144)
OHI_dum		0.582*
		(0.343)
1996b.year		0
		(0)
1997.year		-0.0902
		(0.379)
1998.year		0.240
		(0.406)
1999.year		0.119
		(0.342)
2000.year		-0.0560
		(0.317)
2001.year		-0.265
		(0.316)
2002.year		-0.427
		(0.302)
2003.year		-0.242
		(0.314)
2004.year		-0.169
		(0.314)
2005.year		-0.0529
		(0.323)
2006.year		-0.413
		(0.308)
2007.year		-0.330
		(0.308)
2008.year		-0.115
		(0.333)
UMI_dum	-0.567	
	(0.345)	
Constant	3.696****	3.075****
	(0.864)	(0.809)
R-squared	**0.196**	**0.222**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. The volatility of real GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0). The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012). Income levels are OECD, OECD countries, LMI, Lower Middle Income, OHI, Other High Income, LI, Low Income, UMI, Upper Middle Income.

Appendix XIII

Results of the regression using the Volatility Private Consumption (World Bank); and the measure of Foreign Bank Assets from Claessens and Van Horen (2012), using income level dummy variables.

Table 25: Regression using income fixed effects and GDP per capita growth (WB).

VARIABLES	(1) LSDV_Income private_vol	(2) LSDV_YearIncome private_vol
Net FDI Inflow	0.00347 (0.00728)	0.00217 (0.00754)
Foreign Bank Presence	-0.00342 (0.00241)	-0.00314 (0.00240)
Trade (X-M/GDP)	0.00487*** (0.00152)	0.00520**** (0.00151)
Government Consumption	-0.0252 (0.0182)	-0.0287 (0.0184)
Inflation	0.0189** (0.00748)	0.0171** (0.00728)
Population Growth	0.0213 (0.0790)	0.0210 (0.0794)
Life Expectancy	-0.0569**** (0.0152)	-0.0548**** (0.0156)
Secondary School Enrolment (Gross)	0.00373 (0.00377)	0.00405 (0.00397)
Private Credit (GDP)	-0.132 (0.243)	-0.145 (0.233)
Deposits (GDP)	0.392 (0.251)	0.287 (0.271)
Turnover Ratio	0.166** (0.0802)	0.161* (0.0830)
Stock Market Cap. (GDP)	-0.143 (0.150)	-0.134 (0.165)
M2 (GDP)	-0.00441** (0.00193)	-0.00348* (0.00196)
Democracy (FH_POLIV)	-0.0548 (0.0378)	-0.0563 (0.0375)
Corruption (TI)	0.0279 (0.0539)	0.0284 (0.0552)
LI_dum	-1.640** (0.711)	-0.727** (0.345)
LMI_dum	-0.937 (0.623)	-0.118 (0.214)
OECD_dum	-1.080* (0.550)	-0.269* (0.158)

OHI_dum		0.831
		(0.586)
1996b.year		0
		(0)
1997.year		0.143
		(0.278)
1998.year		0.342
		(0.342)
1999.year		0.319
		(0.277)
2000.year		0.102
		(0.240)
2001.year		0.0634
		(0.263)
2002.year		0.286
		(0.272)
2003.year		0.297
		(0.222)
2004.year		-0.0546
		(0.204)
2005.year		-0.284
		(0.190)
2006.year		-0.176
		(0.220)
2007.year		0.209
		(0.238)
2008.year		0.280
		(0.255)
UMI_dum	-0.823	
	(0.590)	
Constant	6.255****	5.200****
	(1.487)	(1.194)
R-squared	**0.192**	**0.212**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. The volatility of private consumption growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the World Bank databank. The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012). . Income levels are OECD, OECD countries, LMI, Lower Middle Income, OHI, Other High Income, LI, Low Income, UMI, Upper Middle Income.

Appendix XIV

Regression using the ratio of private consumption growth over GDP growth, using foreign bank assets (Claessens and Van Horen, 2012) as the main explanatory variable.

Table 26: regression with the ratio and foreign bank assets.

