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Global Account Imbalances since the Global Financial Crisis: Determinants, Implications and Challenges for the Global Economy

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Abstract

Since the Global Financial Crisis (GFC), the large current account surpluses in some countries have become an important topic of discussion in international fora. In this paper, we empirically assess the factors that could potentially explain the persistence of global imbalances in selected advanced and emerging countries. We adopt a panel-regression approach on a sample covering 56 countries, allowing us to assess the medium-term determinants of current accounts. First, we perform benchmark estimations and break down our estimations between pre- and post- GFC samples using two different approaches. Second, we specify more comprehensive models in order to better understand current account dynamics. Our results show that the GFC did not imply any structural break in the determination of current accounts. Moreover, financial development, openness, and institutional variables appear as the main factors impacting current account dynamics through the effects that they have on investment and saving behaviors. Finally, we use our estimates to predict the equilibrium current accounts and compute the contribution of underlying factors. Despite some uncertainty around the estimates, our models are able to explain most of the observed current account configuration, showing only some excess surplus compared to equilibrium in the case of China and more recently Germany. In the case of the U.S., however, larger uncertainty ranges prevent us from precisely estimating equilibrium current account levels.

Keywords : current accounts, financial development, financial crisis, capital flows

JEL: F21; F32, F41

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1 Introduction

Since the Global Financial Crisis (GFC), issues related to global imbalances have attracted increasing attention in the public policy debate. For instance, discussions at the G20 summit in 2019 showed a renewed interest by policy leaders on the subject, while it was largely absent in the aftermath of the GFC. The [IMF \(2017\)](#) External Sector Report identified 40 episodes of current account surpluses and 70 episodes of current account deficits since 1960. Before the GFC, deficits were mainly concentrated in the U.S. and were financed by surpluses in China, oil-exporting countries, and other emerging economies. While deficits and surpluses can be explained by cross-country differences in key structural factors, the main question concerned the size and the dynamics of the current account imbalances. In the U.S., for instance, the current account deficit was approximately six percent of GDP in 2006, while it was at 1.5 percent of GDP in the early 1990s. In 1977, China's current account surplus was 3.8 percent of GDP and reached 9.9 percent of GDP in 2007 at the eve of the GFC. In developing countries, the aggregate current account balance had already moved into surpluses in the early 2000s, well before the GFC, and increased to record levels in 2006. The GFC led to abrupt adjustments in global imbalances. Deficit countries reduced their current account imbalances owing mainly to a contraction in imports. Concerning surplus countries, the slowdown in international trade following the crisis led to less buoyant exports, and their current account surpluses declined. However, this adjustment implied some changes in the configuration of global imbalances. Indeed, since the GFC, the surpluses have been mainly concentrated in Northern European countries and some emerging and oil-exporting countries. In Europe, Germany is running the largest current account surplus and has become the main surplus country at the global level. Policy makers and academics explain the persistence of German surpluses by structural factors that created a gap in productivity between the manufacturing and service sectors ([Coricelli et al., 2013](#)). As shown by [Figure 1](#), the German surpluses increased mainly after the Asian crisis of 1998. From 2000 to 2014, the current account surpluses are mainly concentrated in emerging market and developing countries. We can also observe the plummet of oil and natural gas prices that led the current accounts of these countries into deficit. It should be noted that the surpluses in emerging countries are driven by oil-exporting countries. Combining German and Japanese current accounts, these two countries have accounted for larger current account surpluses since 2014 than those of China and emerging/developing economies combined. In 2018, the current account surplus in China declined to 0.019 percent of World GDP, while the German current accounts remained at high levels of 0.23 percent of World GDP, moderating somewhat after reaching its record level in 2015 (0.29 percent). At the same time, the U.S. current accounts were still in deficit since 1992, with a record of -1.1 percent of World GDP in 2005.

Going forward, current accounts are projected to increase marginally according to the IMF (International Monetary Fund) WEO (World Economic Outlook) released after the Covid-19 crisis in April 2020. The German surplus is expected to remain close to seven percent of GDP, while the U.S. deficit is projected to deteriorate further to 2.8 percent of GDP in 2021. In its External Assessment Report, the [IMF \(2019\)](#) suggested that approximately 35–45 percent of current account surpluses and deficits were assessed to be excessive. The IMF pointed to higher-than-warranted surpluses in some euro area countries, such as Germany and the Netherlands, as well as Korea and Singapore. On the deficit side, the imbalances remained concentrated in the United Kingdom and the U.S. By contrast, China's external position was assessed to be in line with fundamentals.

Against this background, our paper aims at understanding the reasons of the persistence of global im-

balances and the rotation of surpluses since the GFC from China to North European countries. We adopt an empirical approach based on that used in [Chinn and Prasad \(2003\)](#). First, we run several models using traditional current account determinants, including fiscal balance, net foreign assets, income per capita, GDP growth, financial crisis, trade openness, youth age, and old age dependence ratios. Our database covers advanced and emerging countries. We find that fiscal balance impacts the current accounts positively, i.e., as usually found in the literature assessing the current account determinants. However, when we break down our sample by income levels, this impact disappears in the advanced market subsample. The basic estimation shows the impact of the per capita income and the population ratios depends on the sample of countries. After these basic estimations, we decompose our sample between pre- and post-GFC periods. This decomposition allows us to emphasize that current account dynamics are not only different across countries but also across time. We also use another approach based on dummies variables. However, the use of Chow tests to check for the presence of structural breaks does not show any evidence of the GFC as an important structural change in current account dynamics. Following this first set of results, we specify more comprehensive models to improve our understanding of current account dynamics across countries and over time. In particular, we include the role of financial development, currency misalignment, financial openness, and institution quality variables in explaining current account developments and differences across countries. Our results show that financial development, financial openness, and institutions variables are significant factors impacting current account determination through the change in investment and saving behaviors. Finally, we use our estimates to predict current accounts for selected countries and compute the contribution of the underlying factors. In most cases, our models are able to explain most of the current account configuration. In the aftermath of the GFC, surpluses in China were mainly explained by demographic determinants and trade openness, while in Germany income factors (GDP per capita) remain the main factor explaining the excess of savings. While the surplus observed in the past years show a convergence of the Chinese current accounts towards its equilibrium levels, it remains higher than our predictions in the case of Germany, implying some relative signs of disequilibrium. For deficit countries, our models show more difficulty in tracking the current account dynamics of the U.S., with large uncertainty around the estimates. In any case, the observed current accounts remain at the lower part of our estimates and are only explained by the high development level of the U.S. financial system.

Our paper is organized as follows. Section 2 provides some brief review of the literature. Section 3 gives an overview of the determinants of the current accounts. Section 4 sheds light on details about the empirical methodology and data. Section 5 reports and comments our empirical results. Section 6 presents some concluding remarks.

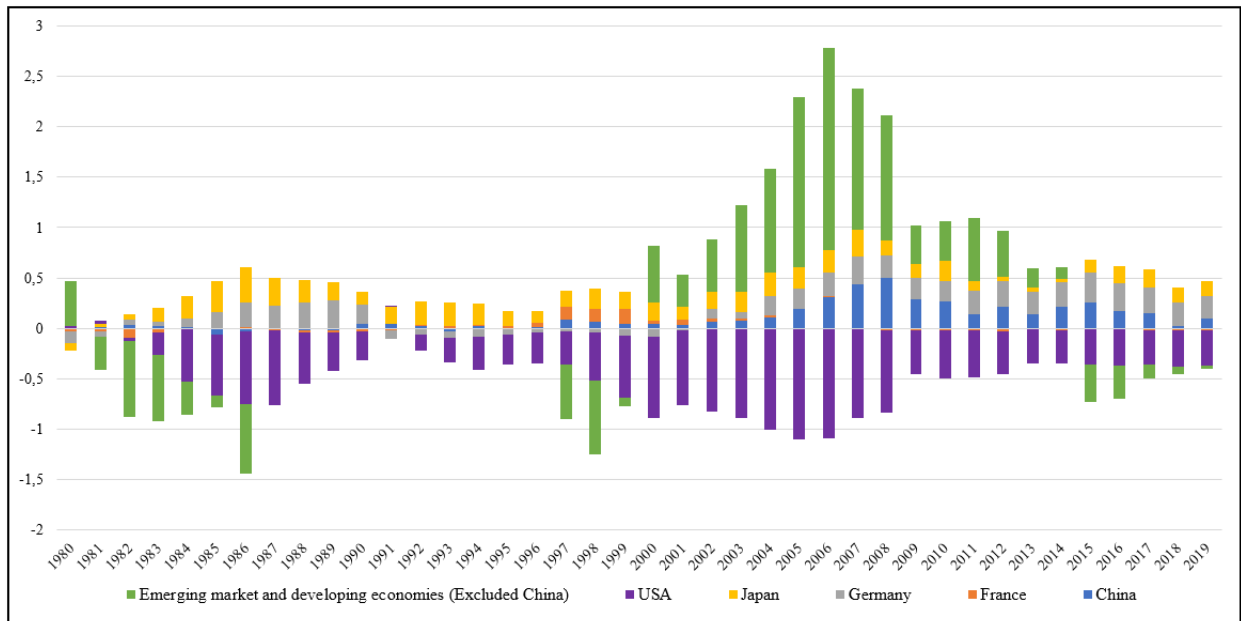


Figure 1 – Global Current Account (as a percentage of world GDP) (Data source: IMF)

2 Literature review

[Oliveira-Martins and Plihon \(1992\)](#) analyzed the history of current account imbalances through three different periods, representing the various stages of global economic developments. From 1967 to 1973, the configuration of current accounts at the global level was characterized by large surpluses in industrialized countries, financing the deficits of peripheral countries. The second stage concerned the period from 1974 to 1982. This period was characterized by “South-South” imbalances, with oil-producing countries using their surpluses to finance developing economies through the banking systems of advanced economies. The third stage concerned “North-North” imbalances, with the United States (the U.S) deficit being financed by European countries and Japan. While the analysis of [Oliveira-Martins and Plihon \(1992\)](#) is dated, we can observe that the current configuration of global imbalances still involves U.S. deficits being financed by European countries and Japan. In the meantime, it is worth pointing out that China has become a key player in current account developments at the global level, being the main surplus country financing the U.S. deficit in the pre-GFC period. In recent years, however, while the U.S. current accounts have remained in deficit, a rotation in the composition of surplus countries has been observed. While the current account surpluses continued to shrink in China and oil exporting countries, the Northern European surplus countries, including Germany, have registered sustained current account surpluses.

Theoretically, [Sachs et al. \(1981\)](#) was among the first to provide an analysis of global current account imbalances through the intertemporal approach. This first contribution was then extended by [Obstfeld and Rogoff \(1984\)](#), [Milesi-Ferrett and Razin \(1996\)](#) and [Milesi-Ferretti and Razin \(1998\)](#). In this approach, the current accounts reflect saving-investment choices at the global level, which rely on the equality of current consumption to the share of the present discounted value of future expected net income (or net assets). Hence, any shock that leads to a change in current consumption will imply a change in current accounts. Such shocks can be related to either change in interest rates or in expectations of future income due to productivity shocks or government policies ([Chinn et al., 2014](#)). This approach has

proved useful to provide various determinants for explaining current account determination at a country level (Obstfeld and Rogoff, 1995). However, explaining current accounts at the global level also needs to assess whether the global configuration reflects equilibrium conditions or imbalances that need to be corrected.

Global current account configurations represent equilibrium conditions only if their determinants are self-sustained. For instance, Caballero et al. (2008) explain that the lack of financial development in emerging economies (shown by underdeveloped financial markets or by financial crises) created a “global saving glut” (Bernanke, 2005; Clarida, 2005) spurring capital flows from underdeveloped financial system to world financial centers (Chinn and Ito, 2019). This view of current accounts led to the “safe asset” argument used by commentators of the U.S. current account deficit. Hence, continuous flows from emerging economies to the U.S. would allow a sustainable financing of the U.S. current account deficits. By contrast, Obstfeld and Rogoff (2005), Obstfeld and Rogoff (2009), Gourinchas and Rey (2007) and Blanchard et al. (2005) advance that real and financial adjustments are necessary because of unsustainable net foreign asset positions at the global level. With a general equilibrium model, Obstfeld and Rogoff (2005) and Obstfeld and Rogoff (2007) show that a reversal of the U.S. current accounts would lead to a significant depreciation of the real effective exchange rate, with severe consequences for economic growth. However, the link between current accounts and exchange rate movements is ambiguous. Blanchard and Giavazzi (2002) argue that current account imbalances are not related to exchange rate misalignment but are the consequence of imbalances between savings and investment. As a result, misalignment would be an indicator but not the root cause of external imbalances.

The determinants of current accounts have also led to an abundant empirical literature (see Chinn and Ito, 2005, 2007; Chinn and Prasad, 2003). For instance, Chinn and Prasad (2003) provide an empirical assessment of the determinants of current accounts in industrialized and developing countries and find a positive relationship between the current account and the fiscal balance. This finding is confirmed by Chinn and Ito (2007) for industrialized countries and the U.S. Within developing countries, they find a positive impact of financial deepening on the current accounts, while trade openness has a negative impact. Gruber and Kamin (2007) fail to explain the U.S. current account deficit but find better results for Asian surplus countries once taking into account the impact of previous financial crises. A part of the empirical literature has also focused on the dynamics of current account adjustments among industrial countries. For instance, Freund (2005) find that reversals of current accounts are associated with 10-20 percent real exchange rate depreciation. Assessing the role of exchange rates in current account persistence, Gnimmassoun and Mignon (2015) show that current account imbalances among industrialized countries are due to exchange rate misalignment. Arghyrou and Chortareas (2008) also find significant relationships between the current accounts and the real exchange rate while examining the link between current account adjustments and effective exchange rates for the euro zone.

