

**CHARLES UNIVERSITY**  
**FACULTY OF SOCIAL SCIENCES**

Institute of Economic Studies

**Master thesis**

**2020**

**Jacob Mainka**

**CHARLES UNIVERSITY**  
**FACULTY OF SOCIAL SCIENCES**

Institute of Economic Studies

**What Drives the Current Account (Im)balances in the EU  
and Are they Relevant to Economic Policy?**

Master thesis

Author: Jacob Mainka

Study programme: International Economic and Political Studies

Supervisor: PhDr. Jaromír Baxa, Ph.D.

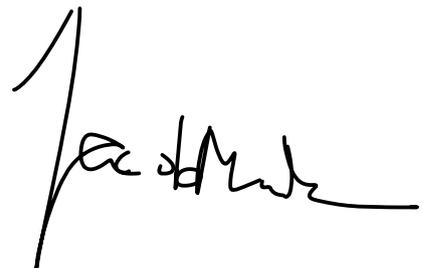
Year of the defence: 2020

## **Declaration**

1. I hereby declare that I have compiled this thesis using the listed literature and resources only.
2. I hereby declare that my thesis has not been used to gain any other academic title.
3. I fully agree to my work being used for study and scientific purposes.

In Prague on July 29, 2020

**Jacob Mainka**

A handwritten signature in black ink, appearing to read 'Jacob Mainka', written in a cursive style.

## **Bibliographic note**

MAINKA, Jacob. *What Drives the Current Account (Im)balances in the EU and Are they Relevant to Economic Policy?* Praha, 2020. 85 pages. Master thesis (Mgr.). Charles University, Faculty of Social Sciences, Institute of Economic Studies. Supervisor Jaromír Baxa, Ph.D.

## **Abstract**

With the global financial crisis and the ensuing European sovereign debt crisis, current account imbalances have attracted enormous interest as both a cause and an indicator. The question therefore arises as to what drives them. In this master thesis I carry out a one-way fixed effects panel regression for the 28 EU countries for the period 1999-2018, testing thirteen potential drivers of the current account. From my baseline model, fiscal balance, domestic credit to private sector, total age dependency ratio and the output gap are found to be of robust statistical significance.

An additional panel regression was only able to confirm to a small extent the *German view* that current account imbalances, high foreign debt and deviations from the inflation target bear responsibility for macroeconomic instability. In addition, I show that the current account has limited information value, its underlying drivers are difficult to target by economic policy, and that imbalances as such do not present a serious concern. Upper and lower thresholds, as stipulated in the Macroeconomic Imbalance Procedure, are not appropriate. The high level of priority given to current account balances in past crises thus appears unjustified.

## **Keywords**

**Current Account, Fixed Effects, Macroeconomic Imbalance Procedure, Macroeconomic instability, European Monetary Union**

**Length of the thesis: 116 827 characters**

## **Acknowledgement**

I would like to express my gratitude to my supervisor Jaromír Baxa, who readily supported and guided me in every phase of this work.

# Master Thesis Proposal



Institute of Economic Studies – IEPS programme  
Faculty of Social Sciences  
Charles University in Prague

Date: 18.5.2019

<b>Author:</b>	<b>Jacob Mainka</b>	Supervisor:	Prof. Jaromír Baxa, Ph.D.
E-mail:	jacob.mai@live.de	E-mail:	jaromir.baxa@fsv.cuni.cz
Phone:	+42 608251276	Phone:	777 152 097
Specialization:	IEPS	Defense Planned:	September 2020

## Proposed Topic:

**What drives the current account (im)balance in the EU and are they relevant to economic policy?**

Registered in SIS: Yes Date of registration: 24.05.2019

## Topic Characteristics / Research Question(s):

In my master thesis I will analyze the drivers of the current account imbalance within the European Union. In recent years, Germany has been criticized by many parties – such as the European Central Bank, the International Monetary Fund, the OECD and the White House – for its exceptionally high current account surplus, which amongst other things, allegedly hampers the recovery of the EU periphery. Several factors driving the intra-EU imbalances have been pointed out already – for instance high domestic savings rates (particularly in Germany), domestic wage restraints, interest convergence in the EU leading to misuse of cheap credits in the EU periphery or the global economic cycle. However, by today, there is no consensus about which factors are responsible for the current account imbalances. My research will contribute to the existing literature with a new attempt of identifying the crucial drivers and classify the role of factors such as the austerity regime and financial flows.

Furthermore, are huge surpluses and imbalances as detrimental as abovementioned institutions claim or do they possibly just represent the power distribution in the European Union? The argument against (excessive) trade surpluses is usually based upon the problems of deficits in the respective other countries. However, these are not inherently harmful to the economy, as the example of the USA shows, which is running a massive current account deficit for decades. In case, this identity turns out to be largely irrelevant for economic policy it would be also worth considering whether the current target balances should be abandoned. If not, what would be economically reasonable upper limits to them? The master thesis allows me to go beyond a purely empirical paper by including political and politico-economic thoughts about the emergence of current account imbalances, their impact on the EU and different policy implications.

I will use data from the European Commission, the International Monetary Fund, the World Bank and the OECD for the panel regression. Furthermore, several reports - such as the External Sector Report of the IMF – and papers on this topic will be used as the basis for my master thesis.

## Working hypotheses:

1. Current account imbalances within the European Union receive a disproportionate amount of attention for comparatively low significance/meaningfulness.
2. Drivers of CA deficits changed after the crisis.
3. Target balances that are irrelevant and upper limits such as +6% for the current account in the Macroeconomic Imbalance Procedure are unfounded.
4. Current account surpluses are related to power in the European Union

## Methodology:

For the first part about drivers of current account imbalances, in particular for trade surplus countries, I will provide an overview of the existing literature and their outcomes. Subsequently, I will conduct my own panel regression for several crucial EU countries and the EU as a whole for the past 15 years.

## Outline:

1. Introduction
2. Theoretical background and review of existing literature on this topic
3. Methodology
  - a. The model
  - b. Data description
4. Analysis of drivers of current account imbalances in the EU: Regression Analysis.
  - a. Global economic cycle
  - b. Demography
  - c. Real estate boom
  - d. Global value chain
  - e. Austerity regime
  - f. Financial flows
  - g. others
5. Findings: Relevance/Importance of different factors determining current trade balances
6. Alternative explanations for discussion of Germany's (and other country's) surpluses
  - a. Neo-mercantilist views
  - b. Power distribution in the EU
  - c. Other (political explanations)
7. Policy Implications: Are target balances necessary – and what would be an economically reasonable upper limit?
8. Conclusion

## References / Bibliography:

- Aric, Kivanc Halil et al. (2017). Current Account Dynamics of Central European Countries. *European Journal of Economic Studies* 6 (2), p. 78-84. Available at: [http://ejournal2.com/journals\\_n/1504095820.pdf](http://ejournal2.com/journals_n/1504095820.pdf).
- Eichengreen, Barry (2010). Imbalances in the Euro Area. Available at: [https://eml.berkeley.edu/~eichengr/Imbalances\\_Euro\\_Area\\_5-23-11.pdf](https://eml.berkeley.edu/~eichengr/Imbalances_Euro_Area_5-23-11.pdf).
- Grömling, Michael et al. (2016). Der deutsche Leistungsbilanzüberschuss – Fluch oder Segen. *Wirtschaftsdienst* 96 (11), p. 787-805. Available at: <https://archiv.wirtschaftsdienst.eu/jahr/2016/11/der-deutsche-leistungsbilanzueberschuss-fluch-oder-segen/>.
- Harkmann, Kersti and Karsten Staehr (2012). Current Account Balances in Central and Eastern Europe: Heterogeneity, Persistence and Driving Factors. Available at: <http://ies.fsv.cuni.cz/default/file/get/id/20935>.
- IMF. External Sector Reports. Available at: <https://www.imf.org/en/Publications/SPROLLs/External-Sector-Reports#sort=%40imfdate%20descending>.
- Pierluigi, Beatrice and David Sondermann (2018). Macroeconomic imbalances in the euro area: where do we stand? *ECB Occasional Paper Series* 211. Available at: <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op211.en.pdf>.
- Timmer, Yannick (2014). Current Account Dynamics in the Euro Area. CES Working Papers 2, p. 165-191. Available at: <https://www.ceeol.com/search/article-detail?id=201228>.

# Table of Contents

List of Abbreviations.....	X
List of Figures .....	XI
List of Tables.....	XI
1. Introduction.....	1
2. Literature review .....	6
2.1. Variety of countries and panels under research.....	6
2.2. Development of the view on current account imbalances over time – from “good” to “bad” imbalances .....	7
2.3. Model and parameter uncertainty.....	10
2.4. Critique of fundamentals and importance of the current account .....	13
2.5. Doubts about the informative value of current accounts.....	16
3. What does the current account tell us?.....	19
3.1. Theoretical background: The current account.....	19
3.2. Macroeconomic instability .....	22
3.2.1. Model specification .....	23
3.2.2. Results .....	24
3.2.3. Robustness checks .....	26
4. Data and methodology .....	28
4.1. Data sources and description .....	28
4.2. Methodology.....	41
5. Results.....	44
5.1. Main regression .....	44
5.2. Comparisons .....	49
6. Discussion: Are current account (im)balances relevant for economic policy?.....	51
6.1. The European regulatory framework for current accounts.....	51
6.1.1. European fiscal framework.....	51

6.1.2.	Macroeconomic Imbalance Procedure .....	53
6.2.	When and why are (current account) imbalances problematic? .....	56
6.2.1.	Current account deficits .....	56
6.2.2.	Flaws of the EMU and current account surpluses .....	59
6.2.3.	Revisit other critique of relevance of current accounts .....	62
7.	Conclusion .....	65
	References .....	69
	Appendices .....	76
	Appendix A: Additional information on macroeconomic instability panel regression.....	76
	Appendix B: Data sources and description.....	78
	Appendix C: Specification tests for main regression .....	81
	Appendix D: Robustness checks for the main regression .....	82
	Appendix E: MIP scoreboard 2018 .....	85

## List of Abbreviations

BoP .....	Balance of Payments
CA .....	current account
EA.....	euro area
ECB.....	European Central Bank
EIA .....	US Energy Information Administration
EMU .....	European Monetary Union
FA.....	financial account
FDI .....	foreign direct investment
FE .....	fixed effects
FOB .....	free on board
GDP.....	gross domestic product
GFC .....	global financial crisis
GIIPS.....	Greece, Italy, Ireland, Portugal, Spain
HLM effect.....	Harberger-Laursen-Metzler effect
IMF .....	International Monetary Fund
MIP.....	Macroeconomic Imbalance Procedure
NFA.....	net foreign assets
NIIP .....	net international investment position
OLS .....	ordinary least squares
RE.....	random effects
REER.....	real effective exchange rate
RIR .....	real interest rate
ToT .....	terms of trade
ULC.....	unit labor costs

## List of Figures

Figure 1: average pre-GFC CA balance vs. subsequent GDP losses .....	25
--	----

## List of Tables

Table 1: Macroeconomic instability (FE regression) .....	24
Table 2: Summary statistics for current account drivers .....	29
Table 3: Main regression: CA determinants of EU countries 1999-2018 .....	45
Table 4: CA determinants incl. slope dummies (FE regression) .....	48
Table 5: Summary statistics for instability drivers .....	76
Table 6: Specification tests: Instability regression .....	76
Table 7: Fixed effects regression: macroeconomic instability (robustness) .....	77
Table 8: Data sources and description .....	78
Table 9: Comparison of direction of effect for CA determinants (theory vs. empirics) .....	80
Table 10: Specification tests: Current account driver regression .....	81
Table 11: Robustness check with 3-5-year averages .....	82
Table 12: CA determinants of Euro area countries vs. non-Euro area countries .....	83
Table 13: Pre-GFC vs. post-GFC current account determinants .....	84
Table 14: MIP scoreboard 2018 .....	85

# 1. Introduction

The widening intra-European current account (CA) balances, specifically since the introduction of the euro in 1999, have been blamed for the course of the global financial crisis 2008 and the subsequent European sovereign debt crisis from 2010 by politicians and a large part of the academic community. According to them, a bank-intermediated large flow of borrowed capital led to a demand boom in the periphery, which, however, concentrated on non-tradable sectors such as construction and consumption (Atoyan et al. 2013: 3). In addition, public debt increased, which then served as a target for speculators (Lapavitsas et al. 2010: 325). This, and the resurgent criticism of German trade surpluses in recent years by major institutions such as the International Monetary Fund (IMF), the European Central Bank (ECB), and the U.S. Treasury (Kollmann et al. 2014: 2), ensures that interest in excessive current account balances remains high.