VARIABLES	(1) LSDV_Reg ratio_vol	(2) LSDV_YearReg ratio_vol	(3) FE_Country ratio_vol	(4) FE_CountryYear ratio_vol
Net FDI Inflow	0.0101	0.00240	-0.0710	-0.0707
	(0.0316)	(0.0338)	(0.0885)	(0.0875)
Bank Assets	0.0211*	0.0148	0.0102	0.0206
	(0.0115)	(0.0116)	(0.0260)	(0.0295)
Trade (X-M/GDP)	-0.00628	-0.00523	0.0157	0.0277
	(0.00811)	(0.00807)	(0.0208)	(0.0258)
Government Consumption	0.0672	0.0356	-0.250	-0.289
	(0.0532)	(0.0622)	(0.300)	(0.331)
Inflation	-0.0277	-0.104	-0.0188	-0.0250
	(0.0300)	(0.0749)	(0.0633)	(0.0815)
Population Growth	-0.291	-0.216	-4.808	-5.209
	(0.636)	(0.594)	(3.801)	(4.070)
Life Expectancy	-0.0503	-0.0984	0.477	0.934
	(0.0592)	(0.0888)	(1.087)	(1.390)
Secondary School Enrolment (Gross)	-0.0324	-0.0324	0.230	0.238
	(0.0254)	(0.0260)	(0.247)	(0.253)
Private Credit (GDP)	3.368	3.197	10.78	11.93
	(2.345)	(2.230)	(8.732)	(9.418)
Deposits (GDP)	1.664	1.972	-24.56	-25.48
	(1.480)	(1.618)	(20.87)	(21.45)
Turnover Ratio	1.302	1.151	3.580	3.641
	(0.999)	(0.874)	(2.709)	(2.712)
Stock Market Cap. (GDP)	-1.065	-1.551	-1.381	-1.190
	(0.816)	(1.139)	(1.396)	(1.130)
M2 (GDP)	-0.0161	-0.0182	0.117	0.115
	(0.0112)	(0.0122)	(0.113)	(0.113)
Democracy (FH_POLIV)	0.121	0.158	1.039	1.062
	(0.152)	(0.163)	(0.797)	(0.846)
Corruption (TI)	-0.484	-0.416	-0.914	-0.754
	(0.391)	(0.355)	(0.831)	(0.760)
dum_CEE	0.0739	0.0159		
	(2.108)	(2.016)		
dum_CIS	2.625	2.449		
	(2.431)	(2.296)		
dum_EAP	0.684	0.282		
	(1.696)	(1.393)		

dum_LAC	1.359	1.106		
	(2.536)	(2.279)		
dum_MENA	2.070	2.138		
	(3.020)	(2.981)		
dum_SA	-1.048	-1.590		
	(1.481)	(1.259)		
dum_SSA	0.671	0.0777		
	(2.008)	(1.677)		
dum_WE	2.147	2.040		
	(2.478)	(2.342)		
2004b.year		0		0
		(0)		(0)
2005.year		0.0733		-0.842
		(0.316)		(0.637)
2006.year		0.315		-0.921
		(0.446)		(0.879)
2007.year		0.688		-1.102
		(0.582)		(1.161)
2008.year		2.098		-1.180
		(1.611)		(1.529)
Constant	4.447	8.478	-54.14	-89.13
	(3.321)	(5.920)	(70.59)	(99.24)
R-squared	**0.099**	**0.117**	**0.179**	**0.184**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. For regressions (3) and (4) the errors are also corrected for autocorrelation using the cluster option in the statistical package used. The volatility of the ratio of private consumption to GDP per capita growth computed has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0). The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank assets has been taken from Claessens and Van Horen (2012).

Appendix XV

Description of the variables Foreign Bank Presence and Foreign Bank Assets (Claessens and Van Horen, 2012).

As described in Claessens and Van Horen (2012, p. 6) the database used in this dissertation is original and newly collected.

"The database on bank ownership created by Micco, Panizza and Yañez (MPY) (2007) differs in a number of ways from ours. First, our database spans the period 1995-2009, while the MPY database covers only 1995-2002. Second, in our database ownership is determined for almost all banks active in a country, while in the MPY database ownership is only determined for those banks that capture 75 percent of the bank assets in a country. Third, the MPY database determines the ownership of a bank based on indirect ownership, while we focus on direct ownership." (Claessens and Van Horen 2012, p.6)

The dataset contains information from 1995 to 2009, for 5377 banks active for at least 12 months in 137 countries. The banks included in the dataset are commercial banks, cooperative banks, savings banks, holding companies and bank holding (Claessens and Van Horen 2012, p.7).

The sources used by the authors to construct the database are the following: "Bankscope, individual banks' annual reports and corporate governance reports, Central Bank publications and websites, banking regulation agencies, local stock exchanges, US SEC forms F-20, parent company's reports, The Economist Intelligence Unit, Factiva, The Banker "and others (Claessens and Van Horen 2012, p.7).

With regards to the definition of ownership Claessens and Van Horen (2002, p. 7) write: "We determine a bank foreign owned using the definition generally applied in the literature, i.e., if 50 percent or more of its shares are owned by foreigners. We next sum the percentages of shares held by foreigners by country of residence, with the country with the highest percentage of shares then considered the home country".

With regards to foreign bank assets, the calculation is done by taking the percentage of foreign bank assets among total assets by country (Claessens and Van Horen, 2012).

Appendix XVI

The following table shows the results of the regression carried out for a sample of countries from CEE and CIS regions.

Table 27: Regression of Foreign Bank assets on alternative measures of output volatility (CEE & CIS).