Overall, the literature remains mostly inconclusive with regard to the fundamental drivers of global current account imbalances. On the one hand, structural factors that drive disequilibria between savings and investment seem fundamental, including demographic trends and productivity developments. On the other hand, policy and institutional factors, such as fiscal and exchange rate policies, openness to trade, and financial market developments, are also likely to explain a large part of the current account configuration at the global level.

3 Model and data

3.1 Methodology

To understand the relationship between current account balance and its determinants, we use a panel data model. Our estimation strategy is mainly inspired by the approach in [Chinn and Prasad \(2003\)](#) and [Gruber and Kamin \(2007\)](#). We run a fixed-effects model taking into account cross-sectional dependence. Instead of constructing multiyear averages of annual observations as in [Chinn and Prasad \(2003\)](#) and [Gruber and Kamin \(2007\)](#), we use an unbalanced panel data covering the period 2000 to 2015 with 56 advanced and emerging countries. In our study, the current accounts—expressed as a share of GDP—serve as our dependent variable.

The econometric specification used is as follows:

$$Y_{it} = \alpha_0 + \alpha_1 X_{it} + u_{it}$$

Where i and t are respectively the country index and the time index. The variable Y represents our dependent variable and X represents our independent variables, which are briefly reviewed below. Apart from the classic methodology on fixed effects (as shown in the table 18), the particularities of this study come from the cross-sectional dependence. Indeed, in our study we take into account the cross-sectional dependence that may occur in a simple fixed-effects analysis using the test proposed by [De Hoyos and Sarafidis \(2006\)](#). Following the approach described in [Baltagi \(2012\)](#), we find the presence of an autoregressive order one process. To correct problems that may occur, we use a panel-corrected standard error estimation proposed by [Blackwell III \(2005\)](#).

3.2 Data

There are numerous empirical studies that have researched the determinants of current account imbalances, allowing us to include some common variables used in the literature. These variables are net foreign assets, oil dependency, trade openness, fiscal policy, the stage of economic development, institutional variables, financial, economic crisis, exchange rate, and demographic variables. The impact of these variables on current accounts differ across empirical strategies used and across countries. Following the theoretical discussion, we include in our exercise variables such as GDP per capita (source: world economic outlook database of IMF ²); population variables composed of age dependence ratios (source: WDI³). From the same database (WDI⁴) we have extracted the trade openness variable. Data of financial development come from the Financial Development Index database of the IMF ⁵. The other control variables include currency misalignment (source: [CEPII, 2017](#))⁶, net foreign assets (source: [Lane and Milesi-Ferrett, 2017](#)), real exchange rates (source: [BRUEGEL, 2020](#)), total factor productivity variable (Penn World Table⁷), financial openness (The Chinn-Ito index⁸) and institution variables (from ICRG)⁹.

²International Monetary Fund

³World Development Indicator

⁴World Development Indicator

⁵<https://data.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b>

⁶Centre d'Etudes Prospectives et d'Informations Internationales

⁷<https://www.rug.nl/ggdc/productivity/pwt/?lang=en>

⁸http://web.pdx.edu/ito/Chinn-Ito_website.htm

⁹International Country Risk Guide

For the financial crisis indicator used in this paper, we construct our own variable based on past financial crises, which is constructed using different databases of major financial crises that our sample countries experienced. Information regarding the economic and financial crises of advanced countries come from the Macroeconomic History Database of [Jordà \(2016\)](#). Emerging countries' data come from the IMF database. Using the dates of financial crises, we build a crisis dummy variable as our financial crisis indicator. It takes the value one if a country is in crisis and zero otherwise. To reduce the influence of the dummy variable when dealing with common crises, we construct a new crisis variable using the method employed by [Gruber and Kamin \(2007\)](#). We transform our crisis dummy into a relative measure. We thus calculate a weighted average of the GDP per capita of the crisis dummy. Then, we correct this value of the initial value to obtain the new crisis variable.

4 Results

4.1 Data snapshot

Before starting the interpretation of our results, we provide a brief snapshot of our data. Note that our period of study ranges from 2000 to 2015. Before our regressions, we drop some outlier countries such as Singapore and countries that have many missing data. A quick analysis shows that during our study period, the maximum value comes from Malaysia in 2008. The minimum value comes from Bulgaria in 2008. On average over our study period, countries run current account deficits. A grouped snapshot between advanced and emerging countries separately shows us some interesting findings. On average, even in advanced or emerging countries, the current accounts are in deficit over the period (the mean indicates -0.06750 for advanced countries and -1.275 for developing countries (see [Table 9](#) and [Table 10](#))).

4.2 Estimation results

[Table 1](#) presents our econometric estimations for several traditional current account determinants. The model is estimated with an initial sample of 56 countries.

The first three models are testing some traditional variables (fiscal balance, demographic factors, net foreign assets, GDP per capita, GDP growth, real exchange rate, trade and financial openness). In the second model, we add our economic crisis variable, and in the third model, we test the impact of the interactive variable of economic crisis and trade openness. The first row for each variable in our tables shows the estimated coefficients, and the second row indicates value of the t-statistic. The stars close to the estimated coefficients indicate the level of significance of our variables.

The results of the first three models give us estimated coefficients with expected signs. Current account surpluses are associated with higher levels of per capita income, fiscal balance, and youth age ratio (or youth dependence ratio). The positive impact of the youth dependence ratio agrees with the life cycle theory. A higher youth dependence ratio should exert a positive impact on the current account by increasing the share of savers in the population. In our context, we can say the youth age ratio is driven more by the working age population. This can be true for the general model, but not for all types of economies. The results of emerging market estimation show that an increase in the youth dependence ratio is associated with current account deficits (as in [Gruber and Kamin \(2007\)](#)). The contradiction in

this result compared to the previous models may be because the youth dependence ratio is driven in these economies by birth rates. The high birth rate and the high rate of the youth dependence ratio leads to a high share of nonsavers, which should exert a negative impact on the current account.

Concerning the old age ratio (old dependence ratio), it does not appear significantly in our general models. However, when separately considering advanced and emerging economies, we notice that it has opposite signs between the two samples. In emerging markets, the old age ratio is negatively associated with the current accounts. This result is consistent with the life-cycle model, which suggests a higher old age dependence ratio should lead to a lower current account. It is a consequence of the higher share of consumers or borrowers relative to savers (The [IMF \(2017\)](#) External Sector Report). In advanced economies, the positive impact can be interpreted as a problem in terms of public policy to encourage consumption. It can also be a consequence of uncertainty, with consumers preferring to save their money rather than spending it. We can also interpret it as solidarity between old and youth generations. The older generation may be concerned about the future of their children or grandchildren so that they reduce their consumption and continue saving in order to help the younger generation face eventual economic problems.

Another finding of this first set of estimation results concerns the role of the real exchange rate. In emerging markets, an appreciation of their currency leads to a lower current account balance. The appreciation makes imports cheaper and exports more expensive, leading to a deterioration in the trade balance. Higher trade openness is associated with surpluses in current accounts in advanced countries, as shown in Model 6 (column 6) of Table 1. This result can also provide information about the impact of a country's integration into global value chains. The more a country is integrated into global value chains, the more the country registers surpluses in their current account.

Concerning the fiscal balance variable, our estimated coefficients are significant and greater than those estimated by [Gruber and Kamin \(2007\)](#), [Chinn and Prasad \(2003\)](#) and [Bussière et al. \(2005\)](#). The value ranges (for significant values) from 0.194 to 0.232. An increase in the budget balance leads to current account surpluses. Following the current account and budget balance relation described above, this result confirms the twin deficit hypothesis. In an economy where economic agents are not fully Ricardian, the fiscal balance (either through tax reductions or increases in spending) could lead to trade deficits and current account deficits. This positive relationship between the fiscal balance variable and the current account appears in five out of six of our models, unambiguously confirming that agents are not fully Ricardian. In this general model, GDP growth significantly impacts the current account, with a negative sign. An increase in GDP growth therefore leads to a deterioration in the current account. Our coefficients are highly significant and higher than those in [Gruber and Kamin \(2007\)](#). This result could be due to our estimation approach. The value and sign are, however, consistent with the estimation results in [Chinn and Prasad \(2003\)](#) and [Chinn and Ito \(2005\)](#). The impact of per capita income on the current account is different whether we consider emerging markets or advanced economies. Even if the impact is significant for all models, in emerging markets, it is negatively associated with the current account, while it is positively associated in advanced economies. These results confirm the role of economic convergence in current account dynamics for fast-growing economies.

Turning to the financial crisis indicator, we find that it positively impacts the current account. This impact can be due to policies set in countries during the crisis period. We have tried to understand the impact of future crises by introducing a crisis variable, which is calculated by considering the financial

crisis variable one-year ahead to compute the current year estimation (model 2.1 in table 1). A future crisis occurrence appears to lead current accounts into deficits. In a perspective to prevent a future crisis, countries would implement expansionary fiscal policies to safeguard their economy. These measures will generate public deficit and hence current account deficit.

Our results concerning the financial openness variable show that in surpluses countries, excess capital mobility could lead to current account reversal, while in deficit countries, an excess capital mobility may worsen external accounts. We can also notice, at least regarding advanced countries, that the combined effect of trade openness and financial crisis is associated with current account deficits, while trade openness only affects the current accounts positively.

Overall, this first set of results confirms the role of the traditional determinants of current accounts while showing different effects depending on the type of countries considered.

4.3 Estimation before and after the GFC

4.3.1 The sample division approach

To better understand the impact of our results, we conduct another set of estimations dividing our regression period into two subsamples. The first period is the years before the GFC (from 2000 to 2008), and the second period is the years after the GFC (from 2008 to 2015). As above, we distinguish—in addition to a whole sample model—separate models for emerging and for advanced economies.

Table 2 shows estimations of the general model using model 3 of our first estimation table. Comparing the first and the second columns, we find noticeable differences for some variables, such as the real exchange rate, old age ratio, and net foreign assets. Net foreign assets appear to play a significant role even before or after the GFC. However, in the subdivided sample, its role is not the same as before and after the GFC. In emerging countries, it does not play any significant and positive role before the GFC, while it does after the GFC. In advanced countries, we find the opposite results. It has a significant and positive impact on the current account before the GFC and no significant impact after the GFC. However, this overall result hides differences between emerging markets and advanced economies. Concerning the old age ratio, we notice that it affects countries differently in the two considered subsamples. Before the GFC, it implies lower current accounts. This result can be explained by the fact that there will be economies with a higher share of consumers, or possibly borrowers, than savers (IMF, 2017, External Sector Report). The impact after the crisis is negative and contrary to the previous impact. This finding can be explained as the psychological side of a recent financial crisis among elders. Indeed, increased uncertainty following the GFC can be a potential factor. Instead of spending their savings, elders appear to prefer accumulation of their income to eventually bequest.

We also find that the real exchange rate does not play the same role before and after the GFC. Before the GFC, the real exchange rate contributes to the current account deficit, while after the GFC, the real exchange rate leads to current account surpluses. The financial openness effects remain the same before or after the GFC. Financial openness impacts the current accounts significantly and with the same sign as in Table 1. However, in emerging countries, its impact is significant only after the GFC, while in advanced countries, it is significant only before the GFC. The financial crisis and the interaction variable between trade openness and financial crisis are significant only in advanced economies and in the pre-crisis model. The first contributes to a negative current account, while the second leads to a positive current account. In emerging markets, net foreign assets and financial openness only impact the current

accounts in the post-GFC model, contrary to advanced economies where it impacts only in the pre-crisis model.

The GDP per capita impact plays a major role only in the pre-crisis model in emerging markets, while it plays an important role both in pre- and post-crisis models for advanced economies. In the first type of economies, it decreases the current accounts, and in the second category, it increases the current account positions.

Another interesting observation concerns the role of the fiscal balance before and after the GFC. Our model indicates that before the GFC, fiscal variables do not have a significant impact on the current accounts, while it does after the GFC, regardless of which group of countries is considered. The sign is positive as in Table 1. The fiscal balance variable plays the same role in post-crisis models for both emerging and advanced economies.

4.3.2 The dummy variable approach

As describe above the first approach help to understand the dynamic of the current accounts before and after the GFC, but it leads us to observation loosing. We complete the analysis with another approach. Indeed, to prevent from losing observation, we conduct a second approach based on dummy variable. We first create dummy variable for periods before and after the GFC. We then interact our main variables with the dummies as the table 4 shows. We create also dummy variable for every single year and also specially for the years 2007 and 2008 which are the year of the beginning of the GFC. The estimation using the dummy of the the year 2008 give an expected result about the negative impact of the GFC (which occurs in year 2008) on the current accounts. It leads countries into deficit and also reduce the surpluses by public spending as response to the crisis. Detailing our results (table 4), we realize that they are not so different from the previous approach. The fiscal balance variable still positive and significative after the GFC. This approach shows us that the GDP per capita is only significative before the GFC and the GDP growth only after the GFC. Concerning the financial crisis variable, the general estimation (table 3) shows that it impacts positively and significantly the current accounts. Table 4 reveals that the impact of the financial crisis is not the same whether we are before or after the GFC situations. In the first case, it has negative impact while in the second it leads to positive impact.

Despite apparent differences in coefficients between the pre- and post-crisis period, we need to check whether such differences are statistically significant or, in other words, whether the GFC has implied structural changes between the current accounts and its traditional determinants. To do so, we perform Chow tests to verify whether coefficients are different according to the various samples considered. These test results are presented in the annexes. The results fail to reject the hypothesis of no structural break. Hence, the GFC does not appear to play an important role in the current account determination. As these determinants are structural, they incorporate changes that the crisis could have brought about. Regarding these facts, the rest of our regression models discussed are on the general model. We do not comment further on the results before and after the GFC, but we present these results in the annexes for further information (Table 7 and Table 8).