The immediate reaction of the European institutions to the sovereign debt crisis were based on the idea that differences in competitiveness have been largely responsible for the build-up of imbalances. The response included tough austerity measures for the so-called deficit countries and the current account was suddenly assigned an increasingly important role in the assessment of financial stability. The Macroeconomic Imbalance Procedure (MIP) as a formalization of the new focus was introduced in order to detect and prevent imbalances in advance – and thus incorporated asymmetric thresholds.

Neither in the media nor in the literature exists a consensus on the drivers of current account imbalances, which is expressed in a variety of policy recommendations - differing mainly in which side should adjust. Nevertheless, there is a standard set of determinants established by a broad range of scholars. I draw on these when I examine potential drivers

of the current account balance myself with the help of a panel regression in the main part of my work. In this context, I am also interested in what factors contributed to the build-up of imbalances before the global financial crisis (GFC) and whether they have changed since then. However, even assuming that they can be correctly identified, the question remains to what extent the imbalances constitute a problem for the economic and financial stability of the European Union. According to the *German view*, deficits in the peripheral European countries are at the root of the crises. In this case a correction would be urgently necessary. In the meantime, however, much criticism has been voiced regarding the meaningfulness of this indicator which leads me to the second part of my research question: Are current account imbalances relevant for economic policy? I will explore this question both empirically - by means of another auxiliary panel regression - and theoretically. In this context I will also comment on target balances. Are they justified and do they achieve their set goals?

Two panel regressions form the main contribution of my master thesis. The first examines the influence of the current account, the net international investment position and the deviation from the inflation target on macroeconomic (in)stability - proxied by the volatility of the gross domestic product (GDP). I use a country-specific fixed effects (FE) model, as for the main regression which analyzes a total of thirteen variables and their impact on the current account balances of all the 28 countries of the EU together over the period of 1999-2018. Fiscal balance, trade openness, the real effective exchange rate (REER), domestic credit to private sector, total age dependency ratio, net international investment position (NIIP), the output gap and the real interest rate (RIR) serve as main factors of interest, complemented by the unemployment rate, foreign direct investment (FDI), terms of trade (ToT), oil price, a wage-productivity-growth differential. Applying

a specification with 3-year and 5-year averaged data intends to filter out cyclical influences and temporary shocks.

My results contribute to the subject by updating previous research with new data. Most of the literature emerged in the run-up and during the crisis years, concentrating on specific countries or the eurozone in particular. My panel includes the whole European Union – whose member states are all examined to the same extent for this 20-year period, regardless of their date of accession. It provides broad and robust determinants of current account imbalances thanks to the established fixed effects model without the sole focus on explicit factors and with a diminished weight on the crisis years. Furthermore, the scope of my studies enables me to go beyond pure econometric analysis and to situate the findings in the political and economic context. I can then present a more complete assessment of the meaningfulness and relevance of current account (im)balances for economic policy.

The thesis is structured as follows. In the subsequent second section I will provide a broad overview of empirical research on current account imbalances since the early beginnings over twenty years ago. A wide range of economists and researchers have already touched or addressed the research question of my work, with varying methods and objectives. The literature review aims at pointing out several trends over time –in the panel of interest, the choice of fundamentals and the respective results. Significant shifts in the perception of current account imbalances and the development of different strands in literature will become apparent. Additionally, it contains a summary of possible relevant approaches which attack the reliance on CA imbalances as an indicator of financial stability.

In the third chapter, the theoretical foundations of the current account as part of the balance of payments (BoP) are first outlined briefly. The savings-investment gap and the

trade balance represent two important approaches to its understanding which helps to illustrate why the current account is generally considered integral in evaluating economic activity and performance. In a subchapter I look at the link to macroeconomic instability - and the usual channels through which it can adversely affect a country's economic development. In a fixed effects panel regression, I put the *German View* to the test and find that all three independent variables - the lagged current account, the lagged NIIP and the deviation from the ECB's inflation target - have a significant negative effect on GDP volatility. However, a robustness check which excluded the four outliers Greece and the three Baltic states, limited the conclusiveness of the result.

The fourth section describes the data and methodology for my model. Based on the theoretical background, I first present the thirteen potential drivers selected - including a justification, their economic rationale and expected signs. In the following, I will specify my model. A country-specific fixed effects model with heteroscedastic-consistent standard errors with annual data from 1999-2018 is utilized. Several robustness checks are applied.

The fifth section reports the results of the panel regression, including a subsection with comparisons between the drivers of members of the European Monetary Union (EMU) and non-members as well as before and after the global financial crisis. Fiscal balance, domestic credit to private sector to GDP ratio, total age dependency ratio and the output gap were found to clearly act as the main driving forces of the current account. With the extended set of determinants, terms of trade, foreign direct investment and the self-calculated wage-productivity-growth differential can be added. The determinants of the current account changed considerably after the GFC, and also eurozone membership appears to wield some influence.

The sixth section is concerned with the question whether current account (im)balances receive the appropriate amount of attention in the EU. A brief summary of the most relevant pieces of legislation on current accounts covers the European Fiscal Framework and particularly the MIP. It turns out that the thresholds laid down in it lack economic foundation. The chapter also shows why and when CA imbalances can cause problems. While “sudden stops”<sup>1</sup> represent the severest threat to an economy, other domestic and external macro implications may be highly undesirable too. Generally, current account deficits and surpluses pose a risk when excessive and persistent - which is difficult to establish due to the unique characteristics and circumstances of each country. Surpluses create a liability owing to the special institutional set-up of the European Union and in particular to the flaws of the EMU. Ultimately, I will return to some criticism of the informative value of current account itself such as the limitation due to the CA as a net concept and shortcomings in its calculation.

Finally, I come to my conclusion wherein the drivers of the current account identified by me turn out to be largely consistent with previous studies. From my analysis, the fiscal balance, domestic credit to private sector, the output gap and varying growth of wage and productivity growth are largely responsible for the build-up of imbalances in the EU. However, as these are country-specific, causality is often not assured and managing them through economic policy remains a challenge. The contribution of current accounts to macroeconomic instability is furthermore modest. They continue to serve as a good indicator of underlying vulnerabilities, but the level of attention received seems not warranted.

---

<sup>1</sup> A "sudden stop" is an abrupt stop of net capital inflows and particularly disruptive for deficit countries. I will return to this in more detail in the discussion chapter.

## **2. Literature review**

Awareness of the causes and drivers of current account imbalances is closely linked to crises, in particular the global economic crisis and the subsequent European sovereign debt crisis. However, the high deficits in the so-called "peripheral countries" of the European Union and the high surpluses of Central and Northern European countries were subject of research already before.

### ***2.1. Variety of countries and panels under research***

Prior to the global financial crisis the literature on current account imbalances did not deal primarily with the EU, but with various panels. Some of the early seminal papers concentrated on developing countries (Calderón et al. 1999) while others analyzed the drivers of current accounts for developed or a mixed group of countries (Debelle & Faruquee 1996; Chinn & Prasad 2003). Both Chinn & Prasad (2003) and Calderón et al. (1999) contributed by including developing countries and making use of a wider range of specifications, taking Debelle & Faruquee's (1996) analysis as a starting point. Subsequently, interest in global imbalances and extensive panels slowly waned with the emerging importance of the European Monetary Union and its implications for financial stability – with notable exceptions such as Das (2016). He criticized this shift and attempted to address problems of past literature by including 106 developed, emerging and developing countries over a period of 1980-2011 in his analysis, introducing several new potential determinants. His findings suggest that the statistical significance, direction of the sign and impact of drivers of current accounts can differ strongly, depending on the stage of development. Today, the eurozone remains the most heavily examined region in literature on current accounts. During the beginning of the euro crisis the majority of scholars focused on deficits and "sudden stops" but soon after Germany caught up due to

the international critique of its exceptional CA surplus. It has been singled out as a subject of research since then (e.g. Kollmann et al. 2014; Gros & Busse 2013; Grömling et al. 2016; Gnath et al. 2018; Micossi et al. 2018; European Commission 2019b).

## ***2.2. Development of the view on current account imbalances over time – from “good” to “bad” imbalances***

In the past twenty years a remarkable change in the perception of current account imbalances took place – away from the benevolent view on an alleged “catching-up” process to blaming them for the European financial and economic crises as well as their magnitude. The former view has been put forward prominently by Blanchard & Giavazzi (2002). It was argued that the observed widening intra-EU imbalances represent a sign for a “catching-up” process of the deficit countries – explained by deeper capital market integration. The line of argumentation follows the neoclassical theory of growth according to which capital accumulation - or factor accumulation in general – in capital-scarce countries leads to greater productivity and thus faster economic growth than in more developed countries. As a consequence, a capital flow to the less developed countries due to better investment opportunities and higher expected returns takes place. In retrospect, Eichengreen (2010) reviewed the idea of “good imbalances” - after Greece just has been bailed out the first time - and calls it “naïve”. His widely acknowledged essay on intra-Euro-area imbalances falls into a period when new wide interest for this issue including a new assessment of the implications was sparked. In the following years, research on drivers of current accounts peaked, aiming at finding a solution for the ongoing sovereign debt crisis. Since then, imbalances were generally not considered sustainable anymore (Schoder et al. 2011). A new chapter has been opened, coined the

“fourth generation of global imbalances” (Belke & Dreger 2013, cited in Gossé & Serranito 2014: 452).<sup>2</sup>

Current account imbalances suddenly enjoyed high policy relevance. As a result, two strands with explicit (policy) recommendations emerged in literature. The new mainstream adopted by most European institutions explained the widening CA balances in the European Union by differences in price competitiveness (Belke & Dreger 2013: 13–14). According to the so-called *German View* deficit countries are required to adjust on both the supply – by reducing unit labor costs (ULC) - and demand side – by cutting spending (Kollmann et al. 2014).