VARIABLES	(1) pwt_vol2	(2) pwt_volch	(3) gdpxcap_vol
Net FDI inflow	0.0100 (0.0119)	0.0159 (0.0119)	0.00736 (0.00846)
Foreign Bank Presence	-0.0172 (0.0109)	-0.0204* (0.0108)	-0.00503 (0.00861)
Trade (X-M/GDP)	-0.0105 (0.00950)	-0.00939 (0.00928)	0.00501 (0.00485)
Government Consumption	-0.0453 (0.0448)	-0.0227 (0.0432)	0.0895*** (0.0319)
Inflation	0.00248 (0.00703)	0.00294 (0.00658)	0.00224 (0.00405)
Population growth	0.0814 (0.174)	0.144 (0.164)	-0.191 (0.139)
Life Expectancy	0.142 (0.163)	0.154 (0.151)	-0.0453 (0.115)
Secondary School Enrolment (gross)	0.0367 (0.0292)	0.0450 (0.0292)	0.0279* (0.0158)
Private Credit (GDP)	0.604 (0.861)	0.859 (0.783)	1.335* (0.755)
Deposits (GDP)	1.080 (2.136)	0.707 (2.053)	-0.545 (2.014)
Turnover Ratio	-0.161 (0.200)	-0.271 (0.202)	-0.491*** (0.147)
Stock Market Cap.	-0.124 (1.066)	0.239 (1.102)	-0.357 (0.631)
M2(GDP)	-0.0258** (0.0117)	-0.0291** (0.0112)	-0.0170 (0.0124)
Democracy (FH&POLIV)	0.173 (0.183)	0.151 (0.207)	-0.369**** (0.105)
Corruption (TI)	-0.302 (0.246)	-0.216 (0.249)	-0.124 (0.140)
1996b.year	0 (0)	0 (0)	0 (0)
1997.year	-0.447 (0.507)	-0.520 (0.411)	0.163 (0.261)
1998.year	-1.058** (0.492)	-0.995** (0.416)	-0.260 (0.289)
1999.year	-0.683	-0.755*	0.111

	(0.511)	(0.426)	(0.338)
2000.year	-1.064*	-1.051**	-0.262
	(0.570)	(0.506)	(0.323)
2001.year	-1.406**	-1.451***	-0.412
	(0.616)	(0.544)	(0.367)
2002.year	-1.458**	-1.479***	-0.571
	(0.619)	(0.547)	(0.373)
2003.year	-1.449**	-1.359**	-0.551
	(0.701)	(0.651)	(0.389)
2004.year	-1.189	-1.222*	-0.296
	(0.718)	(0.650)	(0.419)
2005.year	-0.687	-0.691	-0.279
	(0.797)	(0.730)	(0.446)
2006.year	-0.881	-0.949	-0.292
	(0.817)	(0.746)	(0.494)
2007.year	-0.858	-0.941	0.277
	(0.890)	(0.805)	(0.538)
2008.year	-0.253	-0.601	0.940
	(0.900)	(0.846)	(0.653)
Constant	-9.770	-11.53	3.876
	(12.44)	(11.59)	(8.076)
R-squared	**0.411**	**0.404**	**0.609**

Robust standard errors in parentheses **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1. The volatility of real GDP per capita growth has been done over three intersecting years as shown in appendix V. The variables denoting FDI inflows, trade, government consumption, inflation, population growth, life expectancy and gross secondary school enrolment are taken from the World Bank databank. The dependent variable used is computed from values published in the Penn World Tables (v 7.0) and the World Bank databank. The variables M2, private credit, deposits, turnover ratio and stock market capitalization are taken from Beck, Demirgüç-Kunt, Levine (World Bank, 2000), precisely from the version updated in November 2010. The variable democracy is taken from the Quality of Government Dataset, as computed by Freedom House and Polity IV. The variable corruption is taken from the Quality of Government dataset as computed by the CPI of transparency international. The variable foreign bank presence has been taken from Claessens and Van Horen (2012).

Appendix XVII

Foreign Bank Assets, by region.