4.4 Financial development, currency misalignment, institutional quality, financial openness and current accounts

To improve the ability of our model to better explain global imbalances, we introduce additional variables in order to capture the financial development, exchange rate policy, and quality of institutions. The results are reported in Table 5. Except for in model 2, financial development does not significantly impact current accounts. The negative impact can be interpreted as a consequence of financial development on saving behaviors. Indeed, financial development eases the access to capital for financing investment and allows an increase in capital inflows into countries. A country with a better financial system is associated with less risk and less information costs to obtain credit from banks. The cumulating effects of financial development and financial openness reduce the savings rate and thus increase investment. The increase in investment tends to reduce the current account and then increase deficits. Our results are therefore consistent with prior work regarding the role of financial development in explaining current accounts (Chinn and Ito, 2005). In their study, Gruber and Kamin (2007) also found negative impacts, but they were not significant.

The currency misalignment appears to increase deficits of the current accounts over our sample. When the gap between the real exchange rate and its equilibrium level is high, it leads the current account into a deficit position. Referring to the definition that we gave above on currency misalignment, it appears that an overvaluation of the currency leads to current account deficit. These results are consistent with the work conducted by Gnimassoun and Mignon (2015) concerning industrialized countries.

Among the institutional variables, we notice that the ability of governments to implement declared programs (government stability variable) is a factor that improves the current accounts. In particular, in some North European countries, social and religious factors were used to explain the capacity of their government to respect or implement their declared programs over time (Weber, 1904; Arruñada Benito, 2010; Becker and Woessmann, 2009; Cantoni et al., 2017). Corruption as an institutional variable, making public policies inefficient, allows financial illicit flows among countries and then negatively impacts the current accounts. It can also represent a source of political instability in a country. This variable has negative impacts on the current accounts in our model results. However, it is important to notice that this impact can vary depending on the countries considered. Concerning the investment profile, in the presence of high-risk investment, the current account balance tends to deteriorate.

In the same vein as the financial development variable, the financial openness indicator contributes to current account deficits, as it allows capital movement among countries and then increases investment in countries that can attract capital flows. These countries are those with better financial sectors, and as mentioned above, countries with investment needs run deficits of their current account, explaining the negative signs associated with this variable in our results.

4.5 Robustness check

To check the robustness of our findings, we perform a system-GMM (Generalized Method of Moments) estimation using the same models used in Table 5. This method allows us to deal with the problem of endogeneity that may occur between current accounts and the fiscal balance variable. The results are represented in Table 6. The Hansen test and Arellano-Bond for AR(2) do not allow us to reject the hypothesis of non-validity of our lagged variables as instruments in level or in difference. The effects for most of our variables are confirmed. Fiscal balance, GDP per capita, GDP growth financial crisis,

and some institutional variables have the same impact in terms of sign on the current accounts. One important observation that we make from these estimations is the role of the lagged current accounts. The situation of the current accounts in the previous year positively impact the current position of the current accounts.

4.6 Model uncertainty and assessment of current account equilibrium levels for selected economies

Before analyzing the contributions of the different variables to current account dynamics, we test the overall consistency of the various models presented above. The different models estimated allow us to make current account predictions or estimations of their equilibrium levels, i.e., the current accounts that would be determined by the various fundamental variables considered. As the models include different combinations of variables, this section gives a summary of these predictions for selected countries. These predictions allow us to check whether the actual current accounts are in line or not with their fundamentals and give us an account of model uncertainty around these predictions.

The method is based on our current account equilibrium prediction derived from our 13 different models. As the predictions are different, we want to see how close these results are to each other. Hence, we compute the mean prediction as well as deviations around this mean¹⁰. We then obtain the following graphs. The graphs in Figure 2 show the predictions of our models are consistent for all selected countries except the U.S. These graphs are useful to illustrate the extent of model uncertainty around our predictions. Hence, the tighter the range around the prediction, the lower the model uncertainty. Model uncertainty is low in the case of Germany and China (Graphs in Figure 2). For Germany, the predictions point to structural surpluses in the current accounts of approximately four to six percent of GDP. This result shows that the current levels of German current accounts are therefore above the predictions. They are even above the upper bound of our uncertainty range, pointing to an excessive surplus compared to fundamentals. Concerning China, our models point to current accounts close to balance or in slight deficits. Hence, the strong current account surpluses registered before the GFC appears as clear external imbalances. The recent decline in surpluses is therefore in line with fundamentals as predicted by our models.

For France and Japan, our models point to structural current account deficits of approximately zero to two percent at the end of the period. While the French current account is currently within the range, the Japanese current account remains clearly out of range, as none of our models predict a current account surplus. In the two euro zone countries, we can also add that our results justify the adoption of The Macroeconomic Imbalance Procedure in 2011¹¹.

Finally, the U.S. case remains largely inconclusive. While the mean is approximately zero, the predictions of our models range from surpluses of approximately four percent of GDP to deficits of approximately two percent of GDP. However, the actual level of the U.S. current accounts appears slightly below the lower bound of our wide range, indicating that a current account deficit of more than two percent can be considered excessive. However, these results also indicate that the explanatory variables used in our models may not be the most appropriate in the case of the U.S.

¹⁰We chose to remove the extreme predictions, i.e., the first and last decile of the distribution

¹¹https://ec.europa.eu/info/sites/info/files/file_import/ip039_en_2.pdf

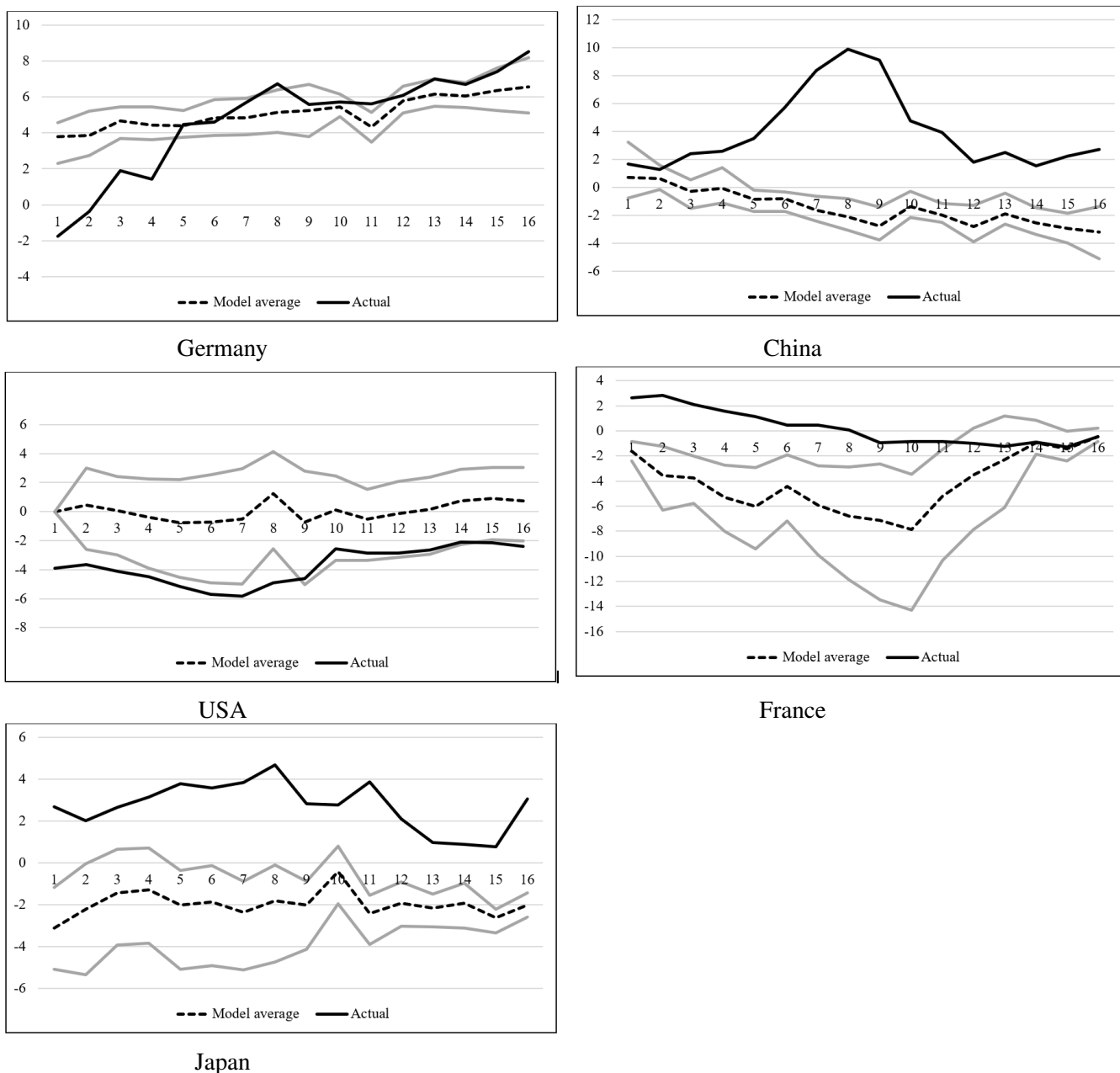


Figure 2 – Estimates of current account equilibrium levels and model uncertainty

4.7 Decomposition of model predictions

Based on models 1 and 4, shown in Table 5, predicted current accounts are computed and compared with observed current accounts. Both variables are represented as lines in our graphics. We also derive our estimates from the contribution of each explanatory variable by multiplying their estimated coefficient by their observations, also accounting for country fixed effects. In our graphs, the contributions of our explanatory variables are represented as bars. We group together the effects of youth and old dependency age ratio into a single variable (named "population factors"). The effects of financial crises, financial development, and its interaction variable are grouped together into "financial factors". Other variables are also categorized into GDP variables, openness variables, exchange rate variables, institution variables, and the productivity variable (Figure 3 and Figure 4).

4.7.1 Which role of saving and investments?

Figure 3, which represents model 1, shows total factor productivity, openness variables, and population factors are the main drivers of the current account positions in our selected countries. We can thus say that saving and investment factors are the main drivers of the current account predictions. On the saving side, demographic factors can be mentioned, along with productivity and openness on the investment side. The component "Other" also represents a large share in the predictions. This share can include some specific characteristics of these countries. In this context, we have tried to understand which components are included in the variable "Other". We conduct our analysis by looking at the role of exchange rate and institutional factors. As mentioned above, exchange rate factors can play a large role and contribute to a significant part of the change in current accounts when these variables are added. These indicators could also explain whether there would be some exchange rate manipulation in some countries. We look at this issue in the next subsection.

4.7.2 Do competitiveness factors and institution factors play any role?

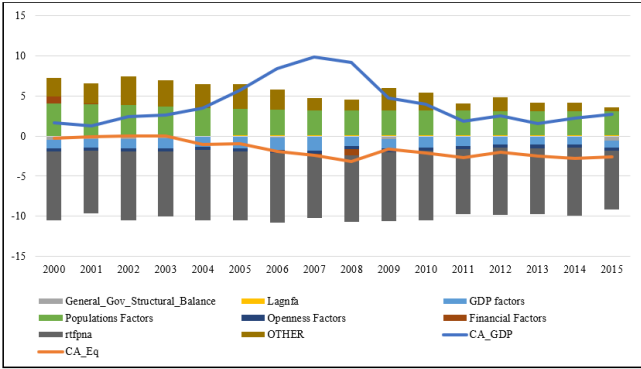
To shed light on this question of exchange rate manipulation, we add some new variables to our model. In addition to the variables mentioned for model 1, in model 4—where we add institutional and exchange rate variables—the role of productivity in each country is confirmed, and the model shows large contributions from institution variables. The exchange rate variables contribute to some extent to current account variations.

In addition to these common factors, it is worth pointing out the contribution of country-specific factors that are reflected in the fixed-effect components that remain labeled "Others" as above. However, as shown by Figure 4, this "Other" factor considerably decreases, suggesting that the newly added variables represent a considerable part of country-specific factors that play an important role in the current account prediction. It is noteworthy that the traditional determinants documented in the literature to understand the current account dynamics may not capture very specific factors that are nevertheless important to explain current account configuration. Focusing on the German surpluses, some important points can be mentioned. Germany is known as one of the largest current account surplus holders, and this country-specific variable needs to be further analyzed.

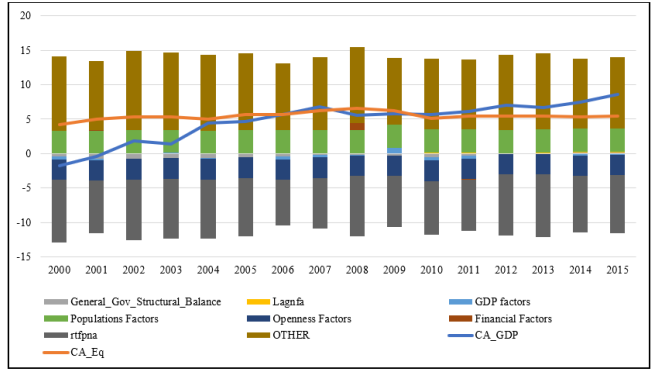
In the literature, ethics, vocational training, and consumer behavior, as well as the specificity of the euro area, are mentioned to be part of the process that leads to current account surpluses in some countries such as Germany (Coricelli et al., 2013; Weber, 1904; Rodriguez-Palenzuela and Dees, 2016). Ethics have been mentioned by sociologists and economists to have a significant impact in protestant countries. They argue that Protestantism is one of the key factors that contribute to these countries' economic prosperity (Weber, 1904; Arruñada Benito, 2010; Becker and Woessmann, 2009; Cantoni et al., 2017). According to the authors, this factor leads to a culture of responsibility among policymakers and risk aversion within households and among entrepreneurs. Households have behaviors that consider saving to be more valuable than spending in order to cope with eventual uncertainty. In the same way, some entrepreneurs or multinationals, instead of investing considerably in their home country, prefer to invest more abroad through foreign direct investments. As a consequence, investment in the home country is less important (Figure 6 below in annexes shows the evolution of investment in percentage of GDP). Other important factors come from the specificity of the industrial sector. Germany's manufacturing sector is a key driver of the surpluses by the high quality of its workforce and the reputation of "Made in

Germany” products. This development was not possible without some changes in the education system such as the vocational training program. Through this program, the manufacturing sector has continually produced a less expensive and more highly qualified workforce. As a consequence, the non-price competitiveness in German exports has also increased continually and contributes to the current account position.