The *German View* looks back on a longer history and its macroeconomic view constitutes a German peculiarity. It is broadly consistent with the Expansionary Fiscal Contraction hypothesis, where large fiscal cuts across the expectation channel and a reduction in crowding out ultimately lead to economic expansion.<sup>3</sup> Best known are the examples of Ireland and Denmark, each of which achieved this trajectory in the 1980s (see Giavazzi & Pagano 1990). The German approach firstly builds on Walter Eucken's prevailing economic model of ordoliberalism, according to which ideal macroeconomics consists of three elements: a balanced budget at (almost) all times, price stability (with an asymmetric preference for deflation) and price flexibility (Wolf 2016). This was manifested in the Stability and Growth Law of 1967 (“*Gesetz zur Förderung der Stabilität und des Wachstums der Wirtschaft*”), which to this day defines the four key economic policy objectives in Germany - price stability, high employment, steady and reasonable

---

<sup>2</sup> According to them, the first generation emerged between the U.S. and Japan in the early 1980s, the second as a result of the Asian crisis between the U.S. and East Asian countries and China, and the third generation since 2003 following the rising CA surpluses of oil-exporting countries.

<sup>3</sup> However, its empirical relevance remains controversial.

sustainable growth, and external balance (Bibow 2017: 15–16). Second, the negative experience and memory of hyperinflation in Germany in the beginning of 1920s justifies its strong focus on price stability and the past obligation to pay reparations after the World Wars does the same for trade surpluses. The German narrative made it into the European Exchange Rate Mechanism and later into the monetary union. Strict conditions for fiscal spending and an independent central bank with the goal of price stability were introduced. Due to fixed exchange rates, current account adjustments between countries must be achieved by enhancing competitiveness. For deficit countries only, "internal devaluation" remains (Bibow 2017: 31). At the same time, transfers and inflation for debt redemption are excluded, since from the German perspective the blame for the crisis lies with the demand-driven economic models of the crisis countries. Representative of the *German view* are the annual reports of the German Council of Economic Experts, founded in 1963, which in the course of the euro crisis admonished stability and austerity and sharply criticized the ECB's loose monetary policy.

This approach attracted much criticism, which stressed possible other factors, such as domestic demand (Comunale & Hessel 2014) and financial drivers (Gehring 2015). The main point of contention constituted the issue which countries should adjust and how. The alternative, second major strand in literature at the time therefore assigned surplus countries in the Eurozone a crucial role in balancing current account imbalances (Brancaccio 2012; Gossé & Serranito 2014). Brancaccio (2012) found that the gap between unit labor costs seems to be indeed one of the determinants of trade imbalances - performing a cross-country ordinary least squares (OLS) regression of ten Eurozone countries over the period of 1999-2010. He, however, expresses serious concern about the shortage of effective demand, resulting from austerity and one-sided adjustment

measures implemented. Later, Fuller (2018) deems adjustment of the periphery's debt-fueled growth model alone highly problematic, and demands remodeling towards a holistic EMU growth model.

Disagreement on those questions and effective policy recommendation stems from the uncertainty whether imbalances are “excessive” and whether they correct themselves. Although the former issue did not experience much empirical attention, the intra-European imbalances were widely seen to have partially caused and at least aggravated the economic and financial crisis in the EU. Gossé & Serranito (2014) studied the long-run determinants of CA balances in 21 OECD countries over the period of 1974-2009. Aside from searching for significant drivers they also compared their structural level to the observed ones in order to determine whether countries are off their long-term equilibrium. Their findings suggest that - since the creation of the euro - the actual current account balances of Finland, Austria, Netherlands and Germany diverged significantly from their structural level while the “periphery” – except for Spain and Greece – meets it considerably better. Literature on self-adjustment of current account imbalances showed most interest in the EMU and the impact of a single currency on this process (e.g. Brissimis et al. 2013; Schoder et al. 2011; Fuller 2018). A comparatively wide consensus holds that the creation of the common currency contributed to an increase in CA imbalances combined with a missing or at least moderately longer adjustment process.

### ***2.3. Model and parameter uncertainty***

A wide range of econometric techniques have been applied to detect the determinants of current accounts. An important factor is the nature of the panel. (Dynamic) fixed effects models have been used both in earlier work - e.g. by Debelle & Faruquee (1996) or Herwartz & Siedenburg (2007) – until today (e.g. Brissimis et al. 2013; Schnabl &

Wollmershäuser 2013; Ehmer 2014; Gehring 2015). Derived results are generally robust in the case of a largely homogeneous panel. For broad, heterogeneous groups of countries - including developed, emerging and developing economies - a pooled OLS model is commonly utilized (e.g. Erauskin 2015; Ca'Zorzi et al. 2012; Chinn & Prasad 2003). However, (vector) error correction models are becoming increasingly popular due to their approach properties that allows them to deal with non-stationarity and co-integration in a dynamic set-up (e.g. Belke & Dreger 2013; Comunale & Hessel 2014; Gossé & Serranito 2014; Unger 2017).

Alongside the choice of the appropriate econometric method, there is strong model and parameter uncertainty to which Ca'Zorzi et al. (2012) dedicated a widely cited paper. They chose fourteen potentially significant medium-term determinants of current account deficits most often used in past literature, from which thousands of models could be created - all with very different outcomes. It should be noted, however, that they focused on global imbalances, and had an extensive panel of 77 countries. Several criteria were applied to filter out the model with the best fit – using a Bayesian Averaging Model – resulting in the choice of a simple pooled OLS estimator. Eventually, their results confirmed previous research. Additionally, they found that the CA positions of major economies such as the US, UK, Japan and China were not in line with their fundamentals. This article clearly shows that the selection of fundamentals, their number and combination can be decisive for the results. Furthermore, the importance of drivers of current accounts may vary depending on the country, region or level of development (Chinn & Prasad 2003; Das 2016). In the following paragraph, I will shortly present the most popular determinants in literature. My primary focus lies on investigated drivers of

current account imbalances in the EU and the Eurozone pertinent to this study, given their particular geographic and time context (Gehring 2015).

By now, a standard set of determinants of current account imbalances exists, called fundamentals. Concerning high-income countries, they include the fiscal deficit, a competitiveness effect (proxied usually by terms of trade or the real effective exchange rate), the real interest rate, demographic variables, initial level of net foreign assets (NFA), real GDP growth, openness to trade and a proxy for financial development or deepening. Because of differences between the econometric techniques used, the choice and scope of the countries studied, the determinants and periods analyzed, making any generally valid statements is hardly possible. Another important reason for this lies in the time horizon of the potential drivers. Several papers distinguished between a short-, medium-, and long-term effect on the current account (Calderón et al. 1999; Gossé & Serranito 2014; Ehmer 2014) or focused specifically on one of them (Chinn & Prasad 2003; Ca'Zorzi et al. 2012; Brissimis et al. 2013). In fact, the main result of Gossé & Serranito (2014) is the difference between short-run and long-run determinants. Their findings suggest a strong link of the CA of 21 OECD countries over the period of 1974-2009 with a competitiveness effect, the oil price and the productivity gap in the short-run. In the long-run, the fiscal balance and the level of financial market development seems crucial.

Despite those difficulties in generalizing statistically significant determinants established in past literature, some similarities can be derived. The initial stock of net foreign assets, fiscal balance, dependency ratios, the REER, financial deepening (proxied by domestic credit to the private sector) and the domestic output gap assume to have an impact on the CA in industrial countries and the European Union. The importance of real GDP growth,

real interest rates, relative income and oil prices remains to be more ambiguous. Results for developing and emerging economies suggest that the government budget, NFA, relative income (squared), financial deepening, trade openness and other possible factors such as the growth rate of industrialized countries (Calderón et al. 1999) matter. Findings regarding the stages-of-development hypothesis which implies an improvement in the current account for developing/emerging economies by convergence to the output level of industrial countries are inconclusive. Calderón et al. (1999) results support it while Chinn & Prasad (2003) obtain limited evidence for it only.

#### ***2.4. Critique of fundamentals and importance of the current account***

After initial research concentrated on finding and exploring the so-called fundamentals, an increasing number of contributions criticizing this approach and its results as either insufficient or even flawed materialized. In the following I will therefore briefly discuss various novel efforts that have addressed the issue and problems of determining the drivers of current account imbalances.

As the mainstream approach centered around determinants related to the behavior of the household sector, the role of the corporate sector was highlighted by Behringer & van Treeck (2019). According to them, the usual assumption that the private households can pierce through the “corporate veil” fails. In their analysis of 25 countries worldwide - with a special focus on G7 plus China - they find that corporate sector saving is an important driver of macroeconomic trends and that corporate net lending has been highly conducive to the build-up of global current account imbalances – especially in surplus economies. Even before that, Brissimis et al. (2013) questioned the predominant focus on the public sector at the time. They analyzed the drivers in seventeen euro countries already earlier and their results suggest a considerably more important role of the private sector

as a driving force for both large CA deficits and surpluses. In their model, price competitiveness is not relevant for explaining long-run current account developments.

Unger (2017) too stresses the relevance of financial flows – instead of the trade balance - for explaining diverging CA imbalances leading to or aggravating the euro crisis. While changes in competitiveness certainly play a role in the accumulation of current accounts, his newly introduced credit push and pull factors turn out to be all statistically significant for deficit countries. Comunale & Hessel (2014) came to a comparable conclusion with a similar panel and time period. Differences in domestic demand occur to be more important than usually realized. Fluctuations at the frequency of the financial cycle might be more suitable to account for the trade balance than does the regular business cycle. Although not performing a regression, Fuller (2018) provides an original contribution to the discussion on drivers of macroeconomic imbalances. His argument challenges the usual assumption of current accounts “clearing first”. According to him, the possibility of a financial product market having its own dynamics gets ignored. Macroeconomic imbalances emerge in part from the heterogeneous capacity to generate assets across the world. Also, shifting demand conditions for financial products can, in fact, act as a driver of the current account (Fuller 2018: 180).

Other alternative approaches addressed the shortcomings of the fundamentals which almost exclusively work through the savings and investment channels. The paper of Gehringer (2015) gives a good summary of the developments of the alternative second strand at the time. She found the standard set of CA determinants to be significant in the EU but included domestic demand and consumption. She tested – and confirmed - her hypothesis that dynamics of consumption and the particular use of borrowed resources matter for the identification of “good” and “bad” imbalances. The findings are based on

an analysis of the disparities between economic sectors in terms of their contributions to the productivity and growth of an economy.