Figure 21: Foreign Bank Assets, CEE

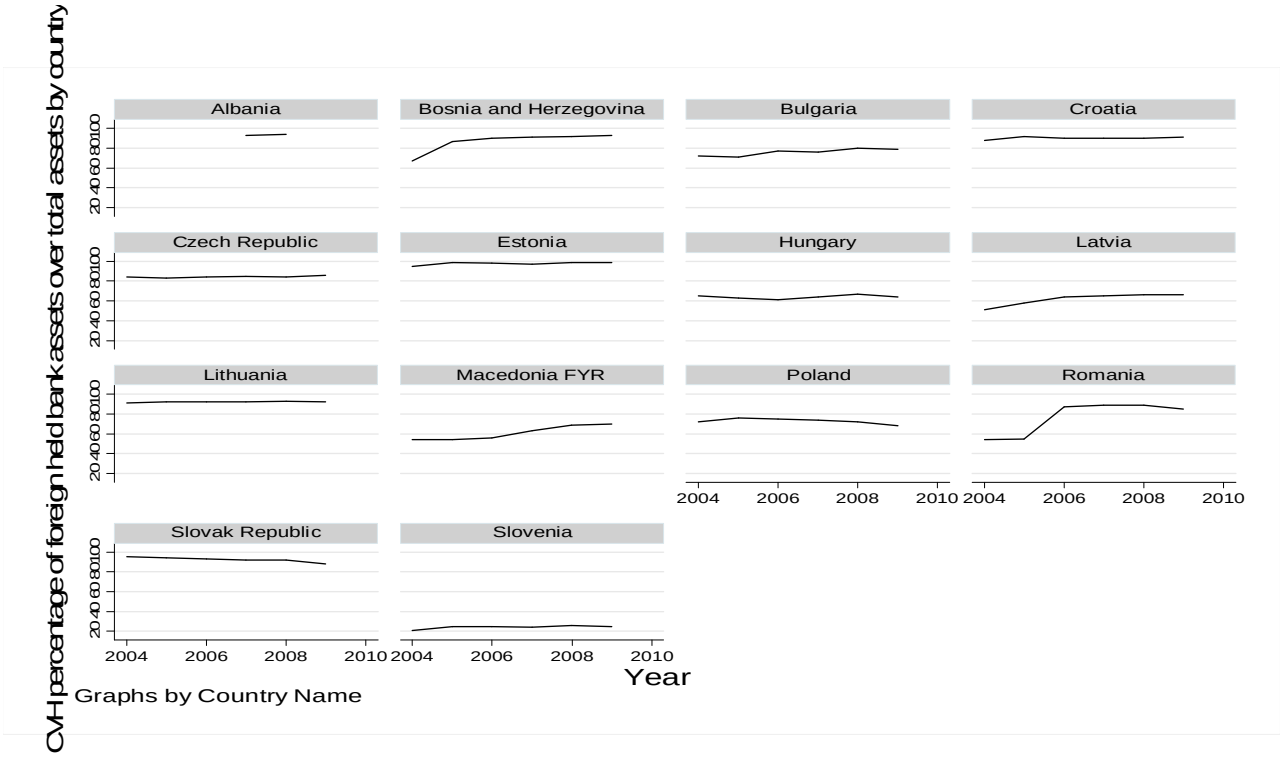


Figure 22: Foreign Bank Assets, CIS

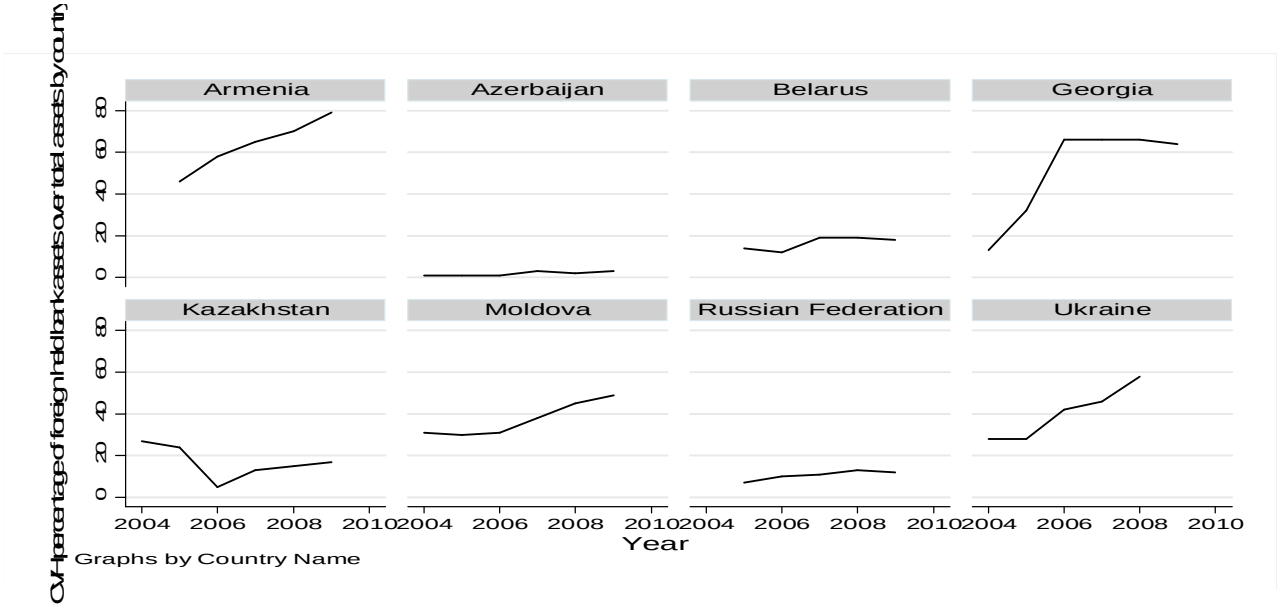