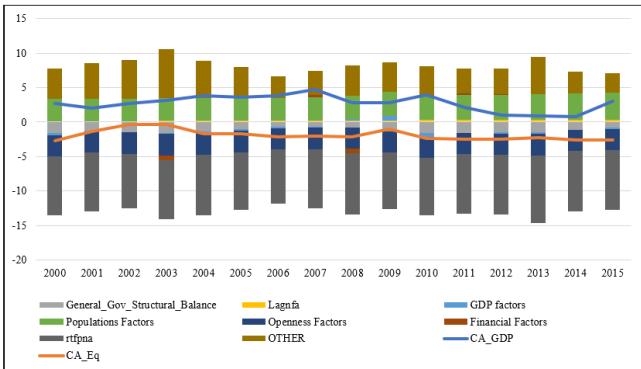
Moreover, when considering monetary policy of the euro zone, the current account surplus in Germany may reflect to some extent the specificity of the EMU (Europe Monetary Union) functioning. The original design of the Europe Monetary Union ignored correction and prevention mechanisms of current account imbalances. This mechanism was implemented only in the post-crisis context in 2011. In this context, the monetary policy of the ECB (European Central Bank) may appear as too accommodating for countries such as Germany with respect to other countries with different characteristics, such as Spain or Italy. In our empirical exercise, exchange rate factors (including misalignment measures) explain a large share of the German surpluses, underlining the role of the exchange rate in Germany-specific factors. These factors contribute to the high current account position in Germany than France, which are both members of the EMU (Figure 5). Regarding this situation, it may be useful to address these issues by implementing a policy mix that accounts for such heterogeneity within the euro area members.



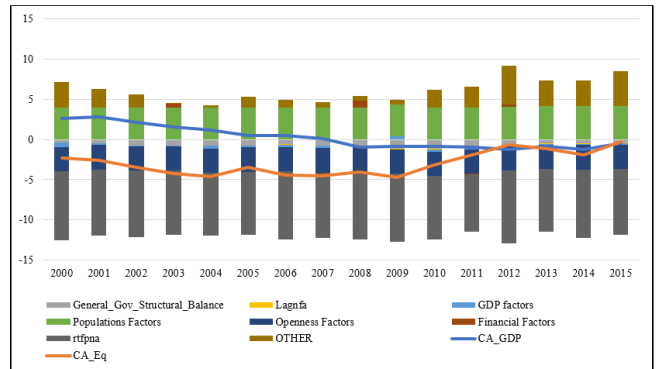
China



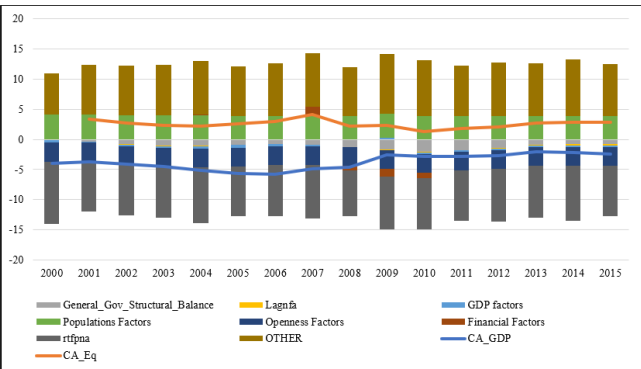
Germany



Japan

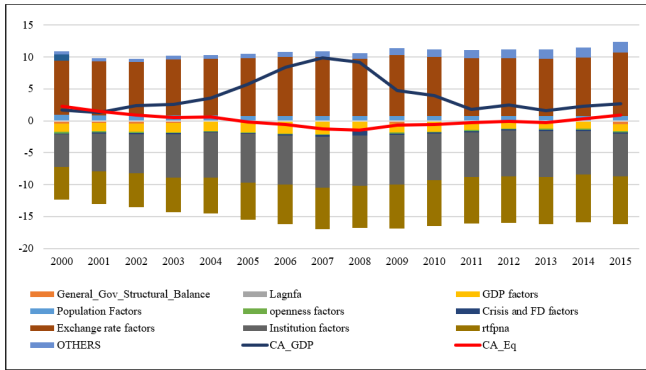


France

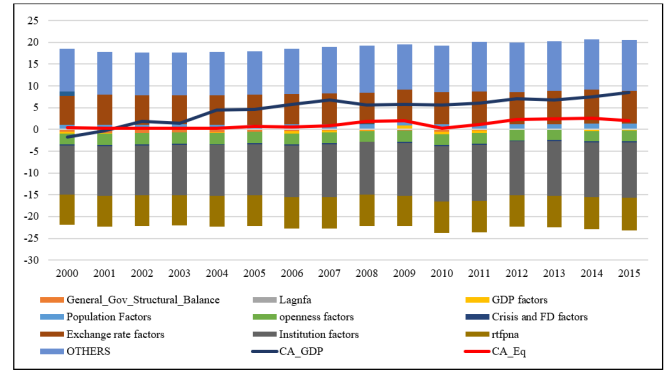


USA

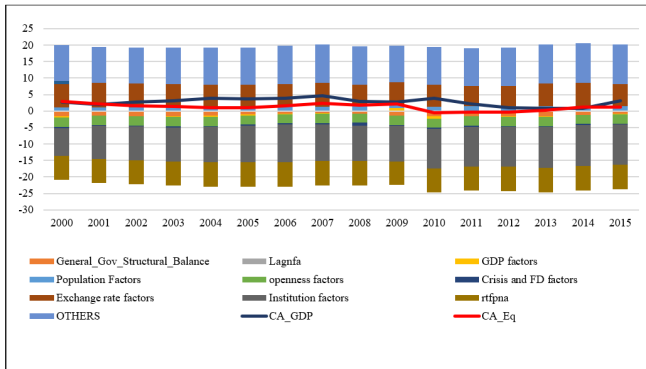
Figure 3 – Contributions of fundamental variables to current account predictions (Model 1 of Table 1)



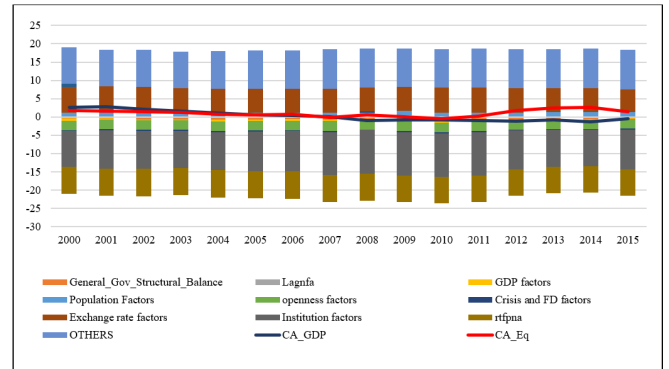
China



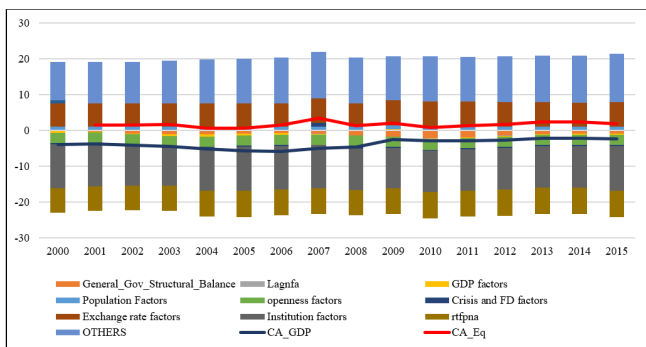
Germany



Japan



France



USA

Figure 4 – Contributions of fundamental variables to current account predictions (Model 4 of Table 3)

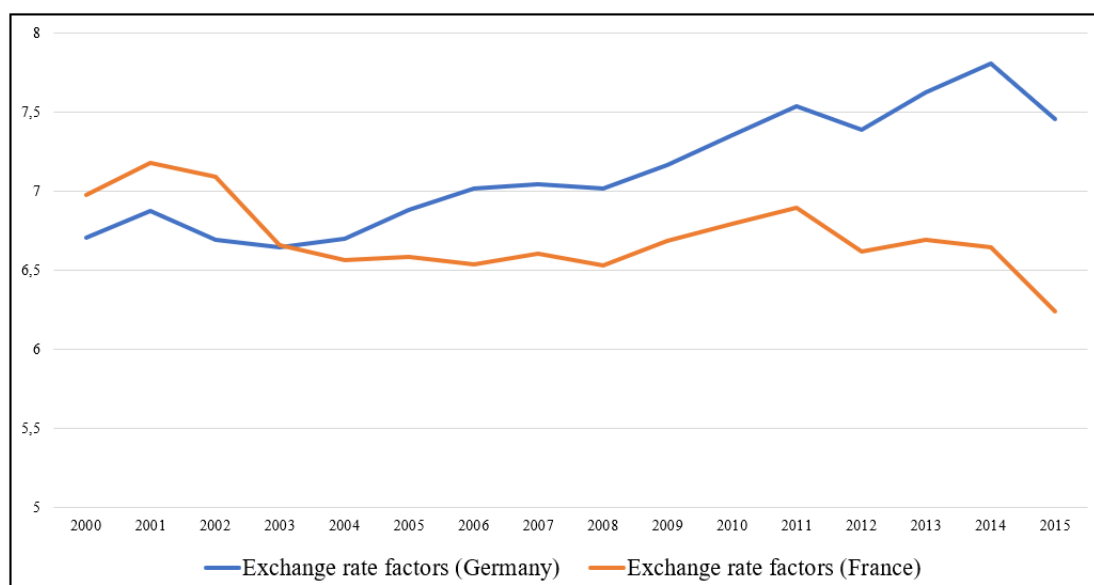


Figure 5 – Exchange Rate Factors Contribution in the Current Account in Germany and France (in percent)

5 Conclusion

Our paper sheds light on variables explaining the persistence of current account imbalances. Through the decomposition of our sample between pre- and post-GFC and the dummy variable approach, we find that current account dynamics differ not only across countries but also across time. However, assessing the presence of structural breaks from the GFC, we have found that the GFC does not change the impact of the determinants across the time. The determinants are structural and incorporate changes themselves that the GFC could have brought. Including the role of financial development, currency misalignment, financial openness, and institution quality variables, we have found that these variables are significant factors impacting current accounts and that their impact passes through the changes in investment and saving behaviors. We have also assessed the degree of uncertainty between our models and have found that our models are consistent with each other in most cases, except for the U.S. Our predictions for current accounts in selected countries underline the role of productivity, exchange rates, openness, and demographic factors in the current account evolution. Concerning Germany, we have found that their surplus is also explained by some factors that we do not consider in our specifications. We interpret the German situation by the presence of key structural factors to explain the current account surpluses, including sociological factors, such as ethics or saving behaviors by households. In the case of the European Monetary Union, it may be useful to address the current account imbalances issues by implementing a policy mix that accounts for such heterogeneity within the euro area members. Overall, our findings help to better understand current account dynamics across time and countries and show the importance of using factors that go beyond the traditional saving-investment determinants and account for more structural factors.