In a similar but more comprehensive manner, Ehmer (2014) adds a new key variable – economic structure - to the test, conducting an estimation of fixed effects and pooled OLS for 18 eurozone members in the period of 1980-2013. His paper is motivated by his critique of the policy response during the euro crisis which required only current account deficit countries to “internally devalue” - ignoring the differences in economic structure within the EU. The correlation between the CA balance and relative size of the industry sector constitutes the main subject of interest in the paper. Ehmer’s (2014) findings indicate that countries with a larger sector for tradables are more likely to exhibit CA surpluses. The economic structure – and particularly the export capacity – of economies are statistically significant and positive in all his specifications. However, he qualifies his result by admitting that a reverse causality could take place and by stressing the importance of the traditional drivers.

In other instances, specific commonly used determinants of CA imbalances have been directly addressed. Schnabl & Wollmershäuser’s (2013) analysis revolves around diverging fiscal and monetary policy stances in 15 Western European countries for the period of 1973-2011 and their influence on the current account. They extend the popular driver or concept of fiscal policy, proxying it with both net government lending in % of GDP and government expenditure in % of GDP. Simultaneously, the accompanying monetary policy stance is taken into account. Their findings point to the value of the policy mix. Diverging fiscal policy stances have a significant impact on macroeconomic imbalances, especially given expansionary monetary policy. Furthermore, as one of very few contributions to this topic, Schnabl & Wollmershäuser (2013) consider potential

external determinants of EU countries' current account balances. They find that in particular the Northern and Central European economies are sensitive to the policy stances of the United States of America.

Demographic variables almost continuously yield statistically significant – and also relatively big – coefficients. Graff et al. (2012) developed a new framework to measure the demographic effects on the current account balance which now accounts for a general equilibrium worldwide and the relative size and openness of countries. They conclude that - unlike in the widely used conventional framework - dependency ratios do not have meaningful influence on the current account. The main goal of their paper, however, is to find a model being able to deal with a highly heterogenous panel which is why it is less relevant for my purpose.

### ***2.5. Doubts about the informative value of current accounts***

Finally, a number of studies in recent years have tried to highlight the limits of the explanatory power of current accounts as a net concept. Obstfeld (2012) explores the question whether CA imbalances in today's world with significantly deeper global financial markets - compared to the recent past – can still provide meaningful interpretations. For this purpose, he summarizes well-known arguments which maintain that CA imbalances are either inherently self-correcting or of limited relevance. They are based on assumption of complete markets, “consenting adults” or stress the explanatory power of gross flows and positions over the CA net flows. Despite the rejection of the very same, Obstfeld concludes that the observation of current account imbalances remains policy relevant as they can serve as a symptom and changes may have strong macro implications. Borio & Disyatat (2015) extend on Obstfeld's (2012) work. They develop a simple, highly stylized general equilibrium model to show that CAs do not provide

sufficient information on financing patterns, the volume and direction of capital flows and the risk distribution among countries. Although, like in Obstfeld (2012), great importance is attached to current accounts, they seek to identify common flaws or inaccuracies. The frequent equation of financing and saving - which leads to current accounts being attributed a role in the assessment of financial stability that it cannot fulfil – is central for them. Gross flows serve this purpose considerably better. Lane (2013) provides an insight into the patterns of international capital flows in the euro area (EA), in particular their role prior to and following the global financial crisis. Given the strong increase in gross capital flows - within the euro area - but also in the global context, the composition of underlying gross flows and positions needs to be included in the financial stability assessment. In this, he echoes before-mentioned contributions. The mix of debt and equity in foreign assets and foreign liabilities, the maturity structure and currency composition of debt is substantive. This is notably the case in the eurozone, with its deep financial markets - and hampered automatic adjustment mechanisms thanks to the common currency. Lane (2013) therefore demands a stronger surveillance of both net and gross capital flows. Additionally, he mentions the issue of lacking data on capital flows and international investment positions as well as difficulties of tracking them due to the residency principle still applied in national accounting. Same concerns were raised by Avdjiev et al. (2018) whose primary issues are the consequences of globalization, with which traditional national accounting cannot keep up. Because of the significant increase in primary income flows and the potential measurement errors due to certain practices of multinational companies, they warn against placing the spotlight on the current account. Obstfeld (2012) discusses massive valuation changes on external assets and liabilities that have driven dynamics of NIIP - alongside with expanding volume of financial flows.

Change in NIIP (just like other capital gains on wealth) are not recorded in the national accounts.

In summary, it can be seen that over the last twenty years, current account imbalances have received increasing attention from a wide variety of parties. In the same way, it becomes evident that despite extensive research - especially during the euro crisis - there is a lack of broad consensus on the exact determinants and their actual impact on current accounts. In addition, their informative value has been repeatedly questioned - adding to the diversity in policy recommendations. My thesis aims to contribute to existing literature in the following way. Unlike the majority of published studies on current account imbalances, which are mostly limited to eurozone countries, I deal with the whole European Union. The 1999-2018 period that I am looking at also constitutes an update, with the years leading up to the crisis and the immediate crisis years losing weight in the regression. Using a fixed effects model allows me to perform a general analysis of the drivers of European current accounts, with robust results, and without focusing my study on one specific factor. In order to be able to discuss the relevance of current accounts as well, I am therefore carrying out an auxiliary regression intended to test the *German view* on imbalances. The result, along with the determination of the drivers of current account imbalances - and taking into account the points of criticism mentioned - will moreover permit me to form my own assessment of the relevance of CA imbalances in the European Union.

### **3. What does the current account tell us?**

#### **3.1. Theoretical background: The current account**

Before I go into the choice of my determinants and give a rationale for them, I consider it helpful to have a brief review of the concept of national accounting. The current account is part of the balance of payments which is a statistical summary of all transactions of an economy with the rest of the world over a given period. For the purpose of complete recording, a double-entry accounting system is used, so that in theory all transactions are registered twice - once as credit and once as debit (Eurostat 2019). The BoP is divided into three categories: the current account, the capital account and the financial account (FA). Since it represents an identity, the former always needs to balance the capital and financial account.<sup>4</sup> For example, if a resident of an economy imports goods from a non-resident and spends foreign currency on them, this is recorded as a debit in the CA and simultaneously a decrease in financial claims vis-à-vis non-residents – a “net acquisition of assets” in the FA. Residents refer to individuals, companies, the government and other institutions with the country being the center of economic interest – regardless of the nationality. Non-residents comprise the rest of the world or the other countries with which transactions are carried out.

The current account is composed of the flow of goods and services, the primary income and secondary income. Net primary income consists primarily of cross-border compensation of employees and income from investments, such as interest and dividend payments as well as taxes and subsidies. Net secondary income includes regular unreciprocated cross-border payments and receipts – for instance remittances of foreign

---

<sup>4</sup> From a theoretical perspective. In fact, slight deviations may occur due to statistical inaccuracies and measurement errors. This item is called "net errors and omissions".

workers to their home countries, transfers between governments or development aid. The capital account covers all capital transfers, including debt forgiveness, one-off guarantees or capital taxes, as well as the acquisition and disposal of non-produces, non-financial assets like land and subsoil assets or patents, copyrights and trademarks. Finally, the financial account documents all transactions linked to changes of ownership in the foreign financial assets and liabilities of an economy. The items are grouped into five functional categories: direct investment, portfolio investment, financial derivatives and employee stock options, other investments and official reserve assets (Eurostat 2019).

In general, there are two ways of defining the current account. These are derived from a transformation of the national income identity which has the following form:

$$Y = C + I + G + (EX - IM) \quad (1)$$

In words: Gross domestic product (GDP) = consumption + investment + government spending + (exports – imports). With the inclusion of taxes (T) it can be expressed as follows:

$$(Y - T - C) + (T - G) - I = EX - IM \quad (2)$$

With  $(Y - T - C)$  being savings of the private sector and  $(T - G)$  being savings of government they can be summed up as national savings (S) – which provides us with the final equation 3:

$$S - I = EX - IM \quad (3)$$

It becomes thus evident that the current account can be understood, on the one hand, as the difference between domestic savings and investments or as the difference between exports and imports of goods and services. The predominant approach relies on the intertemporal model, which focuses on the savings-investment gap. According to this

theory, the current account can be seen as a function of present and permanent income, consumption and public spending. Households, firms and the government make utility maximizing decisions with an eye to the future. If a country maintains a CA surplus, this means that the sum of changes in tangible assets and changes in net financial assets exceeds the investments (Devadas & Loayza 2018: 1). For economic agents whose current income is higher than their permanent income, there arises a motivation to invest it profitably abroad in order to flatten consumption over time (Işık et al. 2017: 107). In the case of a current account deficit, more is invested (or consumed) in the economy than savings are available, which can be offset by the inflow of foreign capital.

#### *Benefits and use of the current account*

We now know that the current account represents one side of the balance of payments, which statistically records the economic exchange of residents of one country with those of another country. This recording of the transactions, their composition and changes is largely considered to fulfil an integral role in the evaluation of the economic activity or its performance. It should be able to help assess macroeconomic stability, as it allegedly provides information on the competitiveness of the domestic economy, for example by means of the balance of trade. Trade deficits are therefore often associated with uncompetitive economies. In the event of an import excess, the size of the CA imbalance should also indicate how much capital needs to be sourced from abroad - and thus give some indication of the sustainability of this situation (Işık et al. 2017: 108). According to the intertemporal model, current accounts also reveal much about the investment, consumption and savings decisions of economic agents which can be of great value in shaping economic policy.

### **3.2. Macroeconomic instability**

Macroeconomic instability describes a deviation of macroeconomic indicators such as GDP, unemployment, consumption or inflation rates from their equilibrium. GDP and departures from its trend growth path have a special status, as it reflects many of the other factors. These, however, are quite normal and are also expressed by the business cycles. In principle, there exists a variety of potential sources of instability. First, exogenous shocks such as sharp and large stops in capital inflows - I will discuss "sudden stops" in more detail in a later chapter - as well as imports or exports due to major changes in the terms of trade. But domestic shocks caused by self-inflicted inappropriate and unpredictable fiscal and monetary policies, which are often a problem of developing countries in particular, can also lead to high economic uncertainty. How problematic this becomes varies depending on such factors as the depth of financial markets to diversify macroeconomic risks and stabilization policies (Loayza et al. 2007: 346–347). High GDP volatility is generally considered to be detrimental to the functioning of the economy and economic growth for a variety of reasons.

First and foremost, instability creates uncertainty at numerous levels and sectors. In capital markets, for example, according to the theory of real options, high volatility can delay the process of accumulation of capital and economic development (Dapena 2006: 47). In countries with a high degree of openness of the capital account, adverse shocks - which are to a large extent responsible for GDP fluctuations - can lead to caution and hesitation among international investors. Credit rationing and further contractions of demand can ultimately have a highly disruptive effect on the real economy (Easterly et al. 2000: 7–8). In addition, welfare costs arise when deviating from the smooth consumption path that is optimal for naturally risk-averse people (Loayza et al. 2007:

344). In addition to the economic and social consequences, it can have distorting implications for the political and policy-related spheres.