Figure 23: Foreign Bank Assets, Western Europe

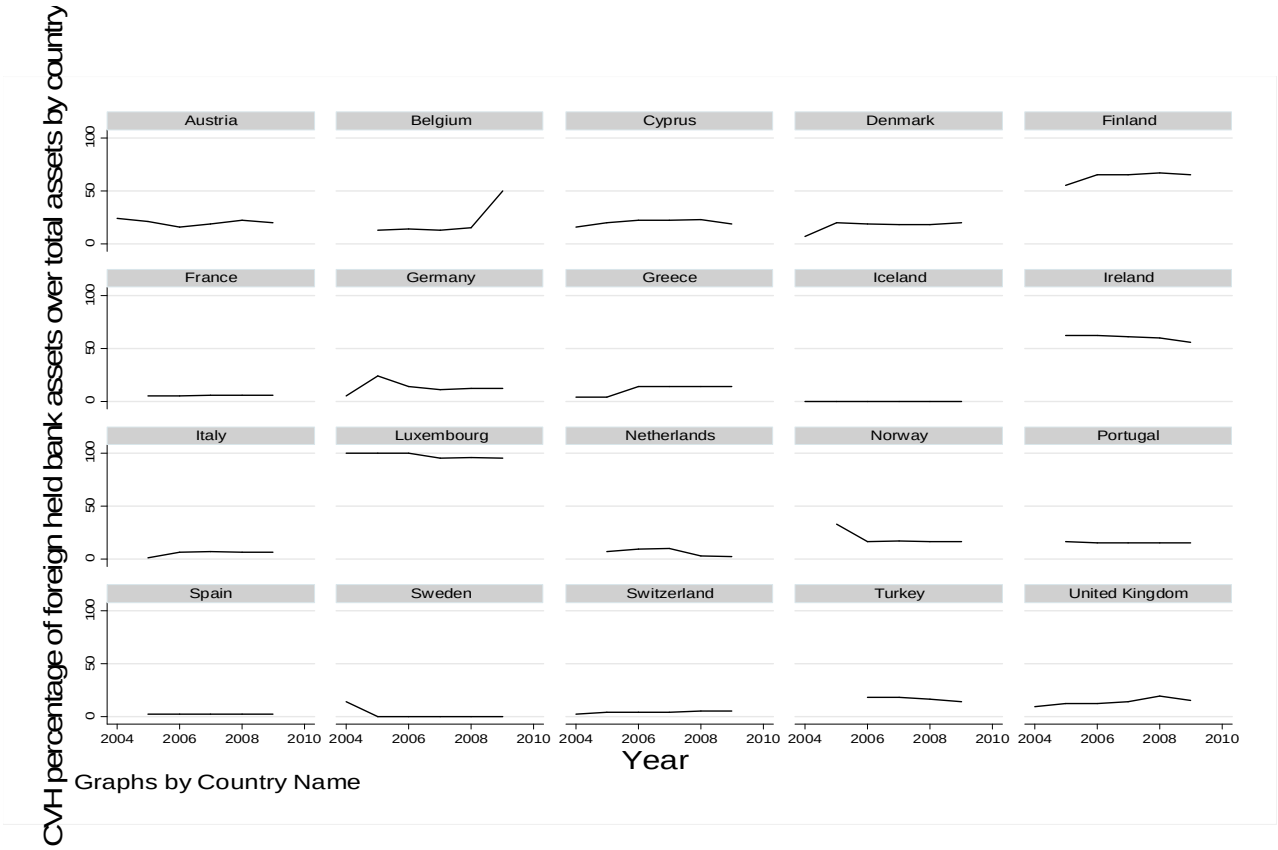


Figure 24: Foreign Bank Assets, East Asia and Pacific