Annexes

6 Results

6.1 Basic estimations

VARIABLES	Model 1	Model 2	Model 2.1	Model 3	Emerging Market	Advanced Market
General_Gov_Structural_Balance	0.206** (0.0887)	0.210** (0.0892)	0.194** (0.0914)	0.218** (0.0889)	0.232** (0.100)	0.148 (0.113)
Lagnfa	0.544 (0.973)	0.513 (0.982)	0.581 (1.011)	0.551 (0.980)	0.139 (1.452)	-0.127 (0.927)
GDP_percapita	0.170*** (0.0227)	0.169*** (0.0229)	0.173*** (0.0240)	0.168*** (0.0227)	-0.428*** (0.148)	0.241*** (0.0373)
GDP_Growth	-0.155*** (0.0557)	-0.154*** (0.0555)	-0.158*** (0.0568)	-0.155*** (0.0560)	-0.121** (0.0559)	-0.165** (0.0711)
Youth Age Ratio	0.0935** (0.0387)	0.0932** (0.0375)	0.0886** (0.0396)	0.0915** (0.0380)	-0.148*** (0.0465)	-0.0276 (0.157)
Old Age Ratio	0.0289 (0.0979)	0.0288 (0.0964)	0.00693 (0.0994)	0.0284 (0.0975)	-0.210* (0.126)	0.300** (0.139)
REER	-0.0106 (0.0162)	-0.0102 (0.0158)	-0.00750 (0.0165)	-0.0105 (0.0161)	-0.0311** (0.0152)	0.0228 (0.0255)
Trade Openness	0.00193 (0.0102)	0.00223 (0.0102)	0.00497 (0.00918)	0.000582 (0.0109)	-0.00942 (0.0155)	0.0276** (0.0136)
Financial Openness	-3.030** (1.241)	-3.011** (1.223)	-3.050** (1.315)	-3.122** (1.224)	0.860 (1.219)	-1.784 (2.263)
Financial Crisis		0.658 (0.450)		1.714*** (0.581)	1.447 (1.430)	0.136 (0.766)
Financial Crisis(t+1)			-0.840* (0.499)			
FincrisisOpenness				-0.0131 (0.00854)	0.0258 (0.0214)	-0.0157* (0.00843)
Constant	-3.499 (3.588)	-3.552 (3.541)	-3.630 (3.604)	-3.247 (3.621)	15.30*** (4.158)	-18.29** (7.708)
Observations	885	885	883	885	392	493
R-squared	0.185	0.187	0.193	0.187	0.169	0.352
Number of idcoun	56	56	56	56	25	31

Standard errors in parentheses

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

Table 1 – Basic estimations

6.2 Estimation before and after the Global Financial Crisis (GFC) of 2008

6.2.1 The sample dividing approach

VARIABLES	Before GFC	After GFC	EM before GFC	EM After GFC	AM Before GFC	AM After GFC
General_Gov_Structural_Balance	0.0916 (0.112)	0.504*** (0.105)	0.179 (0.149)	0.404*** (0.135)	0.144 (0.140)	0.488*** (0.120)
Lagnfa	3.393** (1.498)	1.463* (0.784)	-0.578 (1.439)	6.960*** (1.681)	5.683*** (0.949)	-0.669 (0.883)
GDP_percapita	0.161*** (0.0274)	0.122*** (0.0143)	-0.698*** (0.205)	0.0106 (0.143)	0.207*** (0.0279)	0.203*** (0.0314)
GDP_Growth	-0.0843* (0.0480)	-0.143* (0.0744)	-0.0264 (0.0496)	-0.182** (0.0762)	-0.186* (0.111)	-0.0760 (0.0748)
Youth Age Ratio	0.0261 (0.0270)	0.131*** (0.0323)	-0.149** (0.0627)	0.0411 (0.0453)	0.0185 (0.0797)	-0.0774 (0.144)
Old Age Ratio	-0.208** (0.0847)	0.217*** (0.0716)	-0.162 (0.158)	0.0577 (0.171)	-0.0573 (0.0912)	0.405*** (0.108)
REER	-0.0438** (0.0192)	0.0564*** (0.0167)	-0.0718*** (0.0182)	0.0245 (0.0216)	-0.0117 (0.0263)	0.0801*** (0.0296)
Trade Openness	0.00558 (0.00839)	0.0159*** (0.00601)	-0.0217 (0.0259)	0.0238 (0.0156)	0.000570 (0.00857)	0.0366*** (0.0100)
Financial Openness	-3.348*** (1.203)	-6.729*** (1.388)	1.538 (2.018)	-4.147** (1.924)	-2.747* (1.650)	1.249 (3.838)
Financial Crisis	-2.908 (2.105)	1.249 (1.729)	-0.148 (2.683)	2.003 (2.392)	-6.250* (3.408)	-1.239 (1.980)
FincrisisOpenness	0.0787* (0.0417)	-0.0128 (0.0194)	0.0429 (0.0549)	0.0165 (0.0318)	0.138** (0.0619)	-0.0139 (0.0187)
Constant	6.212*** (1.738)	-12.28*** (3.042)	19.68*** (4.375)	-2.206 (4.390)	-2.456 (4.267)	-28.27*** (6.811)
Observations	437	448	192	200	245	248
R-squared	0.302	0.400	0.232	0.365	0.586	0.581
Number of idcoun	56	56	25	25	31	31

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

Table 2 – Estimations before and after the 2008 GFC

6.2.2 Dummy variable approach

VARIABLES	General	General with Year2007	General with Year2008	General with Year dummies
General_Gov_Structural_Balance	0.218** (0.0889)	0.235*** (0.0874)	0.203** (0.0798)	0.276*** (0.0812)
Lagnfa	0.551 (0.980)	0.685 (0.974)	0.366 (0.930)	0.402 (0.935)
GDP_percapita	0.168*** (0.0227)	0.165*** (0.0222)	0.172*** (0.0215)	0.174*** (0.0221)
GDPgrowthannualNYGDPMK	-0.155*** (0.0560)	-0.158*** (0.0558)	-0.148*** (0.0454)	-0.142*** (0.0513)
Agedependencyratioyoungo	0.0915** (0.0380)	0.0919*** (0.0349)	0.0979*** (0.0368)	0.0870** (0.0361)
Agedependencyratiooldof	0.0284 (0.0975)	0.0233 (0.0847)	0.0332 (0.0895)	-0.00789 (0.0879)
REER	-0.0105 (0.0161)	-0.00872 (0.0158)	-0.00210 (0.0146)	0.00175 (0.0153)
openess	0.000582 (0.0109)	0.00234 (0.0106)	0.0113 (0.00908)	0.0154 (0.00993)
ka_open	-3.122** (1.224)	-3.200*** (1.187)	-3.026*** (1.145)	-2.916** (1.185)
wFinCris	1.714*** (0.581)	1.691*** (0.630)	1.041* (0.626)	1.146* (0.672)
FinCrisisOpness	-0.0131 (0.00854)	-0.0134 (0.00864)	-0.0101 (0.00855)	-0.0117 (0.00911)
2001.year				0.231 (0.197)
2002.year				0.854*** (0.228)
2003.year				0.963*** (0.261)
2004.year				1.003*** (0.299)
2005.year				0.146 (0.340)
2006.year				-0.385 (0.387)
2007.year				-1.141*** (0.416)
2008.year				-2.348*** (0.451)
2009.year				0.341 (0.560)
2010.year				0.631 (0.485)
2011.year				-0.209 (0.513)
2012.year				-0.591 (0.519)
2013.year				0.220 (0.546)
2014.year				0.476 (0.547)
2015.year				1.305** (0.523)
1.year2007		0.0904 (0.629)		
1.year2008			-1.954*** (0.447)	
Constant	-3.247 (3.621)	-3.339 (3.424)	-5.622* (3.199)	-5.488 (3.388)
Observations	885	885	885	885
R-squared	0.187	0.194	0.248	0.273
Number of idcoun	56	56	56	56

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

Table 3 – Estimations before and after the GFC(Dummy variable approach)

6.2.3 Dummy variable approach

VARIABLES	Before GFC	After GFC
BeforeGFCxGeneralGov	0.0665 (0.101)	
AfterGFCxGeneralGov		0.213** (0.0881)
BeforeLagnfa	1.423 (1.229)	
AfterLagnfa		-0.277 (0.940)
BeforeGDP_percapita	0.0484* (0.0257)	
AfterGDP_percapita		0.0232 (0.0273)
BeforeGDPgrowthannualNYGDPMK	-0.0555 (0.0730)	
AfterGDPgrowthannualNYGDPMK		-0.184*** (0.0659)
BeforeAgedependencyratioyoung	0.0738** (0.0359)	
AfterAgedependencyratioyoung		-0.0159 (0.0242)
BeforeAgedependencyratioold	-0.0713 (0.0753)	
AfterAgedependencyratioold		0.0452 (0.0758)
BeforeREER	-0.00506 (0.0165)	
AfterREER		0.00205 (0.0151)
Beforeopeness	0.0125 (0.00758)	
Afteropeness		0.00365 (0.00706)
Beforeka_open	-1.756 (1.304)	
Afterka_open		-1.765 (1.362)
BeforewFinCris	-3.800* (2.211)	
AfterwFinCris		1.435* (0.826)
BeforeFincrisisOpness	0.0951** (0.0475)	
AfterFincrisisOpness		-0.0139 (0.0102)
Constant	-1.579 (0.961)	-0.320 (0.717)
Observations	885	885
R-squared	0.057	0.067
Number of idcoun	56	56

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

Table 4 – Estimations before and after the GFC(Dummy variable approach)

6.3 General model taking into account exchange rate and institutional factors

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
Fiscal Balance	0.214** (0.0894)	0.207** (0.0858)	0.211** (0.0862)	0.223*** (0.0848)	0.220*** (0.0842)
Lagnfa	0.475 (0.969)	0.777 (0.874)	0.104 (0.908)	0.0963 (0.853)	0.130 (0.850)
GDP_percapita	0.175*** (0.0222)	0.213*** (0.0314)	0.193*** (0.0314)	0.258*** (0.0349)	0.270*** (0.0367)
GDP_Growth	-0.126** (0.0567)	-0.126** (0.0564)	-0.141** (0.0589)	-0.149** (0.0585)	-0.142** (0.0573)
Youth Age Ratio	0.102** (0.0433)	0.0185 (0.0486)	0.0556 (0.0465)	0.0177 (0.0505)	-0.0154 (0.0524)
Old Age Ratio	0.0406 (0.0984)	-0.0164 (0.101)	0.00937 (0.0935)	0.0261 (0.0982)	-0.00794 (0.101)
Trade Openness	0.00250 (0.0110)	0.00120 (0.0112)	0.00430 (0.0118)	0.00665 (0.0110)	0.00485 (0.0111)
Financial Openness	-3.158*** (1.213)	-2.039* (1.186)	-3.335*** (1.244)	-2.982** (1.201)	-2.340* (1.204)
Financial Crisis	1.642*** (0.562)	1.825*** (0.638)	1.631*** (0.599)	1.982*** (0.617)	1.909*** (0.622)
FincrisisOpenness	-0.0125 (0.00853)	-0.0142 (0.00872)	-0.0103 (0.00832)	-0.0145* (0.00837)	-0.0142* (0.00842)
FD		-3.971* (2.324)	-1.249 (2.232)	-0.345 (1.984)	-1.414 (2.109)
Mis_bar		-4.993*** (1.744)	-11.18*** (2.490)	-11.43*** (2.373)	-10.59*** (2.375)
GovernmentStability			0.00513 (0.113)	0.126 (0.105)	0.182* (0.105)
Corruption				-0.953*** (0.306)	-0.922*** (0.310)
SocioeconomicConditions				-0.456*** (0.176)	-0.422** (0.175)
LawandOrder				-0.213 (0.324)	-0.191 (0.330)
InvestmentProfile		-0.422*** (0.159)		-0.327** (0.157)	-0.286* (0.156)
REER			0.0634*** (0.0187)	0.0700*** (0.0171)	0.0632*** (0.0169)
rtfpna	-8.539* (4.789)	-6.067 (4.693)	-8.592* (4.847)	-7.288 (4.625)	-7.782* (4.605)
InternalConflict		-0.585*** (0.171)			-0.445*** (0.151)
Constant	3.036 (5.587)	14.44** (6.531)	-1.089 (5.658)	4.728 (5.906)	10.61* (6.393)
Observations	885	885	885	885	885
R-squared	0.193	0.222	0.221	0.261	0.264
Number of idcoun	56	56	56	56	56

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

Table 5 – Estimation of the general model taking into account exchange rate and institutional factors

6.4 Robustness Model

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
L.CA_GDP	0.855*** (0.0414)	0.849*** (0.0397)	0.860*** (0.0448)	0.852*** (0.0406)	0.853*** (0.0410)
Fiscal Balance	0.185*** (0.0627)	0.139** (0.0630)	0.188*** (0.0635)	0.150** (0.0598)	0.146** (0.0600)
Lagnfa	-0.202 (0.249)	-0.194 (0.264)	-0.234 (0.248)	-0.331 (0.303)	-0.360 (0.311)
GDP_percapita	0.0165** (0.00769)	0.0235* (0.0124)	0.0152 (0.00911)	0.0272* (0.0147)	0.0292* (0.0157)
GDP_Growth	-0.276*** (0.0619)	-0.266*** (0.0626)	-0.282*** (0.0618)	-0.275*** (0.0634)	-0.273*** (0.0632)
Youth Age Ratio	0.0144 (0.0156)	0.000133 (0.0187)	0.0133 (0.0168)	0.0103 (0.0167)	0.00440 (0.0179)
Old Age Ratio	-0.0212 (0.0276)	-0.0302 (0.0293)	-0.0232 (0.0294)	-0.0153 (0.0256)	-0.0163 (0.0259)
Trade Openness	0.00313 (0.00222)	0.00333 (0.00209)	0.00369 (0.00227)	0.00343 (0.00228)	0.00384 (0.00233)
Financial Openness	-0.511 (0.556)	0.133 (0.640)	-0.547 (0.603)	-0.0533 (0.669)	0.0400 (0.662)
Financial Crisis	3.051** (1.464)	3.021** (1.447)	1.634 (1.025)	3.050** (1.454)	2.989** (1.455)
FincrisisOpenness	-0.0170 (0.0153)	-0.0167 (0.0151)		-0.0165 (0.0154)	-0.0160 (0.0153)
FD		-0.0870 (0.897)		0.378 (0.820)	0.0117 (0.839)
Mis_bar		-1.770 (1.299)		-3.067* (1.730)	-3.077* (1.701)
GovernmentStability				0.0373 (0.0787)	0.0590 (0.0809)
Corruption				-0.231* (0.123)	-0.225* (0.125)
SocioeconomicConditions				-0.00217 (0.120)	0.0205 (0.114)
LawandOrder				0.0957 (0.124)	0.104 (0.122)
InvestmentProfile		-0.155** (0.0718)		-0.164** (0.0703)	-0.137* (0.0720)
REER			0.00666 (0.00897)	0.0240* (0.0122)	0.0237* (0.0121)
rtfpna	-1.565 (2.465)	-1.453 (2.494)		-1.687 (2.335)	-2.009 (2.375)
InternalConflict		-0.113 (0.110)			-0.132 (0.0970)
Constant	2.391 (3.070)	4.769 (3.061)	0.280 (1.362)	0.856 (2.512)	2.070 (2.605)
Observations	835	835	835	835	835
Number of idcoun	56	56	56	56	56