### 3.2.1. *Model specification*

In order to be able to give an assessment of the relevance of current account imbalances and especially deficits on macroeconomic instability, I have - in addition to the comprehensive regression on current account drivers - run a supplementary regression of the following form:

$$GDP\ volatility_{it} = CA_{it-1}\beta_1 + NIIP_{it-1}\beta_2 + (r_{it} - r^*)\beta_3 + \delta_i + \varepsilon_{it} \quad (4)$$

As dependent variable I have chosen GDP volatility - calculated as standard deviation of GDP growth of non-overlapping 3-year and 5-year periods.<sup>5</sup> The selection of tested variables rests on the *German view*, for which the summary statistics can be found in table 5 in appendix A. It generally holds negative current account balances - proxied by the lagged current account balance ( $\beta_1$ ) -, high foreign debt - proxied by the lagged net international investment position ( $\beta_2$ ) - and excessive inflation or deflation - proxied by the deviation of inflation from the ECB's declared inflation target of 2% ( $\beta_3$ ) - responsible for macroeconomic crises. Country-specific effects are denoted as  $\delta_i$  and the error term as  $\varepsilon_{it}$ .

I use the first lags for the explanatory variables CA and NIIP, as I am interested in how GDP reacts to these positions in the previous period. In addition, an unstable economic background can also affect the current account and the closely related NIIP - for example,

---

<sup>5</sup> In the literature there is a whole range of proxies, such as inflation, budget and trade deficit, unemployment rate or even the calculation of an entire index. However, simple GDP volatility serves my purpose.

due to a deteriorating investment climate. In this way, the simple instrumentation by means of first lags helps to deal with potential endogeneity.

### 3.2.2. Results

The results of a series of specification tests, which are summarized in table 6 in the appendix A, render the fixed effects model with individual effects consistent. I report heteroscedastic-robust standard errors - following Arellano (1987) - in the brackets.<sup>6</sup>

Table 1: Macroeconomic instability (FE regression)

<b>Determinants of macroeconomic instability</b>				
<i>Dependent variable:</i>				
<i>GDP volatility</i>				
	Full sample		excl. GR, Baltics	
	3-year averages	5-year averages	3-year averages	5-year averages
	(1)	(2)	(3)	(4)
CA <sub>t-1</sub>	-0.257*** (0.074)	-0.303*** (0.078)	-0.084* (0.051)	-0.099* (0.051)
NIIP <sub>t-1</sub>	-0.032*** (0.007)	-0.030** (0.013)	-0.021*** (0.006)	-0.022 (0.014)
Inflation deviation	0.161* (0.098)	0.294** (0.117)	0.112 (0.129)	0.320** (0.162)
Observations	130	68	109	58
R <sup>2</sup>	0.306	0.445	0.111	0.181
Adjusted R <sup>2</sup>	0.096	-0.006	-0.171	-0.506

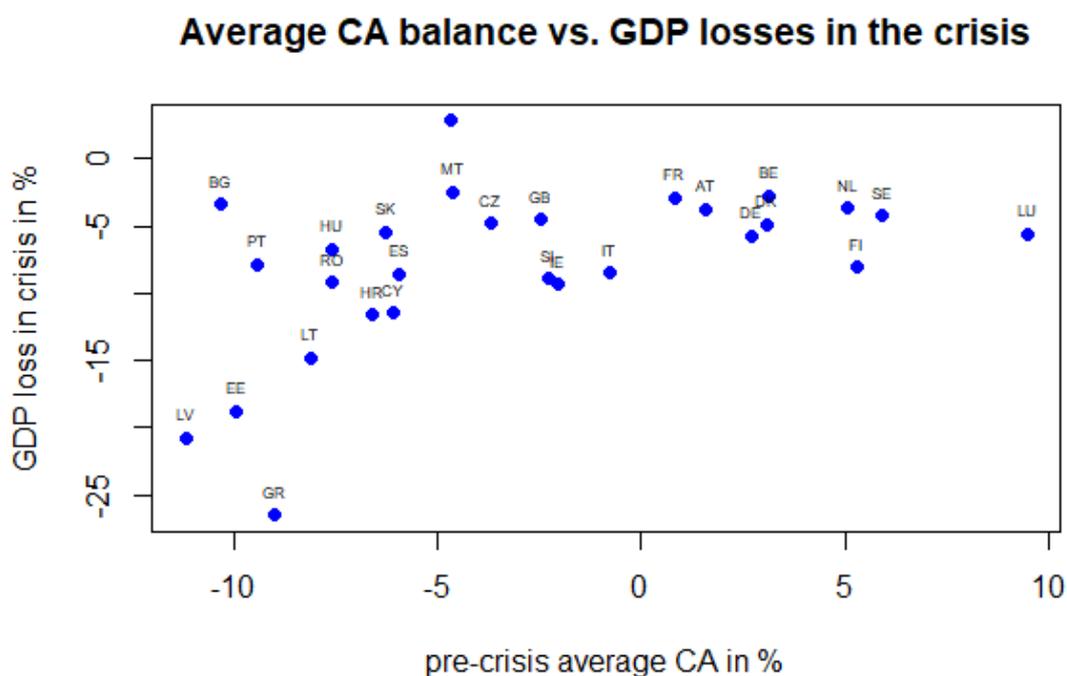
*Note:* \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

The results of my regression confirm the negative effect of foreign debt, current account deficits and to a certain degree also deviation from the inflation target on steady GDP growth, which is readily propagated by Germany - and by the other so-called “core”

<sup>6</sup> The procedure is analogous to that for the main regression, which is why I would like to refer to the methodology section.

countries<sup>7</sup>. An improvement of the CA as well as the NIIP leads to a significant reduction in volatility. Furthermore, an inflation rate above the target of 2% - statistically significant at 10% and 5% levels - increases macroeconomic instability clearly, given the mean of four. The significance of these determinants is limited however, when looking at the low adjusted R<sup>2</sup> value of 0.096 - and even -0.006 for 5-year periods.

Figure 1: average pre-GFC CA balance vs. subsequent GDP losses



In addition to that, Figure 1 serves the purpose of taking a better look at the potential link between current account deficits and the impact on GDP. The Y-axis shows the average CA balances for each EU country in the ten years before the global economic crisis (1999-

<sup>7</sup> I use this term to refer to Austria, Belgium, Germany, Denmark, Finland, France, United Kingdom, Luxembourg, Netherlands and Sweden. The “periphery” covers Cyprus, Spain, Greece, Italy, Portugal as well as Ireland.

2008), the X-axis shows the percentage GDP loss<sup>8</sup> - calculated as the percentage difference between the highest and lowest GDP values from 2008.<sup>9</sup>

The scatter plot shows a positive correlation: the better the average CA balance was before the 2008 crisis, the less GDP losses were experienced.

### **3.2.3. Robustness checks**

Figure 1, however, also reveals that this relationship between the pre-crisis average current account and the collapse of GDP is much less pronounced when the Baltic States and Greece are excluded. Countries such as Bulgaria or Portugal, despite having very high average current account deficits before the crisis, showed a similar drop in GDP - of around 4-7% - as did the majority of countries with surpluses. This indicates that the Baltic States and Greece exerted a significant influence on the outcome of the regression which is why I perform a robustness check by excluding the outliers this time. The result can be also found in table 1.

By doing that, the current account loses much of its statistical significance. Moreover, the value of the coefficient decreases substantially. For the other two variables tested - the lagged NIIP and the deviation from the inflation target - no such marked changes can be observed. Another striking aspect is the considerable lowering of the adjusted R<sup>2</sup> value, which does not stand in proportion to the smaller number of observations.

Additionally, since using non-overlapping periods shortens the panel considerably, I performed a regression as a robustness check, which features a rolling window (also with

---

<sup>8</sup> With the exception of Poland, which was the only country to weather the crisis without any drop in GDP.

<sup>9</sup> In most cases, GDP was at its peak in 2008 and at its lowest in the following year. Only the following countries had their trough after 2010: Cyprus, Greece, Italy, Portugal, Slovenia and Spain which suffered particularly from the Eurozone crisis.

3 years and 5 years) standard deviation of GDP growth as a dependent variable, and corresponding averages for the regressors. It broadly confirms the results of the main model with the full sample and can be found as table 7. The adjusted  $R^2$  ranges between 0.11 and 0.12 and therefore higher than for the first regression, which can be explained by the higher number of degrees of freedom. Only the value of the coefficient of deviation from the inflation target turns negative, but insignificant. On the other hand, in this model with the rolling standard deviation the results are much more robust when the outliers are excluded. When using the 3- and 5-year moving GDP volatility, in the former the current account and the NIIP remain at their 1% significance level, while in the latter it already deviates more significantly.

In summary, I conclude that the current account does have an influence on the emergence of unfavorable economic conditions in a country and the emergence of crises - or at least their magnitude. Unlike the NIIP and the deviation from the inflation target of 2%, however, this seems to be driven by just a few countries. The current account therefore displays only limited explanatory power in the explanation of macroeconomic instability.

## **4. Data and methodology**

### **4.1. Data sources and description**

For the estimation of my main model, I have annual data for the 28 EU countries in the period 1999-2018. This period is suitable because the euro was introduced in 1999, it covers exactly twenty years and it can therefore be divided reasonably well into a pre-GFC and post-GFC period for a comparison. Furthermore, I later use three- and five-year averages of the panel for a robustness check to filter out short-term outliers that could distort the results. My panel thus covers not only the eurozone - as in much research on current account drivers - but the entire European Union. As mentioned already in the introduction, all member states are examined to the same extent for this period, regardless of their date of accession. This can be justified by the fact that EU accession candidates already have to comply with a number of convergence criteria in order to facilitate entry.

The dependent variable in my main analysis is the current account in percent of the GDP. To explain its dynamics, I consider a number of potential determinants, many of which are among the so-called fundamentals in the literature. The selection of variables for my baseline estimation are drawn from these – namely the fiscal balance, trade openness, the real effective exchange rate, domestic credit to private sector, the total age dependency ratio, the output gap, the lagged net international investment position and the real interest rate. In the extensions I add the unemployment rate, net FDI flow, terms of trade, oil price and the self-calculated differential of wage and productivity growth to the explanatory variables.

The summary statistics (table 2) reveal that I am dealing with an unbalanced panel. Most of the missing observations concern the domestic credit to private sector to GDP ratio and

the net international investment position. Overall, however, only few observations are missing, which is why the coefficients and standard errors should nevertheless be consistent. It can be noticed that on average the 28 EU countries had a current account deficit of about -1.1% and a budget deficit of about -2.5% of GDP from 1999-2018. Net international investment position was also negative on average in the EU at around -35%. Wages grew 2.7 percentage points faster than productivity.