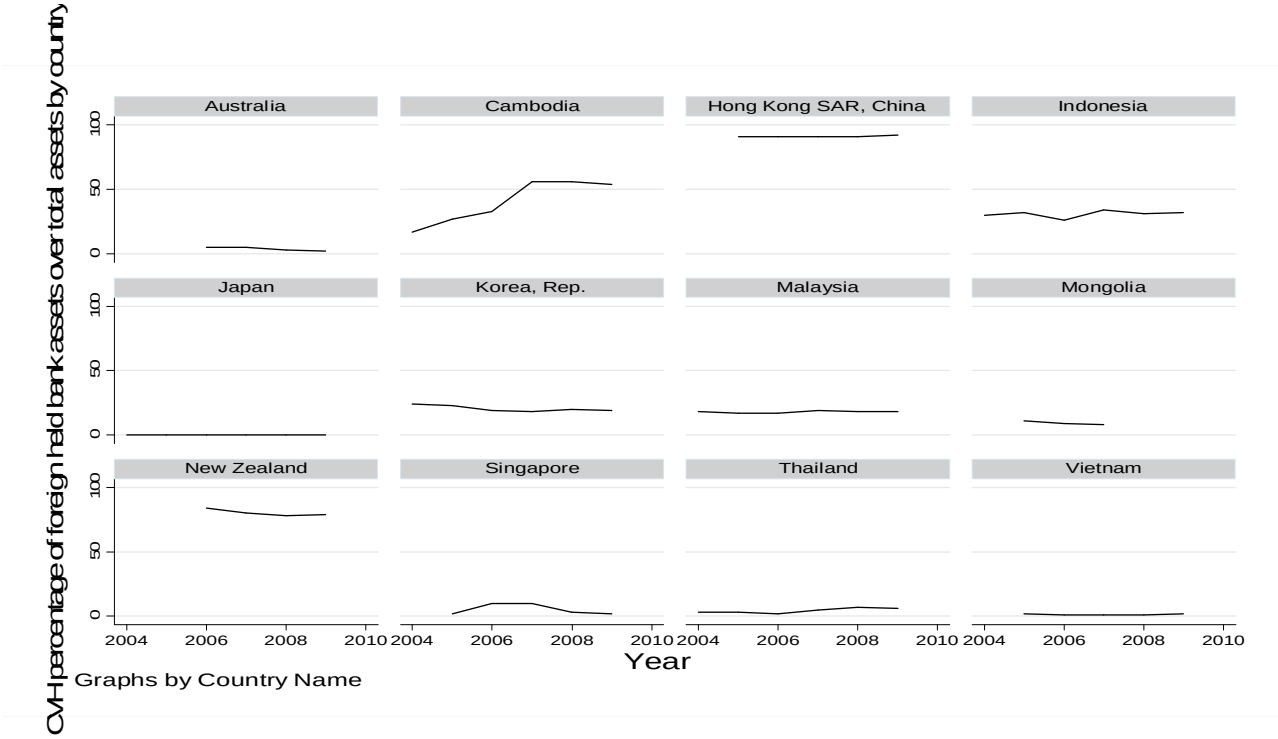


Figure 25: Foreign Bank Assets, Latin America and Caribbean

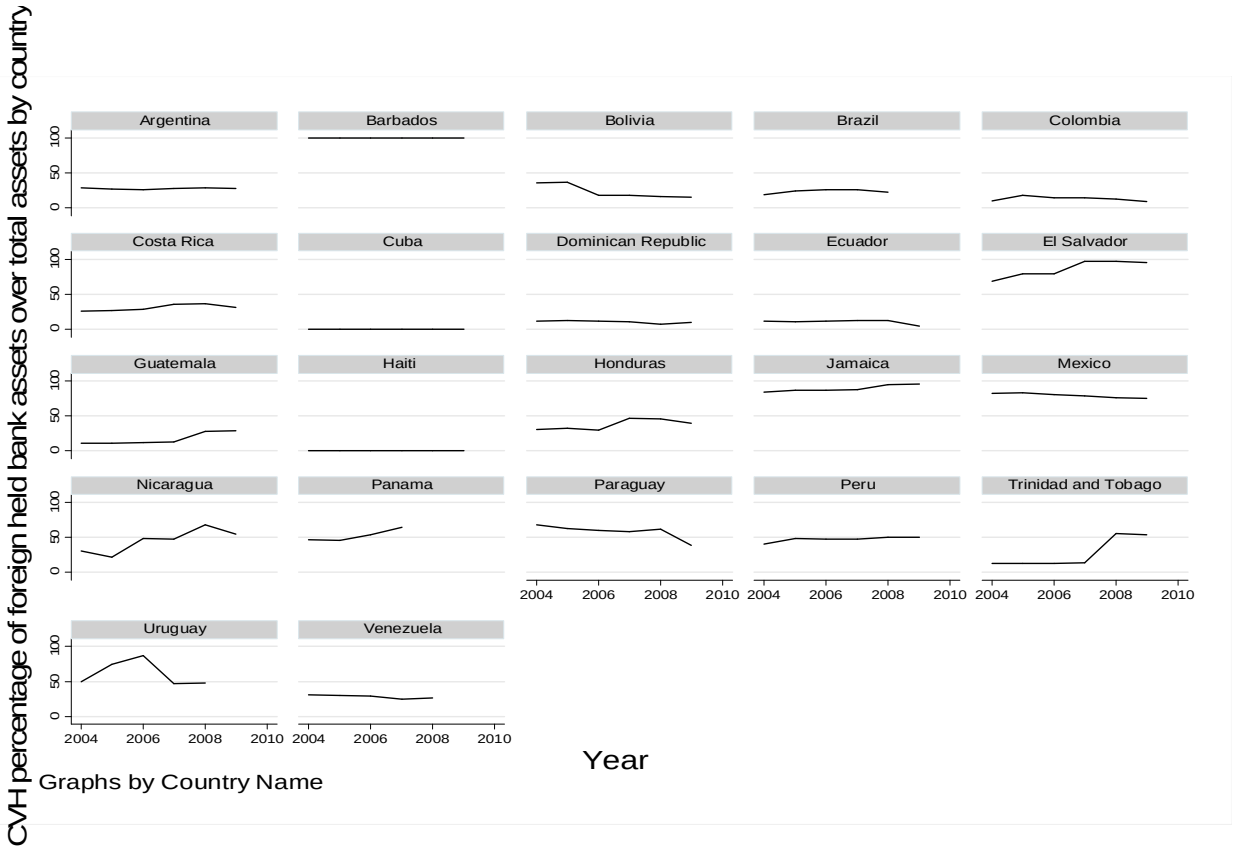