Robust standard errors in parentheses

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

Table 6 – GMM model estimation

6.5 Results of the General model (before and after the GFC)

VARIABLES	(1) Model 1.a	(2) Model 1.b	(3) Model 2.a	(4) Model 2.b	(5) Model 3.a	(6) Model 3.b	(7) Model 4.a	(8) Model 4.b	(9) Model 5.a	(10) Model 5.b
Fiscal Balance	0.108 (0.111)	0.511*** (0.107)	0.0977 (0.0869)	0.468*** (0.0963)	0.0846 (0.0934)	0.453*** (0.109)	0.186** (0.0890)	0.417*** (0.102)	0.179** (0.0888)	0.416*** (0.0998)
Lagnfa	3.697*** (1.323)	1.753** (0.789)	3.343*** (1.196)	1.830** (0.726)	3.080*** (1.082)	0.901 (0.776)	3.750*** (0.986)	0.982 (0.821)	3.550*** (1.051)	0.942 (0.810)
GDP_percapita	0.157*** (0.0242)	0.116*** (0.0145)	0.235*** (0.0266)	0.163*** (0.0277)	0.250*** (0.0245)	0.123*** (0.0241)	0.257*** (0.0269)	0.158*** (0.0382)	0.266*** (0.0270)	0.172*** (0.0384)
GDP_Growth	-0.0172 (0.0459)	-0.108 (0.0762)	-0.0924 (0.0651)	-0.0953 (0.0771)	-0.0334 (0.0526)	-0.125 (0.0791)	-0.142** (0.0680)	-0.109 (0.0787)	-0.136** (0.0668)	-0.112 (0.0769)
Youth Age Ratio	0.0758*** (0.0252)	0.134*** (0.0316)	-0.125*** (0.0477)	0.0703 (0.0495)	-0.0912* (0.0525)	0.0954** (0.0403)	-0.0693 (0.0509)	0.0760 (0.0529)	-0.0980** (0.0487)	0.0497 (0.0584)
Old Age Ratio	-0.0781 (0.0819)	0.209*** (0.0697)	-0.333*** (0.104)	0.178** (0.0773)	-0.430*** (0.102)	0.244*** (0.0592)	-0.292*** (0.107)	0.196*** (0.0672)	-0.304*** (0.100)	0.191*** (0.0709)
Trade Openness	0.00618 (0.00774)	0.0154** (0.00695)	-0.00594 (0.00911)	0.0135* (0.00767)	0.00646 (0.0102)	0.0186** (0.00845)	0.00648 (0.00908)	0.0194** (0.00824)	0.00171 (0.00898)	0.0186** (0.00836)
Financial Openness	-4.284*** (1.202)	-5.992*** (1.486)	-1.442 (1.209)	-4.994*** (1.386)	-1.853 (1.278)	-6.676*** (1.480)	-1.252 (1.396)	-5.424*** (1.484)	-0.680 (1.284)	-5.143*** (1.442)
Financial Crisis	-3.824** (1.903)	1.440 (1.701)	-1.682 (1.659)	1.461 (1.772)	-2.056 (1.699)	1.011 (1.829)	-2.308 (1.613)	1.509 (1.639)	-2.302 (1.581)	1.432 (1.668)
FincrisisOpenness	0.0942** (0.0399)	-0.0138 (0.0197)	0.0568* (0.0311)	-0.0164 (0.0189)	0.0673* (0.0364)	-0.0102 (0.0194)	0.0680** (0.0327)	-0.0168 (0.0174)	0.0667** (0.0322)	-0.0167 (0.0173)
rtfpna	-13.96*** (2.816)	-6.210 (9.476)	-7.952*** (2.992)	-4.039 (8.725)	-12.62*** (2.934)	-11.01 (9.732)	-9.631*** (2.946)	-5.998 (9.026)	-9.473*** (3.108)	-6.581 (8.892)
FD			-10.54*** (2.366)	-2.583 (1.901)	-8.484*** (2.130)	1.041 (1.991)	-7.411*** (2.406)	2.532 (1.879)	-8.291*** (2.424)	1.150 (1.956)
Mis_bar			-8.904*** (1.942)	-1.252 (2.204)	-12.57*** (2.420)	-9.235*** (3.585)	-11.12*** (2.041)	-9.199** (3.607)	-11.26*** (2.159)	-9.287** (3.664)
GovernmentStability					-0.0614 (0.101)	-0.0544 (0.194)	0.0311 (0.116)	0.0998 (0.117)	0.0842 (0.117)	0.133 (0.196)
REER					0.0633*** (0.0169)	0.117*** (0.0297)	0.0419*** (0.0134)	0.111*** (0.0302)	0.0403*** (0.0135)	0.111*** (0.0306)
Corruption							-1.258*** (0.248)	-0.248 (0.303)	-1.272*** (0.265)	-0.226 (0.306)
SocioeconomicConditions							-0.336** (0.144)	-0.570** (0.251)	-0.273* (0.152)	-0.465* (0.269)
LawandOrder							0.360** (0.175)	0.264 (0.373)	0.501** (0.208)	0.241 (0.362)
InvestmentProfile			-0.397*** (0.105)	-0.436** (0.205)			-0.353*** (0.121)	-0.341* (0.205)	-0.333*** (0.116)	-0.339 (0.206)
InternalConflict			-0.422*** (0.161)	-0.537** (0.233)					-0.444*** (0.160)	-0.303 (0.230)
Constant	12.14*** (2.418)	-0.292 (8.993)	27.57*** (4.012)	9.185 (9.768)	17.14*** (3.173)	-7.545 (7.972)	19.98*** (3.615)	-7.151 (9.311)	24.08*** (3.931)	-3.426 (8.944)
Observations	437	448	437	448	437	448	437	448	437	448
R-squared	0.320	0.390	0.320	0.418	0.434	0.423	0.410	0.415	0.377	0.424
Number of idcoun	56	56	56	56	56	56	56	56	56	56

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

Table 7 – General Model After and Before the GFC

6.6 Robustness models Before and After the GFC

VARIABLES	(1) Model 1	(2) Model 1.1	(3) Model 2	(4) Model 2.1	(5) Model 3	(6) Model 3.1	(7) Model 4	(8) Model 4.1	(9) Model 5	(10) Model 5.1
L.CA_GDP	0.980*** (0.0797)	0.728*** (0.0654)	0.952*** (0.0816)	0.725*** (0.0649)	0.982*** (0.0805)	0.723*** (0.0661)	0.939*** (0.0735)	0.728*** (0.0673)	0.934*** (0.0748)	0.729*** (0.0685)
Fiscal Balance	0.164 (0.0991)	0.202 (0.132)	0.127 (0.0863)	0.154 (0.143)	0.151 (0.0936)	0.226* (0.132)	0.0567 (0.0975)	0.156 (0.147)	0.0439 (0.0914)	0.165 (0.148)
Lagnfa	0.375 (0.469)	-0.0567 (0.280)	0.477 (0.442)	-0.106 (0.333)	0.350 (0.459)	-0.166 (0.272)	0.622* (0.340)	-0.396 (0.359)	0.635* (0.338)	-0.497 (0.362)
GDP_percapita	0.00319 (0.0106)	0.0307** (0.0143)	0.00416 (0.0161)	0.0433** (0.0189)	0.00239 (0.0111)	0.0359** (0.0156)	-0.00759 (0.0189)	0.0517** (0.0206)	-0.00497 (0.0198)	0.0584** (0.0228)
GDP_Growth	-0.165 (0.107)	-0.290*** (0.0654)	-0.172 (0.104)	-0.283*** (0.0672)	-0.169 (0.107)	-0.284*** (0.0737)	-0.169 (0.109)	-0.294*** (0.0707)	-0.161 (0.107)	-0.297*** (0.0705)
Youth Age Ratio	0.0110 (0.0189)	0.0165 (0.0247)	0.00830 (0.0206)	-0.0104 (0.0317)	0.0106 (0.0195)	0.0171 (0.0251)	0.0188 (0.0229)	0.00146 (0.0325)	0.0130 (0.0214)	-0.0135 (0.0355)
Old Age Ratio	-0.0392 (0.0408)	-0.0113 (0.0387)	-0.0336 (0.0445)	-0.0259 (0.0394)	-0.0415 (0.0403)	-0.00339 (0.0393)	-0.0214 (0.0423)	-0.00157 (0.0415)	-0.0261 (0.0433)	-0.000862 (0.0422)
Trade Openness	0.00213 (0.00324)	0.00209 (0.00294)	0.00294 (0.00326)	0.00272 (0.00265)	0.00177 (0.00326)	0.00367 (0.00297)	0.00148 (0.00346)	0.00448 (0.00297)	0.00184 (0.00351)	0.00546* (0.00314)
Financial Openness	-0.325 (0.739)	-0.506 (0.904)	-0.0517 (0.625)	0.275 (1.008)	-0.294 (0.727)	-0.849 (0.890)	-0.261 (0.592)	-0.124 (0.968)	-0.156 (0.594)	0.0255 (0.935)
Financial Crisis	-0.289 (2.179)	2.872* (1.657)	-0.0997 (2.278)	2.796* (1.659)	4.021*** (1.395)	1.070 (1.113)	0.0652 (2.367)	2.716* (1.622)	0.0214 (2.334)	2.572 (1.649)
FincrisisOpenness	0.0772** (0.0297)	-0.0199 (0.0165)	0.0701** (0.0298)	-0.0191 (0.0166)			0.0666** (0.0299)	-0.0178 (0.0166)	0.0672** (0.0294)	-0.0166 (0.0169)
FD			0.867 (0.960)	-0.880 (1.378)			0.321 (1.079)	0.662 (1.361)	0.00138 (1.110)	-0.293 (1.331)
Mis_bar			-2.082 (1.519)	-1.703 (1.541)			-3.369** (1.611)	-4.101* (2.350)	-3.539** (1.584)	-4.062* (2.255)
GovernmentStability							-0.0583 (0.108)	0.0388 (0.125)	-0.0369 (0.115)	0.0722 (0.125)
Corruption							0.00965 (0.203)	-0.209 (0.227)	0.0172 (0.198)	-0.187 (0.233)
SocioeconomicConditions							0.153 (0.130)	-0.0322 (0.172)	0.167 (0.130)	0.0442 (0.162)
LawandOrder							0.162 (0.176)	-0.121 (0.211)	0.190 (0.184)	-0.188 (0.204)
InvestmentProfile			-0.124 (0.156)	-0.0961 (0.113)			-0.144 (0.151)	-0.157 (0.106)	-0.123 (0.152)	-0.0862 (0.117)
REER					-0.000323 (0.0129)	0.0200 (0.0148)	0.0174 (0.0109)	0.0428* (0.0227)	0.0174 (0.0109)	0.0420* (0.0224)
rtfpa	-0.117 (1.453)	3.265 (7.073)	-0.0409 (1.423)	3.481 (7.464)			-0.244 (1.358)	3.297 (7.762)	-0.444 (1.400)	2.226 (7.792)
InternalConflict			-0.0574 (0.103)	-0.273 (0.171)					-0.121 (0.115)	-0.308** (0.149)
Constant	1.323 (2.117)	-2.965 (7.505)	2.290 (2.745)	0.828 (7.822)	1.283 (1.780)	-1.930 (2.231)	-0.804 (2.195)	-6.045 (7.802)	0.169 (2.438)	-2.601 (7.714)
Observations	387	448	387	448	387	448	387	448	387	448
Number of id	56	56	56	56	56	56	56	56	56	56

Robust standard errors in parentheses

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

Table 8 – GMM Models After and Before the GFC

6.7 Descriptive statistics General

VARIABLES	N	Mean	Sd	Min	Max
CA_GDP	896	-0.607	5.805	-23.90	16.53
Fiscal Balance	885	-2.260	2.879	-18.71	7.717
GDP_Growth	896	3.150	3.500	-14.76	25.16
Financial Openness	896	0.739	0.327	0	1
Mis_bar	896	-0.0105	0.125	-0.359	0.334
Youth Age Ratio	896	32.43	12.35	14.87	83.64
Old Age Ratio	896	18.35	7.603	5.610	42.66
GDP_percapita	896	24,341	20,305	826.6	91,566
FD	896	0.533	0.226	0.0613	1
SocioeconomicConditions	896	7.184	2.015	2	11
InvestmentProfile	896	9.854	1.696	3	12
GovernmentStability	896	8.069	1.503	4.667	12
Corruption	896	3.312	1.269	1	6
LawandOrder	896	4.356	1.302	1	6
Trade Openness	896	87.28	52.77	19.80	442.6
rtpna	896	0.988	0.0616	0.696	1.212
REER	896	99.37	12.85	57.41	160.1
Financial Crisis	896	-0.00475	0.149	-0.430	0.997
Lagnfa	896	-0.275	0.728	-6.610	3.483

Table 9 – Summary statistics General

6.7.1 Descriptive statistics Advanced Market

VARIABLES	N	Mean	Sd	Min	Max
CA_GDP	496	-0.0675	6.312	-23.30	16.23
Fiscal Balance	493	-2.252	2.969	-18.71	5.346
GDP_Growth	496	2.260	3.317	-14.43	25.16
Financial Openness	496	0.921	0.183	0.166	1
Mis_bar	496	0.0214	0.101	-0.239	0.334
Youth Age Ratio	496	25.81	5.232	14.87	45.74
Old Age Ratio	496	23.05	5.088	9.953	42.66
GDP_percapita	496	38,565	16,753	6,960	91,566
FD	496	0.674	0.176	0.208	1
SocioeconomicConditions	496	8.432	1.428	4	11
InvestmentProfile	496	10.69	1.441	6.250	12
GovernmentStability	496	8.069	1.399	4.667	11.08
Corruption	496	4.082	1.081	2	6
LawandOrder	496	5.200	0.680	3	6
Trade Openness	496	96.28	61.96	19.80	442.6
rtfpna	496	0.996	0.0534	0.766	1.212
REER	496	98.11	11.30	63.22	151.5
Financial Crisis	496	0.00566	0.148	-0.430	0.982
Lagnfa	496	-0.199	0.924	-6.610	3.483