*Table 2: Summary statistics for current account drivers*

<b>Summary statistics for CA drivers</b>						
Statistic	N	Mean	St. Dev.	Min	Median	Max
CA	560	-1.134	5.669	-23.872	-0.884	12.603
FISBAL	558	-2.456	3.507	-32.100	-2.400	6.900
Trade	560	114.929	64.020	44.621	98.626	408.362
REER	560	97.469	8.318	53.660	98.915	130.660
credit	489	87.241	45.828	0.186	83.074	255.310
age depend	560	49.013	4.386	38.457	48.926	61.267
Output gap	558	-0.329	3.322	-16.337	0.048	12.016
NIIP <sub>t-1</sub>	486	-35.683	47.947	-198.400	-32.800	73.300
NIIP	505	-35.332	49.174	-198.400	-32.600	73.300
unempl	555	8.831	4.327	1.900	7.800	27.500
FDI	557	3.751	22.266	-198.432	1.121	264.014
ToT	560	98.264	5.677	60.256	99.238	115.365
Oil price	560	62.272	30.198	17.900	58.155	111.630
w-p-g diff	558	2.716	5.456	-18.457	2.048	66.847
RIR	548	0.349	2.904	-9.528	0.103	25.280

The data for the variables is obtained from different sources. Most of them, however, come from the macroeconomic database of the European Commission, Eurostat or the World Development Indicators of the World Bank. In addition, I have extracted data from the World Economic Outlook April 2020 of the International Monetary Fund, UNCTAD and the US Energy Information Administration (EIA). A complete overview of the

determinants, a brief description and their sources can be found in table 8 in the appendix B.

Before moving on to my model and estimation, I will now look at the individual potential determinants of the current account on a theoretical level. What does the variable actually describe, how can it possibly exert influence on the current account and what would this look like? The underlying economic rationale should become clear.

### *Fiscal Balance*

The government budget balance describes public saving. With regard to the effects of fiscal balance, several theories - some of which are in competition with each other - must be considered. The twin-deficit hypothesis, formulated by Martin Feldstein in 1985 with reference to the USA, assumes a positive relationship. According to the Mundell-Fleming model, a fiscal deficit causes an increase in the real interest rate, an appreciation of the domestic exchange rate and a decrease in the current account balance (Kovačević 2017: 400). Under Keynesian assumptions, a higher government budget deficit reduces the national savings included in the national income identity (equation 1-3, p. 20) - resulting in a deterioration of the current account. However, public savings and investment can also lead to the crowding-out phenomenon, making the magnitude of the effect difficult to predict beforehand.

In opposition to this is the Ricardian equivalence hypothesis, which, based on the intertemporal model, denies any factual effect of a change in the fiscal balance. Economic agents would react to an increase in the fiscal deficit by boosting private savings as they anticipate rising taxes to finance it in the future. Private savings would compensate for the decline in public savings, leaving the current account unchanged. In the literature, the

positive correlation is a comparatively certain fact, which means that the Ricardian equivalence hypothesis does not correspond to reality. Some intertemporal models now work with two types of agents: the " spender " household and the " saver " household - of which the latter smooths its consumption intertemporally. Within this framework, the effect of fiscal deficits or surpluses depends on the proportion of non-Ricardian households in the economy (Bussière et al. 2005: 11; Gossé & Serranito 2014: 452). We assume that private savings will not fully offset the decrease or increase in public savings and therefore a positive correlation between fiscal balance and current account is expected. Factors such as precautionary saving or liquidity constraints also play a smaller role in comparatively rich European societies than, for example, in developing countries.

#### *Trade openness*

The sum of imports and exports as a percentage of GDP usually serves as a measure of the openness of an economy to international trade compared to domestic transactions. It indicates the economic integration of the country as well as qualities such as liberalized international trade, receptiveness of technology transfers, and the ability to service external debt through export earnings (Yang 2011: 16–17). Openness to international trade and the capital account can lead to an inflow of foreign capital and thus have a negative impact on the current account. However, trade restrictions and policy choices play hardly any role for the European Union, as all countries belong to the European single market, which guarantees the free movement of goods, capital, services and persons and operates a common customs policy. Nevertheless, there are significant differences in trade openness and integration between EU Member States, reflecting inter alia economic performance, integration into European and global value chains and

regulatory, structural and behavioral obstacles to business opportunities, innovation opportunities and investments.<sup>10</sup>

The trade-to-GDP ratio can, to a certain extent, also help to explain current account dynamics by means of production and trade structures. An economy with a large and competitive sector for tradable goods is more likely to experience high trade openness and at the same time current account surpluses. From a theoretical perspective, the effect and the sign cannot be clearly determined.

### *Real Effective Exchange Rate*

To measure the competitiveness effect, two indicators are typically used, the real effective exchange rate and terms of trade.<sup>11</sup> The former consists of two factors, the exchange rate vis-à-vis major trading partners and price and cost competitiveness (Ehmer 2014: 17). For members of the Eurozone the special case occurs that the REER component related to trading only reflects their cost and price development as well as the different weights of the extra-euro area trading partners, as they share one currency and therefore no exchange rates exist. Consequently, feedback effects with the current account, which would normally require attention, do not play a major role in my panel.

A positive change in the real effective exchange rate implies a real appreciation of the domestic currency and thus a loss of competitiveness. There exist two principal ways in which a change can affect the current account. The probably more important one concerns private savings. A REER appreciation increases the purchasing power of the inhabitants

---

<sup>10</sup> The European Commission's Single Market Scoreboard provides an overview of developments for the individual EU countries. Available at: [https://ec.europa.eu/internal\\_market/scoreboard/integration\\_market\\_openness/trade\\_goods\\_services/index\\_en.htm](https://ec.europa.eu/internal_market/scoreboard/integration_market_openness/trade_goods_services/index_en.htm) (Accessed: 28 July 2020).

<sup>11</sup> Terms of Trade is included as a separate determinant in my analysis, the description and rationale for which will follow below.

in relation to goods from foreign countries. The value of their monetary and property assets also rises, which provides an overall incentive to import the now cheaper foreign goods. There is a tendency to consume and invest rather than save, so that national savings decrease. According to equation 3, both higher imports and falling savings rates have a negative impact on the current account. However, assuming the consumption smoothing hypothesis, under which the current account serves as a buffer in the event of adverse shocks to national savings, an increase in the REER may even lead to an improvement in the current account. Forward-looking economic agents would accordingly invest abroad and avoid additional consumption (Yang 2011: 17). Related to this is the question whether the REER only serves as a short-term account of the CA dynamics or can also provide a long-term explanation (Yang 2011: 14; Ca'Zorzi et al. 2012: 16). Although the sign of the REER appears to be rather ambiguous, I assume a negative correlation corresponding to literature.

#### *Domestic credit to private sector to GDP ratio*

Credit is an enormously important factor in the transmission of money, financing production, consumption and capital formation, which in turn influences economic activity ('Metadata Glossary – Domestic credit to private sector (% of GDP)'). A high volume of loans to the private sector shows a high correlation with the sophistication of the domestic financial market and integration into international financial markets – which imply lower borrowing constraints and larger bank lending. External borrowing contributes to the expansion of domestic credit (Unger 2017: 436). This is particularly the case for countries with a common currency, which may produce higher capital flows. Regarding the effect on the current account, however, the purpose for which the credits are used seems to be crucial. For households, they mean an increase in purchasing power

that can be spent on consumption and imports, which would lead to a deterioration in the current account. On the company side, the decisive factor will be how the investments are placed. For example, a higher credit volume can lead to economic growth, but if used for low-productive sectors - such as the construction sector - it can lead to debt (Gehring 2015: 771). Ultimately, however, it is also possible that a well-developed financial system leads to higher savings, as higher returns can be generated there (Ca'Zorzi et al. 2012: 5). Nevertheless, a negative correlation between the domestic credit to GDP ratio and the current account can be expected.

### *Demographic effects*

Demographic variables have long been part of the standard set of determinants of the current account. Often, old age dependency and young age dependency ratios are included as separate variables in the estimate. However, I have decided to focus on the total age dependency ratio, which is defined as the proportion of the population under 15 and over 64 years of age to the rest of the (working) population. This figure is intended to provide an insight into the burden on the working population in terms of children and the elderly - regardless of whether this concerns direct care or, for example, pension contributions. It should be noted, however, that such a burden can only be derived to a limited extent, as only age and not employment status is considered.

According to the life cycle hypothesis formulated by Ando and Modigliani in 1963, the level of aggregated national savings depends on the demographic structure of the population (Gossé & Serrano 2014: 453). Households mostly save during their working lives to provide for their retirement, where they either deplete their savings or even need to take on debt. Accordingly, a country with a high "dependent" population should have lower national savings, which, according to equation 3, results in a reduction in the current

account balance. Compared to many other determinants, this plays a role predominantly in the long term.

However, since I study the dynamics over time, the factor of the speed of aging must be taken into account. According to Devadas & Loayza (2018: 1–2), although CA deficits rise with a high age dependency ratio, they decline with a fast aging rate. This is explained by higher savings due to the risk of longevity among the working population and corresponding potential future problems for pension systems. In addition to that of longevity, other factors should also be borne in mind in the evaluation, such as the type of investments being made by age (young people tend to invest more long-term) and the fertility rate (Graff et al. 2012: 1–2). From a theoretical perspective, therefore, the expected sign of this determinant emerges as ambiguous.

#### *Output gap*

The current account is also driven by cyclical factors, which I will measure using the output gap (as % of potential GDP). The output gap is defined as the difference between potential GDP and actual GDP and thus determines the cyclical component of the long-term trend GDP. A positive output gap indicates a positive demand shock, leading to inflationary pressures on the economy. Strong domestic demand is reflected in higher investment and consumption and lower savings - which has a negative impact on the current account. A negative sign for this variable is therefore to be expected.

#### *Net international investment position*

The net international investment position refers to the total stock of foreign assets held by the state, companies or private individuals from one country minus the total stock of domestic assets held by foreign states, companies or private individuals. A positive NIIP

value therefore tells whether a nation is a creditor, or a debtor – in the case of a negative value. A close link exists with the current account, which effectively records the change in the NIIP from one period to the next. Another factor that determines the NIIP, apart from the simple net acquisitions and sales of foreign assets and liabilities, has become valuation changes (Obstfeld 2012: 5–6). For example, net foreign assets may rise or fall as a result of exchange rate fluctuations, movements in the prices of stock and commodities.

For the analysis I use the lagged NIIP as a percentage of GDP. The lag is preferred because of the close relationship to the current account - and the corresponding risk of endogeneity. As stated in the section on the theoretical background, the NIIP essentially represents the stock of all past CA movements. I am interested in the impact that initial positive or negative foreign assets might have on the current account - not the annual change. Ehmer (2014: 19) has well summarized the two main directions in which it can operate. On the one hand, high net foreign assets usually generate a large amount of returns that flow back into the domestic economy and increase national savings. Wealth moreover tends to be self-sustaining. On the other hand, a concentration of foreign assets may also encourage people to take on debt recklessly, as the perceived risk decreases. Countries with foreign debt, on the other side, may be forced to run current account surpluses to secure a sustainable economy.

#### *Real interest rate*

Short-term real interest rates reflect the real cost of borrowing on the financial market - or the real return on lending. Real interest rates are also important as an indicator for monetary policy, as well as in determining expected rates of return and the direction of international capital flows (Herwartz & Siedenburg 2007: 356).