Figure 26: Foreign Bank Assets, Middle East and North Africa

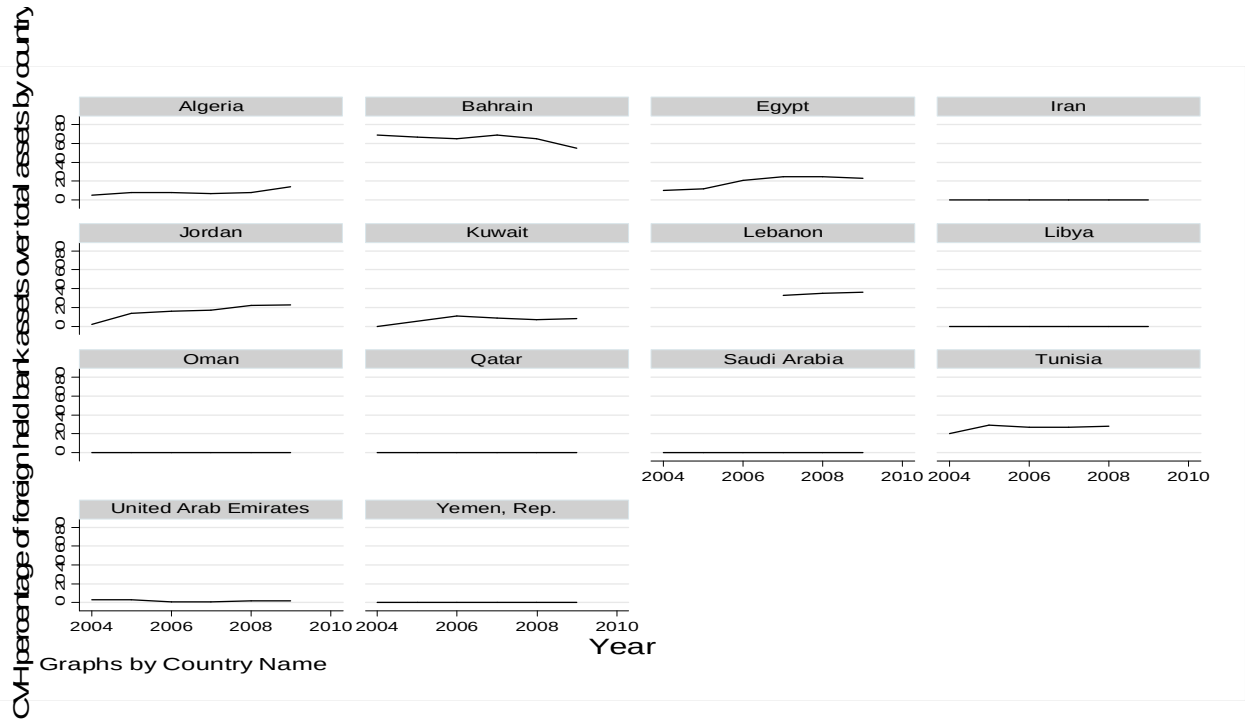


Figure 27: Foreign Bank Assets, Sub Saharan Africa