Table 10 – Summary statistics Advanced Market

6.7.2 Descriptive statistics Emerging Market

VARIABLES	N	Mean	Sd	Min	Max
CA_GDP	400	-1.275	5.035	-23.90	16.53
Fiscal Balance	392	-2.269	2.764	-10.95	7.717
GDP_Growth	400	4.255	3.408	-14.76	14.23
Financial Openness	400	0.513	0.325	0	1
Mis_bar	400	-0.0500	0.141	-0.359	0.288
Youth Age Ratio	400	40.64	13.63	19.46	83.64
Old Age Ratio	400	12.52	6.008	5.610	30.47
GDP_percapita	400	6,704	3,650	826.6	15,208
FD	400	0.358	0.145	0.0613	0.703
SocioeconomicConditions	400	5.636	1.495	2	10
InvestmentProfile	400	8.822	1.396	3	11.50
GovernmentStability	400	8.070	1.625	5	12
Corruption	400	2.358	0.716	1	5
LawandOrder	400	3.310	1.117	1	6
Trade Openness	400	76.11	35.47	22.11	220.4
rtfpna	400	0.980	0.0696	0.696	1.168
REER	400	100.9	14.40	57.41	160.1
Financial Crisis	400	-0.0176	0.149	-0.430	0.997
Lagnfa	400	-0.369	0.337	-2.149	0.305

Table 11 – Summary statistics Emerging Market

6.8 Structural break tests

Linear regression								
CA_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig	
Fiscal Balance	0.365	0.081	4.49	0.000	0.206	0.525	***	
Lagnfa	5.476	0.497	11.02	0.000	4.501	6.451	***	
GDP_percapita	0.126	0.016	7.71	0.000	0.094	0.158	***	
GDP_Growth	-0.285	0.095	-2.99	0.003	-0.472	-0.098	***	
Youth Age Ratio	0.071	0.033	2.16	0.031	0.007	0.135	**	
Old Age Ratio	-0.107	0.073	-1.47	0.142	-0.249	0.036		
REER	-0.006	0.019	-0.32	0.752	-0.043	0.031		
Trade Openness	0.013	0.005	2.42	0.016	0.002	0.024	**	
Financial Openness	-5.334	1.005	-5.31	0.000	-7.308	-3.361	***	
Financial Crisis	-7.197	4.991	-1.44	0.150	-16.993	2.599		
FincrisisOpenness	0.144	0.090	1.61	0.107	-0.031	0.320		
d2	-9.851	4.107	-2.40	0.017	-17.912	-1.789	**	
id1	0.268	0.115	2.33	0.020	0.042	0.494	**	
id2	-3.695	0.568	-6.50	0.000	-4.810	-2.580	***	
id3	0.011	0.022	0.49	0.625	-0.032	0.053		
id4	0.190	0.115	1.66	0.097	-0.035	0.415	*	
id5	0.020	0.048	0.42	0.675	-0.074	0.114		
id6	0.251	0.092	2.74	0.006	0.071	0.431	***	
id7	0.044	0.027	1.62	0.106	-0.009	0.097		
id8	-0.003	0.007	-0.49	0.623	-0.017	0.010		
id9	-0.746	1.397	-0.53	0.593	-3.487	1.995		
id10	10.778	5.681	1.90	0.058	-0.371	21.928	*	
id11	-0.193	0.093	-2.07	0.039	-0.376	-0.010	**	
Constant	2.436	2.944	0.83	0.408	-3.342	8.214		
Mean dependent var	-0.602		SD dependent var		5.822			
R-squared	0.433		Number of obs		885.000			
F-test	28.539		Prob > F		0.000			
Akaike crit. (AIC)	5175.223		Bayesian crit. (BIC)		5290.077			

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(1) d2 = 0
 (2) id1 = 0
 (3) id2 = 0
 (4) id3 = 0
 (5) id4 = 0
 (6) id5 = 0
 (7) id6 = 0
 (8) id7 = 0
 (9) id8 = 0
 (10) id9 = 0
 (11) id10 = 0
 (12) id11 = 0
 $F(12, 861) = 6.67$
 $Prob > F = 0.0000$

Table 12 – Chow Test1

Linear regression

CA_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Fiscal Balance	0.346	0.081	4.29	0.000	0.188	0.504	***
Lagnfa	5.164	0.495	10.43	0.000	4.192	6.135	***
GDP_percapita	0.139	0.017	8.28	0.000	0.106	0.172	***
GDP_Growth	-0.250	0.095	-2.63	0.009	-0.438	-0.063	***
Youth Age Ratio	0.089	0.033	2.67	0.008	0.024	0.154	***
Old Age Ratio	-0.062	0.073	-0.85	0.397	-0.206	0.082	
Trade Openness	0.012	0.005	2.28	0.023	0.002	0.023	**
Financial Openness	-5.373	0.977	-5.50	0.000	-7.290	-3.457	***
Financial Crisis	-7.128	4.968	-1.44	0.152	-16.880	2.623	
FincrisisOpenness	0.135	0.089	1.52	0.130	-0.040	0.309	
rtfpna	-9.605	3.119	-3.08	0.002	-15.728	-3.483	***
d2	-11.530	8.395	-1.37	0.170	-28.008	4.948	
id1	0.286	0.115	2.49	0.013	0.061	0.512	**
id2	-3.208	0.559	-5.73	0.000	-4.306	-2.110	***
id3	-0.012	0.022	-0.54	0.592	-0.054	0.031	
id4	0.181	0.117	1.54	0.123	-0.049	0.410	
id5	0.001	0.048	0.02	0.984	-0.094	0.096	
id6	0.202	0.093	2.18	0.029	0.020	0.384	**
id7	-0.004	0.007	-0.63	0.529	-0.018	0.009	
id8	-0.219	1.355	-0.16	0.872	-2.878	2.441	
id9	10.865	5.661	1.92	0.055	-0.246	21.976	*
id10	-0.183	0.093	-1.98	0.048	-0.365	-0.002	**
id11	8.366	8.310	1.01	0.314	-7.945	24.678	
Constant	9.399	3.381	2.78	0.006	2.763	16.035	***
Mean de- pendent var	-0.602		SD dependent var		5.822		
R-squared	0.436		Number of obs		885.000		
F-test	28.965		Prob > F		0.000		
Akaike crit. (AIC)	5169.533		Bayesian crit. (BIC)		5284.387		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(1) d2 = 0
(2) id1 = 0
(3) id2 = 0
(4) id3 = 0
(5) id4 = 0
(6) id5 = 0
(7) id6 = 0
(8) id7 = 0
(9) id8 = 0
(10) id9 = 0
(11) id10 = 0
(12) id11 = 0
F(12, 861) = 6.05
Prob > F = 0.0000

Table 13 – Chow Test2

Linear regression

CA_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Fiscal Balance	0.350	0.078	4.47	0.000	0.196	0.503	***
Lagnfa	5.220	0.483	10.80	0.000	4.272	6.169	***
GDP_percapita	0.172	0.021	8.05	0.000	0.130	0.214	***
GDP_Growth	-0.446	0.096	-4.65	0.000	-0.635	-0.258	***
Youth Age Ratio	-0.008	0.037	-0.21	0.834	-0.081	0.065	
Old Age Ratio	-0.107	0.075	-1.42	0.155	-0.254	0.040	
Trade Openness	0.015	0.005	2.73	0.007	0.004	0.026	***
Financial Openness	-2.755	0.991	-2.78	0.006	-4.701	-0.810	***
Financial Crisis	-4.131	4.809	-0.86	0.391	-13.571	5.309	
FincrisisOpenness	0.076	0.086	0.89	0.376	-0.093	0.245	
rtfpna	-3.428	3.147	-1.09	0.276	-9.606	2.750	
FD	-2.125	1.635	-1.30	0.194	-5.333	1.083	
Mis_bar	-10.298	2.055	-5.01	0.000	-14.332	-6.263	***
InvestmentProfile	-1.021	0.194	-5.25	0.000	-1.402	-0.639	***
InternalConflict	-0.425	0.178	-2.40	0.017	-0.774	-0.077	**
d2	-19.662	9.087	-2.16	0.031	-37.498	-1.827	**
id1	0.280	0.111	2.51	0.012	0.061	0.499	**
id2	-3.267	0.552	-5.91	0.000	-4.351	-2.182	***
id3	-0.035	0.029	-1.20	0.229	-0.092	0.022	
id4	0.377	0.116	3.24	0.001	0.149	0.604	***
id5	0.086	0.054	1.61	0.108	-0.019	0.191	
id6	0.224	0.093	2.40	0.016	0.041	0.408	**
id7	-0.006	0.007	-0.81	0.420	-0.019	0.008	
id8	-1.837	1.428	-1.29	0.199	-4.641	0.966	
id9	7.832	5.476	1.43	0.153	-2.916	18.580	
id10	-0.125	0.090	-1.40	0.163	-0.301	0.051	
id11	3.248	8.189	0.40	0.692	-12.825	19.322	
id12	2.827	2.377	1.19	0.235	-1.838	7.493	
id13	10.459	2.709	3.86	0.000	5.143	15.775	***
id14	0.700	0.264	2.65	0.008	0.182	1.218	***
id15	0.214	0.279	0.76	0.445	-0.335	0.762	
Constant	20.821	4.027	5.17	0.000	12.917	28.725	***
Mean de- pendent var	-0.602			SD dependent var	5.822		
R-squared	0.483			Number of obs	885.000		
F-test	25.742			Prob > F	0.000		
Akaike crit. (AIC)	5108.284			Bayesian crit. (BIC)	5261.423		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(1) d2 = 0
(2) id1 = 0
(3) id2 = 0
(4) id3 = 0
(5) id4 = 0
(6) id5 = 0
(7) id6 = 0
(8) id7 = 0
(9) id8 = 0
(10) id9 = 0
(11) id10 = 0
(12) id11 = 0
(13) id12 = 0
(14) id13 = 0
(15) id14 = 0
(16) id15 = 0
F(16, 853) = 6.32
Prob > F = 0.0000

Table 14 – Chow Test3

Linear regression

CA_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Fiscal Balance	0.354	0.080	4.40	0.000	0.196	0.511	***
Lagnfa	5.165	0.495	10.43	0.000	4.194	6.137	***
GDP_percapita	0.159	0.021	7.59	0.000	0.118	0.201	***
GDP_Growth	-0.339	0.094	-3.60	0.000	-0.524	-0.154	***
Youth Age Ratio	0.016	0.037	0.44	0.661	-0.056	0.088	
Old Age Ratio	-0.099	0.076	-1.30	0.195	-0.248	0.051	
Trade Openness	0.006	0.005	1.11	0.266	-0.005	0.017	
Financial Openness	-5.221	1.014	-5.15	0.000	-7.212	-3.230	***
Financial Crisis	-5.983	4.864	-1.23	0.219	-15.530	3.563	
FincrisisOpenness	0.112	0.087	1.29	0.199	-0.059	0.284	
rtfpna	-7.574	3.088	-2.45	0.014	-13.634	-1.514	**
FD	-2.427	1.651	-1.47	0.142	-5.667	0.812	
Mis_bar	-16.475	2.530	-6.51	0.000	-21.442	-11.509	***
GovernmentStability	-0.174	0.155	-1.13	0.261	-0.478	0.130	
REER	0.084	0.023	3.68	0.000	0.039	0.129	***
d2	-11.197	9.070	-1.23	0.217	-29.000	6.606	
id1	0.283	0.114	2.49	0.013	0.060	0.506	**
id2	-3.563	0.583	-6.12	0.000	-4.706	-2.420	***
id3	-0.032	0.028	-1.15	0.252	-0.087	0.023	
id4	0.244	0.116	2.11	0.036	0.017	0.471	**
id5	0.070	0.053	1.33	0.186	-0.034	0.174	
id6	0.240	0.096	2.50	0.013	0.052	0.428	**
id7	0.004	0.007	0.58	0.560	-0.010	0.018	
id8	-0.634	1.406	-0.45	0.652	-3.393	2.126	
id9	9.649	5.549	1.74	0.082	-1.242	20.540	*
id10	-0.161	0.091	-1.76	0.078	-0.339	0.018	*
id11	5.369	8.200	0.66	0.513	-10.725	21.463	
id12	3.978	2.349	1.69	0.091	-0.632	8.588	*
id13	14.227	3.260	4.36	0.000	7.828	20.627	***
id14	-0.027	0.238	-0.11	0.910	-0.494	0.440	
id15	-0.029	0.032	-0.89	0.375	-0.092	0.035	
Constant	5.036	4.017	1.25	0.210	-2.848	12.920	

Mean de- pendent var	-0.602	SD dependent var	5.822
R-squared	0.469	Number of obs	885.000
F-test	24.320	Prob > F	0.000
Akaike crit. (AIC)	5132.228	Bayesian crit. (BIC)	5285.366

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(1) d2 = 0
(2) id1 = 0
(3) id2 = 0
(4) id3 = 0
(5) id4 = 0
(6) id5 = 0
(7) id6 = 0
(8) id7 = 0
(9) id8 = 0
(10) id9 = 0
(11) id10 = 0
(12) id11 = 0
(13) id12 = 0
(14) id13 = 0
(15) id14 = 0
(16) id15 = 0
F(16, 853) = 6.45
Prob > F = 0.0000