A low interest rate increases the demand for real money, which can be used for investments or the purchase of domestic or foreign assets. Expanding the monetary base creates inflation, making exports less competitive. All this points to a deterioration in the current account. An increase in the RIR on the other side encourages saving. I am assuming a positive sign for the coefficient.

### **Additional determinants**

Beyond this baseline model, I control for five additional determinants that may have driven the current account balance in the countries of the European Union between 1999 and 2018.

#### *Unemployment*

Unemployment (as % of total labor force) features in my selection of control variables due to its close link to the concept of potential output – being one of the key factors of production whose efficient use determines the potential total economic output. Several ways in which a rise in unemployment can affect the current account exist. First of all, it appears evident that a negative output gap is usually associated with employment below the natural rate – resulting in a positive effect. On the other hand, the loss of a permanent source of income would suggest that many people are forced to deplete some of their savings, while (necessary) consumption would remain relatively constant - leading to a negative effect of higher unemployment on the current account. Very high unemployment can also put a heavy financial burden on the government budget and thus contribute to the problem. Ultimately, the sign cannot be predicted with certainty, as factors such as inequality and the design of social systems in the country exercise an influence.

### *Foreign Direct Investment*

Foreign direct investment is linked to the current account simply because it is recorded in the financial account. In my analysis I employ the net FDI flow, which I defined as inward minus outward flow (in % of GDP).

There is no consensus in the literature on the impact of FDI inflow on the current account, as it depends on several factors. For example, two types of FDI exist. Market-seeking FDI aims to expand the sales market and substitute international trade of the host economy, while resource/efficiency-seeking FDI takes advantage of the low production costs and produces largely for export (Mahnaz et al. 2019: 783). For the latter, this tends to improve the recipient country's current account balance. The inflow of foreign direct investments allows the stimulation of domestic investment - especially in capital-poor countries - which increases productive capacity. Import of technology, know-how, integration into the global economy and stronger competition may also boost productivity (Ariç et al. 2017: 80). The need for imports of goods may decline, and exports and economic growth can increase.

On the other hand, FDI inflow creates inflationary pressure on the prices and currency of the host economy, which can cause more import-based consumption. Furthermore, the problem of investment income repatriation has already been identified in some countries (Siddiqui et al. 2013: 104; Mahnaz et al. 2019: 781). FDI returns flow back to the countries of origin, which is captured in the primary income of the current account. Again, the direction of the effect cannot be clearly determined in advance. Nevertheless, I expect a negative sign of the variable due to the particular relationship with the CA identity.

### *Terms of Trade*

Terms of Trade constitutes the second indicator of competitiveness in addition to the REER. It sets export prices in relation to import prices<sup>12</sup> and thus tells us something about their price development. My data consists of an index with the base year 2015. An improvement in ToT entails an increase in real income, since more import units are affordable per export unit. If - in line with the Harberger-Laursen-Metzler (HLM) effect - the propensity to consume is less than one - i.e. consumption is rising less strongly than income - a positive effect on the current account is produced (Gossé & Serranito 2014: 452). However, according to the intertemporal approach to the current account it would only occur if the shock to the terms of trade were short-lived, as forward-looking economic agents would save money for precautionary reasons.

On the other hand, the newly gained wealth can also be spent on consumption and investment, which would lower the current account position (Devadas & Loayza 2018: 2). Chia & Alba (2005: 804) find that ultimately - in the presence of nominal rigidities and imperfect competition – the direction of effect for permanent terms of trade shocks depends critically on the relative elasticities of intertemporal and intratemporal substitution of consumption between tradables and non-tradables. In the short-term, however, they always note a current account surplus. The sign is ambiguous, but I expect a positive outcome.

### *Oil price*

Furthermore, I have added the oil price as a determinant of the current account, as this has also been considered as a driver in the literature. For example, the low oil price in the

---

<sup>12</sup> Calculated as index of average export prices minus index of average import prices.

2000s was an important contributing factor for Germany's massive CA surplus build-up (Grömling et al. 2016: 794) and it also plays a role in OECD countries in the short-run (Gossé & Serranito 2014: 455). I use the annual Europe Brent Spot price FOB, in dollars per barrel. The data originate from the US Energy Information Administration.

Since all EU member states are net oil importers<sup>13</sup> and this industrialized region has a high energy consumption, an effect in the same direction is expected. An increase in the price of oil, which meets a relatively inelastic demand, should worsen the trade balance and thus the current account.

#### *Wage-productivity-growth differential*

The differences between labor cost growth and productivity growth are commonly attributed a significant role, which is why I have incorporated this self-calculated variable into my extended model. It resembles greatly the growth of unit labor costs, which also functions as a MIP indicator - with the difference of the calculation of a differential instead of a ratio.<sup>14</sup> This potential determinant provides information on productivity gains and wage policies. The former are one of the main drivers of the current account. Short-term productivity shocks increase output - and thus have a positive effect - while long-term productivity growth tends to worsen it in two ways. Higher returns to capital increase investment and the anticipation of higher future yields reduces savings (Glick & Rogoff 1995; Obstfeld & Rogoff 1995; Bussière et al. 2010, cited in Gossé & Serranito 2014: 452). A good example of the influence of wage policies is Germany, which for decades has experienced faster productivity growth than wage growth because of its neo-

---

<sup>13</sup> Denmark was the last EU country to export more oil than it imported until 2017 (Danish Energy Agency 2018).

<sup>14</sup> The interpretation takes a very similar form. Both show negative values when productivity increases faster than labor costs. However, the result of my estimation will have to be understood in percentage points rather than percentages (as in the case of ULC).

corporatist economic system characterized by strong employee and employer unions. These follow an agreement to keep wages suppressed in order to keep Germany's vital export sector competitive ('Why Germany's current-account surplus is bad for the world economy' 2017). In addition, reforms to make the labor market more flexible have been implemented, in particular the controversial so-called Agenda 2010.

According to Gaulier & Vicard (2012: 7) who examined the build-up of trade imbalances in the euro area before the crisis, the changes in competitiveness are, however, merely a symptom of demand shocks, which have mainly led to rising prices in the non-tradable sector. Their results warn against a hasty interpretation of ULC growth as a worsening of trading performance.

A rise in the wage-productivity growth differential should in principle reflect a loss of competitiveness leading to higher imports and lower exports. Although there is the possibility of a positive effect on the current account - via stronger savings as a result of wage increases - I assume a negative sign.

## 4.2. Methodology

After presenting the data set and the variables, I proceed with the panel regression. The estimated model assumes the following form:

$$CA_{it} = X'_{it}\beta + \delta_i + \varepsilon_{it} \quad (5)$$

where the dependent variable  $CA_{it}$  describes the current account position for the countries  $i$  over the period of 1999-2018 in percentage of GDP,  $\delta_i$  denotes the country-specific term and  $\varepsilon_{it}$  the error term. The thirteen explanatory variables of the full model are included in the vector  $X'_{it}$  – with  $i$  being the cross-sectional and  $t$  the time dimension. In the following analysis, I always estimate the baseline model with the eight variables – fiscal balance,

trade openness, REER, credit, total age dependency ratio, output gap, NIIP and the real interest rate – as well as once together with the five remaining regressors unemployment, net FDI flow, terms of trade, oil price and wage-productivity-growth differential.

The results of a series of tests suggest the use of a FE estimation over pooled OLS or random effects.<sup>15</sup> The F-Test confirmed the existence of unobserved fixed effects, and according to the result of the Hausman test they are endogenous, i.e. correlated with the time-varying explanatory variables. As already for the estimation of equation 4 (see p. 23), I employ heteroscedastic-consistent standard errors from Arellano (1987) since the Breusch-Pagan test rejected the null hypothesis of homoscedasticity for my panel. They are additionally applicable to deal with autocorrelation of the residuals.

Fixed effect models regard the individual, unobserved heterogeneity as fixed and constant over time. For my panel of 28 EU countries, this method is therefore clearly suitable to deal with factors such as culture or geography. The estimated coefficients reflect a change in the independent variable over time within a country and the associated impact on the independent variable. To detect certain unobserved time-invariant factors that influence the current account and are simultaneously correlated with the explanatory variables, I have added  $\delta_i$  to the right side of the equation 5 (see p. 41) which captures this effect. Accordingly, unbiased and consistent estimates are to be obtained.

The main estimation utilizes annual data. In order to further reduce the potential problem of autocorrelation – which has been found by the Breusch-Godfrey/Woolridge test for serial correlation in panel data – and to filter out short-term cyclical influences, I performed the same regression with non-overlapping 3-year and 5-year averages. This

---

<sup>15</sup> A summary of performed tests can be found in table 10 in appendix C.

has been done in literature before (e.g. Chinn & Prasad 2003). Furthermore, there remains always the potential problem of endogeneity, due to omitted variables or reverse causality. I countered the latter by lagging the NIIP, the only truly problematic endogenous variable due to its direct relationship with the current account. The alternative common methodology of instrumental variables estimation poses difficulties, as suitable instruments for the determinants are not easily found (Chinn & Prasad 2003: 70). Since finding and establishing causality does not stand in the foreground of my research, potential endogeneity is not important in the further course of my work.

As an additional robustness check, I will test a number of slope dummies, i.e. interaction terms. Of particular interest are the joint influence of the fiscal balance, the domestic credit to the private sector and several others on the current account balance.

Since the question of possible changes in current account drivers in the aftermath of the global financial crisis is also of interest, I finish by dividing the panel into two ten-year periods and re-running the estimation on both samples. I apply the same procedure for members of the common currency area compared to the remaining EU countries.

## 5. Results

### 5.1. Main regression

Table 3 shows the result of fixed effects regression with heteroscedastic-consistent standard errors to determine the drivers of current account balances, estimating both the baseline and extended model. The coefficients turned out by and large as expected - both the signs and assumed size effects or relevance.<sup>16</sup> Only the oil price shows unexpectedly a purportedly positive relationship with the current account. In the following I will briefly discuss the individual variables. For their evaluation I refer to table 3 as well as to the robustness check with 3-, 4- and 5-year averages, which can be found in the appendix D as table 11.

In the baseline, only the lagged NIIP is statistically insignificant, all other determinants are significant at least at 10% level. The positive, highly significant and robust coefficient for fiscal balance is in line with the results of previous analyses in literature. Thus, an improvement in the fiscal balance consistently exerts a positive effect on the current account, which refutes the Ricardian equivalence hypothesis and its assumptions of forward-looking and rational economic agents.

Trade openness, on the other hand, seems to play only a minor role. In the baseline the increase in imports and exports has a positive effect on the CA, but in all other specifications it loses its relevance. In principle, a cross-sectional analysis would be interesting, since the large differences between countries are not accounted for by the fixed effects method.

---

<sup>16</sup> For a comparison between the signs derived in the theoretical part of this thesis and the empirical directional effect, I would like to refer to such an overview in the table 9 in the appendix B.