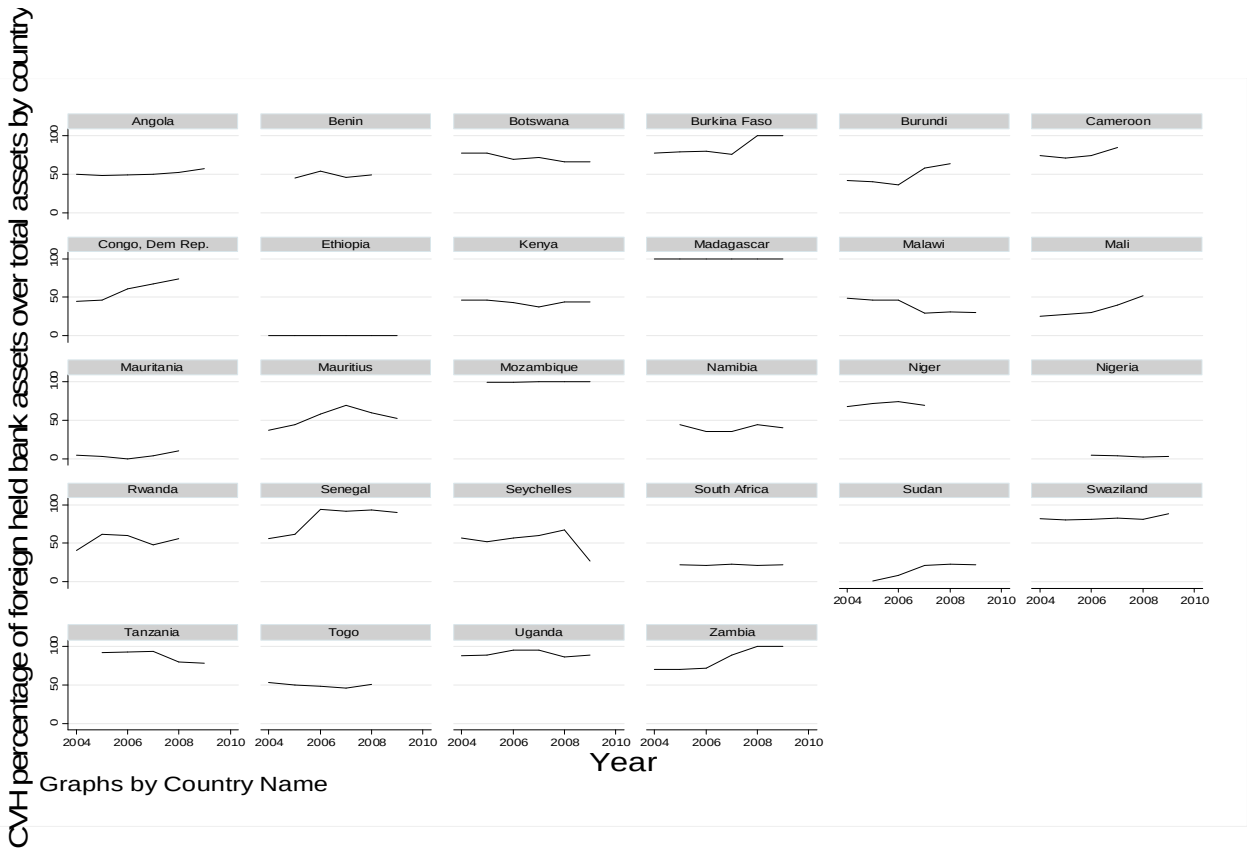


Figure 28: Foreign Bank Assets, North America

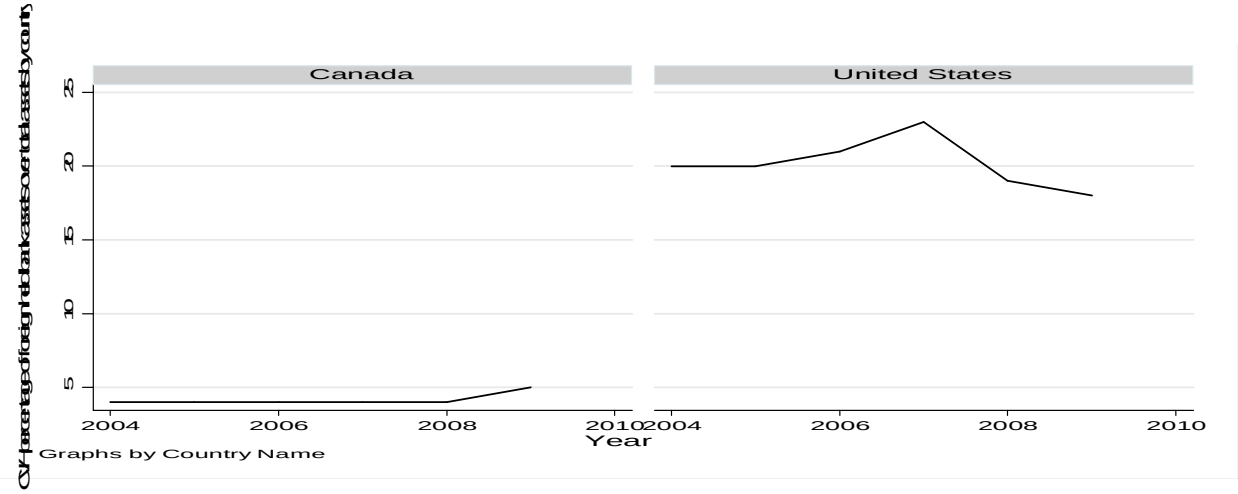


Figure 29: Foreign Bank Assets, South Asia