Table 15 – Chow Test4

Linear regression

CA_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Fiscal Balance	0.446	0.082	5.46	0.000	0.286	0.606	***
Lagnfa	5.059	0.515	9.82	0.000	4.048	6.069	***
GDP_percapita	0.175	0.025	6.89	0.000	0.125	0.225	***
GDP_Growth	-0.521	0.098	-5.34	0.000	-0.712	-0.329	***
Youth Age Ratio	0.023	0.038	0.60	0.548	-0.052	0.098	
Old Age Ratio	-0.054	0.078	-0.70	0.484	-0.207	0.098	
Trade Openness	0.012	0.006	2.18	0.030	0.001	0.023	**
Financial Openness	-3.772	1.039	-3.63	0.000	-5.812	-1.733	***
Financial Crisis	-4.111	4.760	-0.86	0.388	-13.454	5.231	
FinncrisisOpenness	0.086	0.085	1.01	0.312	-0.081	0.254	
rtfpna	-3.533	3.127	-1.13	0.259	-9.670	2.605	
FD	-0.728	1.718	-0.42	0.672	-4.100	2.645	
Mis_bar	-14.525	2.492	-5.83	0.000	-19.417	-9.633	***
GovernmentStability	-0.225	0.157	-1.43	0.153	-0.534	0.083	
REER	0.071	0.023	3.09	0.002	0.026	0.115	***
Corruption	-0.742	0.279	-2.66	0.008	-1.289	-0.195	***
SocioeconomicCond	0.027	0.202	0.13	0.896	-0.371	0.424	
LawandOrder	0.291	0.281	1.04	0.300	-0.260	0.842	
InvestmentProfile	-1.075	0.195	-5.51	0.000	-1.458	-0.692	***
d2	-18.875	9.122	-2.07	0.039	-36.779	-0.971	**
id1	0.197	0.115	1.72	0.085	-0.028	0.422	*
id2	-3.484	0.602	-5.79	0.000	-4.666	-2.302	***
id3	-0.035	0.035	-0.99	0.322	-0.104	0.034	
id4	0.422	0.118	3.59	0.000	0.191	0.652	***
id5	0.092	0.055	1.66	0.097	-0.017	0.200	*
id6	0.224	0.097	2.30	0.022	0.033	0.415	**
id7	-0.002	0.007	-0.21	0.830	-0.016	0.013	
id8	-1.383	1.460	-0.95	0.344	-4.249	1.483	
id9	7.470	5.429	1.38	0.169	-3.185	18.125	
id10	-0.131	0.089	-1.48	0.140	-0.306	0.043	
id11	1.286	8.098	0.16	0.874	-14.608	17.180	
id12	2.205	2.429	0.91	0.364	-2.562	6.972	
id13	12.272	3.229	3.80	0.000	5.934	18.610	***
id14	0.157	0.244	0.65	0.518	-0.321	0.635	
id15	-0.015	0.032	-0.46	0.643	-0.078	0.048	
id16	0.002	0.430	0.00	0.997	-0.841	0.845	
id17	0.402	0.300	1.34	0.181	-0.187	0.991	
id18	-0.167	0.420	-0.40	0.692	-0.992	0.658	
id19	0.704	0.265	2.66	0.008	0.184	1.224	***
Constant	11.936	4.212	2.83	0.005	3.668	20.203	***

Mean de- pendent var	-0.602	SD dependent var	5.822
R-squared	0.501	Number of obs	885.000
F-test	21.757	Prob > F	0.000
Akaike crit. (AIC)	5093.430	Bayesian crit. (BIC)	5284.853

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(1) d2 = 0
(2) id1 = 0
(3) id2 = 0
(4) id3 = 0
(5) id4 = 0
(6) id5 = 0
(7) id6 = 0
(8) id7 = 0
(9) id8 = 0
(10) id9 = 0
(11) id10 = 0
(12) id11 = 0
(13) id12 = 0
(14) id13 = 0
(15) id14 = 0
(16) id15 = 0
(17) id16 = 0
(18) id17 = 0
(19) id18 = 0
(20) id19 = 0
F(20, 845) = 5.46
Prob > F = 0.0000

Table 16 – Chow Test5

Linear regression

CA_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Fiscal Balance	0.443	0.081	5.45	0.000	0.284	0.603	***
Lagnfa	5.045	0.513	9.83	0.000	4.038	6.052	***
GDP_percapita	0.181	0.025	7.12	0.000	0.131	0.231	***
GDP_Growth	-0.503	0.097	-5.17	0.000	-0.695	-0.312	***
Youth Age Ratio	0.003	0.039	0.08	0.933	-0.073	0.080	
Old Age Ratio	-0.065	0.078	-0.84	0.403	-0.217	0.087	
Trade Openness	0.013	0.006	2.40	0.017	0.002	0.024	**
Financial Openness	-3.419	1.045	-3.27	0.001	-5.470	-1.368	***
Financial Crisis	-4.613	4.747	-0.97	0.331	-13.930	4.705	
FinrcrisisOpenness	0.096	0.085	1.12	0.262	-0.072	0.263	
rtfpna	-3.958	3.120	-1.27	0.205	-10.083	2.166	
FD	-1.906	1.776	-1.07	0.283	-5.393	1.580	
Mis_bar	-14.987	2.490	-6.02	0.000	-19.874	-10.099	***
GovernmentStability	-0.152	0.159	-0.96	0.339	-0.465	0.160	
REER	0.071	0.023	3.14	0.002	0.027	0.116	***
Corruption	-0.729	0.278	-2.63	0.009	-1.274	-0.184	***
SocioeconomicCond	0.078	0.203	0.39	0.700	-0.320	0.476	
LawandOrder	0.440	0.286	1.54	0.124	-0.121	1.002	
InvestmentProfile	-0.990	0.197	-5.01	0.000	-1.377	-0.602	***
InternalConflict	-0.467	0.188	-2.49	0.013	-0.835	-0.099	**
d2	-18.031	9.657	-1.87	0.062	-36.985	0.923	*
id1	0.199	0.114	1.74	0.082	-0.025	0.423	*
id2	-3.585	0.606	-5.92	0.000	-4.774	-2.396	***
id3	-0.034	0.035	-0.95	0.342	-0.103	0.036	
id4	0.400	0.117	3.40	0.001	0.169	0.630	***
id5	0.096	0.057	1.70	0.090	-0.015	0.207	*
id6	0.237	0.097	2.44	0.015	0.046	0.428	**
id7	-0.001	0.007	-0.19	0.848	-0.016	0.013	
id8	-1.601	1.465	-1.09	0.275	-4.477	1.275	
id9	7.632	5.418	1.41	0.159	-3.003	18.267	
id10	-0.138	0.089	-1.55	0.121	-0.312	0.036	
id11	-0.177	8.184	-0.02	0.983	-16.240	15.885	
id12	2.343	2.576	0.91	0.363	-2.714	7.400	
id13	12.659	3.223	3.93	0.000	6.332	18.986	***
id14	0.126	0.246	0.51	0.609	-0.357	0.609	
id15	-0.016	0.032	-0.50	0.617	-0.079	0.047	
id16	0.025	0.429	0.06	0.954	-0.817	0.866	
id17	0.439	0.306	1.43	0.152	-0.163	1.040	
id18	-0.409	0.428	-0.95	0.340	-1.250	0.432	
id19	0.692	0.271	2.55	0.011	0.160	1.225	**
id20	0.149	0.295	0.51	0.613	-0.430	0.729	
Constant	15.242	4.402	3.46	0.001	6.602	23.882	***

Mean dependent var	-0.602	SD dependent var	5.822
R-squared	0.506	Number of obs	885.000
F-test	21.045	Prob > F	0.000
Akaike crit. (AIC)	5088.930	Bayesian crit. (BIC)	5289.925

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(1) d2 = 0
(2) id1 = 0
(3) id2 = 0
(4) id3 = 0
(5) id4 = 0
(6) id5 = 0
(7) id6 = 0
(8) id7 = 0
(9) id8 = 0
(10) id9 = 0
(11) id10 = 0
(12) id11 = 0
(13) id12 = 0
(14) id13 = 0
(15) id14 = 0
(16) id15 = 0
(17) id16 = 0
(18) id17 = 0
(19) id18 = 0
(20) id19 = 0
(21) id20 = 0
F(21, 843) = 5.42
Prob > F = 0.0000

Table 17 – Chow Test6

GDP_percapita	-0.3364447	0.0894799	-0.4259246	0.0721303
GDP_Growth	-0.1048169	-0.1661256	0.0613088	0.0098154
Youth Age Ratio	0.1394425	0.1670231	-0.0275807	0.0326653
Old Age Ratio	0.5749898	0.2307472	0.3442425	0.0636085
REER	0.0091896	0.0012671	0.0079225	0.0057788
Trade Openness	0.0266145	0.0255897	0.0010248	0.0079292
Financial Openness	-1.764377	-3.524842	1.760466	0.5278339

Hausman (1978) specification test

Coef.	
Chi-square test value	117.968
P-value	0.0000

Table 18 – Hausman Test

Regression results							
CA_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Fiscal Balance	0.317	0.060	5.28	0.000	0.199	0.435	***
Lagnfa	-1.630	0.300	-5.43	0.000	-2.220	-1.040	***
GDP_percapita	-0.336	0.071	-4.73	0.000	-0.476	-0.197	***
GDP_Growth	-0.105	0.039	-2.71	0.007	-0.181	-0.029	***
Youth Age Ratio	0.139	0.044	3.15	0.002	0.053	0.226	***
Old Age Ratio	0.575	0.084	6.85	0.000	0.410	0.740	***
REER	0.009	0.012	0.77	0.441	-0.014	0.033	
Trade Openness	0.027	0.009	2.87	0.004	0.008	0.045	***
Financial Openness	-1.764	0.986	-1.79	0.074	-3.701	0.172	*
Constant	-8.748	2.881	-3.04	0.002	-14.403	-3.092	***
Mean dependent var	-0.602			SD dependent var	5.822		
R-squared	0.175			Number of obs	885.000		
F-test	19.351			Prob > F	0.000		
Akaike crit. (AIC)	4517.130			Bayesian crit. (BIC)	4564.986		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Pesaran's test of cross-sectional independence = 5.752, Pr = 0.0000
Average absolute value of the off-diagonal elements = 0.380

Table 19 – Cross-Sectional Dependence

Regression results

CA_GDP	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Fiscal Balance	0.125	0.061	2.04	0.042	0.005	0.245	**
Lagnfa	-1.946	0.464	-4.19	0.000	-2.858	-1.035	***
GDP_percapita	0.000	0.000	-0.52	0.602	0.000	0.000	
GDP_Growth	-0.090	0.032	-2.84	0.005	-0.153	-0.028	***
Youth Age Ratio	0.350	0.122	2.88	0.004	0.111	0.589	***
Old Age Ratio	0.835	0.160	5.21	0.000	0.521	1.150	***
REER	-0.036	0.016	-2.20	0.028	-0.068	-0.004	**
Trade Openness	-0.057	0.015	-3.92	0.000	-0.086	-0.029	***
Financial Openness	-0.435	1.386	-0.31	0.754	-3.156	2.287	
Constant	-16.730	1.857	-9.01	0.000	-20.375	-13.085	***
Mean dependent var	-0.602			SD dependent var	5.822		
Overall r-squared	0.059			Number of obs	829.000		
F-test	9.609			Prob > F	0.000		
Akaike crit. (AIC)	3762.092			Bayesian crit. (BIC)	3809.295		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

F test that all $u_i = 0$: $F(55,764) = 4.10$ Prob > F = 0.0000
 modified Bhargava et al. Durbin-Watson = .69529204
 Baltagi-Wu LBI = .84255353

Table 20 – Autocorrelation test

Investment

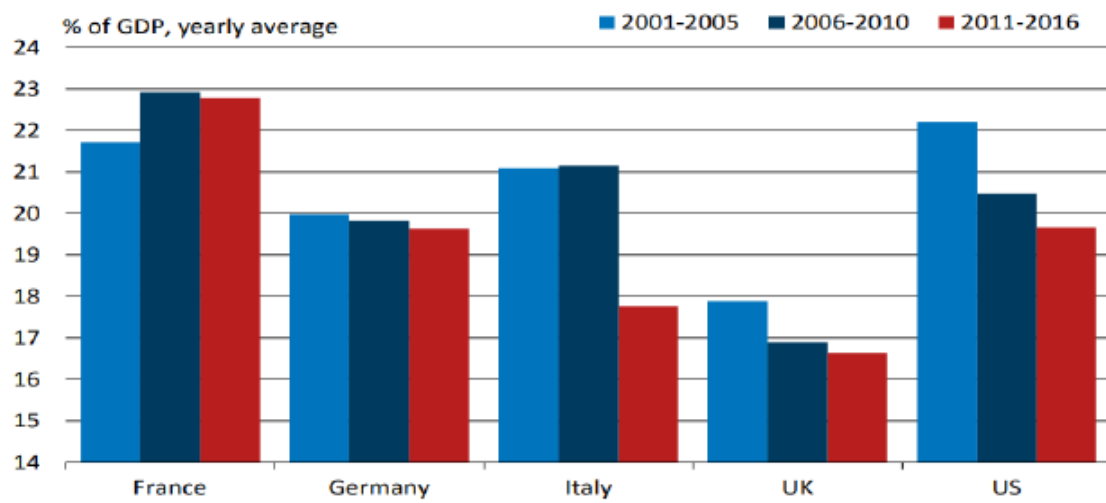


Figure 6 – Investment in some countries (source: IMF and IFO Institute)

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