Table 3: Main regression: CA determinants of EU countries 1999-2018

<b>Determinants of current account in EU countries</b>		
	<i>Dependent variable:</i>	
	CA	
	baseline	extended
	(1)	(2)
FISBAL	0.213*** (0.075)	0.233*** (0.072)
Trade	0.037** (0.016)	0.017 (0.019)
REER	0.080* (0.043)	0.071** (0.036)
credit	-0.062*** (0.017)	-0.062*** (0.017)
Age depend	0.545*** (0.200)	0.514*** (0.172)
output gap	-0.583*** (0.066)	-0.421*** (0.078)
NIIP <sub>t-1</sub>	-0.008 (0.016)	0.004 (0.014)
RIR	0.290* (0.174)	0.217 (0.162)
unempl		0.164* (0.096)
FDI		-0.024*** (0.008)
ToT		0.277*** (0.095)
Oil price		0.013* (0.008)
w-p-g diff		-0.196*** (0.075)
Observations	434	434
R <sup>2</sup>	0.481	0.548
Adjusted R <sup>2</sup>	0.436	0.502
<i>Note:</i>		* p < 0.1 ** p < 0.05 *** p < 0.01

Although the direction of the effect for the two measures of competitiveness – REER and terms of trade - was relatively ambiguous in theory, my findings present a relatively clear picture. Although an increase in both variables implies a real appreciation of the domestic

currency, which normally implies a loss of competitiveness, both coefficients display robust positive values. The result thus suggests a validation of the HLM hypothesis stating that the income gains thanks to cheaper imports is partly saved, instead of fully consumed or invested.

The very consistent statistically highly significant negative value for domestic credit to the private sector indicates a non-productive use of the additional financial resources by households, business and non-financial institutions. This is not surprising, as the real estate bubble and the increase in private consumption are well known (Gehring 2015: 789), especially in the so-called GIIPS countries before the crisis. At the same time, a non-causal relationship between the contraction of loans forced by the crisis in connection with the improvement of current accounts through other means might offer an explanation.

Although the effect of the ageing of society is disputed in the literature, a clear and robust result was obtained. A maturing society<sup>17</sup> entails an improvement in the current account. I can only speculate why. A rapidly ageing population has an incentive to set aside money for pensions - especially if there is a lack of confidence in the state pension system. This argument is often put forward in connection with the enormous German current account surplus.

Another important driver is the output gap. The coefficient is statistically significant at a high level and negative in the vast majority of specifications – as expected. However, the value size fluctuates a little. The lagged NIIP on the other hand is mainly of interest as an interaction term, less as an own driver.

---

<sup>17</sup> European countries as a whole have a very low birth rate compared with the rest of the world, which is why I can roughly equate an increase in this variable (total dependency ratio) with an ageing population.

The real interest rate does not seem to have a strong influence on the dynamics of the CA either. In the baseline model it is positive and statistically significant at 10% significance level, but the robustness checks reveal a high variation of the coefficient. An increase in the real interest rate encourages saving - which, along with the other effect described in the theoretical part, translates into an improvement of the current account.

Of the variables that are added to the extended baseline model, the ToT already mentioned as well as the net FDI flow and the wage-productivity-growth differential deserve attention. Net FDI inflow worsens the current account, possibly via investment returns and the negative impact on the primary balance - but the number of possible channels is too large to be tied down. However, the coefficient varies greatly depending on the specification, unlike the very robust value for wage-productivity-growth differential. In the robustness check this turns out larger than in the main model. The positive sign confirms the assumption that faster wage growth compared to productivity growth affects the current account negatively.

Although the unemployment rate is statistically significant in the basic model and at 4-year averages, it is rather difficult to interpret. The interaction term linked to the output gap has not supported the assumption of a joint effect of the two determinants. The oil price, which is supposed to have an unexpected positive effect on the current account, can also be neglected.

#### *Interaction Terms*

A series of regressions I performed with multiple interaction terms yielded the following results – to find in table 4. Although the net international investment position is not

significant as a separate coefficient, it becomes so in combination with several other variables, notably the real effective exchange rate, the terms of trade and the output gap.

Table 4: CA determinants incl. slope dummies (FE regression)

Baseline regression incl. slope dummies							
Dependent variable:							
CA							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FISBAL	0.258*** (0.069)	0.211*** (0.073)	0.146** (0.071)	0.517** (0.232)	-1.673** (0.655)	0.241*** (0.077)	0.177** (0.070)
Trade	0.044*** (0.014)	0.037** (0.016)	0.038** (0.017)	0.035** (0.016)	0.041** (0.017)	0.030* (0.016)	0.046** (0.019)
REER	-0.016 (0.034)	0.073 (0.046)	0.078* (0.043)	0.083* (0.044)	0.069* (0.042)	0.092** (0.044)	0.065* (0.039)
credit	-0.072*** (0.019)	-0.064*** (0.017)	-0.070*** (0.018)	-0.072*** (0.019)	-0.059*** (0.016)	-0.056*** (0.016)	-0.061*** (0.017)
Age depend	0.539*** (0.187)	0.543*** (0.202)	0.520*** (0.195)	0.528*** (0.203)	0.581*** (0.201)	0.528*** (0.202)	0.519*** (0.173)
Output gap	-0.598*** (0.058)	-0.587*** (0.065)	-0.278*** (0.095)	-0.578*** (0.065)	-0.599*** (0.068)	-0.507*** (0.059)	-0.607*** (0.070)
NIIP <sub>t-1</sub>	0.285** (0.117)	-0.008 (0.016)	-0.006 (0.015)	-0.006 (0.014)	-0.007 (0.015)	-0.006 (0.016)	0.382** (0.185)
RIR	0.283* (0.166)	0.156 (0.365)	0.193 (0.184)	0.292 (0.178)	0.254 (0.172)	0.252 (0.168)	0.295* (0.177)
REER*NIIP <sub>t-1</sub>	-0.003** (0.001)						
credit*RIR		0.002 (0.003)					
Output gap*NIIP <sub>t-1</sub>			0.005*** (0.002)				
FISBAL*credit				-0.003* (0.002)			
FISBAL*age depend					0.039*** (0.014)		
w-p-g diff						-0.164 (0.126)	
w-p-g diff*credit						-0.0004 (0.001)	
ToT							0.036 (0.099)
ToT*NIIP <sub>t-1</sub>							-0.004** (0.002)
Observations	434	434	434	434	434	434	434
R <sup>2</sup>	0.504	0.483	0.508	0.493	0.493	0.502	0.515
Adjusted R <sup>2</sup>	0.459	0.436	0.464	0.447	0.448	0.456	0.470

The budget balance also interacts both with domestic credit and strongly with the total dependency ratio. The former may indicate a crowding-out effect caused by government spending. The second could be explained by growing public expenditure on Europe's expensive welfare systems as the dependency ratio rises. Interesting are furthermore the slope dummies, which do not show a significant effect. The gap between wage and productivity growth does not seem to be influenced by domestic credit growth which in turn is surprisingly independent of the real interest rate.

## **5.2. Comparisons**

Splitting the panel into two subsamples respectively allows a deeper understanding of the differences between countries with and without EMU membership as well as for current account drivers before and after the global financial crisis.<sup>18</sup>

In EU countries with an own currency fiscal balance hardly plays a role as a driver of CA, while it still does for EA countries. Possibly due to the fact that for the former the important exchange rate channel for CA adjustments remains open. Trade openness on the other hand is suddenly highly significant with a high positive value for non-EA countries. This could probably be explained by the fact that among the non-EA countries are many former communist bloc countries that initially had a low level of trade openness. The total age dependency ratio, the credit to GDP and the output gap (partly) lose their statistical significance for non-EA countries. Business cycles may not be as evident there, as they have retained both fiscal policy and monetary policy for smoothing them. On the other hand, the lagged NIIP gains statistical significance - both in the baseline and the

---

<sup>18</sup> For more information and details, see table 12 and table 13 in appendix D.

extended model - and the sign becomes positive. The RIR turns highly relevant for all specifications.

In the ten years before the onset of the 2008 global financial crisis, only the credit variable, the output gap<sup>19</sup> and the total dependency ratio served as drivers of the current account - with the familiar direction of effects. At the same time, the adjusted  $R^2$  in the baseline model has a relatively low value (0.117), therefore the explanatory power appears fairly limited. In the wake of the crisis and the European fiscal framework, which was expanded and tightened as a consequence shortly afterwards, fiscal balance became a significant determinant - as did lagged NIIP, net FDI inflow and the wage-productivity-growth differential. The results after 2009 are similar to those over the entire period studied, including a higher adjusted  $R^2$  and numerous significant drivers.

In summary, a few factors were found that are consistently statistically significant and robust across a wide range of specifications. Fiscal balance, the credit to GDP ratio, the output gap, the dependency ratio, the difference between wage and productivity growth as well as net FDI inflow appear to be the main drivers of current account imbalances in the EU from 1999-2018. However, many of these emerged only after the global economic crisis.

Building on this knowledge, in the next chapter I turn to the second part of my research question, as to whether current account (im)balances are central to economic policy.

---

<sup>19</sup> It seems to me that the oddly high coefficient for the unemployment rate in specification (3) in table 13 interacts with the otherwise statistically significant and otherwise high value for the output gap.

## **6. Discussion: Are current account (im)balances relevant for economic policy?**

As the auxiliary regression has illustrated, there is at least a weak link between current account imbalances and macroeconomic instability, or the severity of a crisis. However, even a limited adverse effect may be undesirable and therefore justify the efforts of policy-makers to correct excessive imbalances. This coincides with the change of opinion that followed the European sovereign debt crisis, which, however, attached considerably more meaning to them. As already outlined in the literature review, a radical rethinking of current account deficits has taken place - from a desired "catch-up" effect of the less developed member states to blaming the same states for the crisis. To prevent this from happening in the future, a series of European rules were introduced in the years 2011-2013 to streamline and improve the effectiveness of the existing rules - especially with regard to the European fiscal framework - and to introduce similar measures for macroeconomic imbalances.

The aim of this work is, among other things, to address whether current account imbalances in the European Union receive the appropriate amount of attention. For this reason, I will also present here a concise summary of the pieces of legislation that are concerned with it.

### **6.1. The European regulatory framework for current accounts**

#### ***6.1.1. European fiscal framework***

As now widely acknowledged in the literature - and confirmed by my model - the fiscal balance possesses a robust significant positive impact on the current account balance. As early as 1993, a budget deficit ceiling of 3% of GDP – combined with the second, well-

known debt rule requiring a maximum debt-to-GDP ratio of 60% - came into force with the Maastricht Treaty. The idea behind this was primarily related to the creation of the European common currency area. As long as the present agreement with a single monetary policy but, at the same time, a decentralized fiscal policy exists, certain common fiscal rules seem necessary. Fiscal "free-riding" should thus be avoided and market discipline consolidated by means of the no bail-out clause (European Fiscal Board 2019: 3). To a certain extent, they are intended to replace a coordinated fiscal policy aimed at economic convergence and sustainable budgetary policy, which is politically difficult to implement.

The Stability and Growth Pact in 1997 expanded the set of regulations considerably. These were, however, frequently broken and ultimately revised in 2005 – introducing space for discretionary fiscal policy which lead to a softening and inefficiency of the system. As a consequence of the global financial crisis and the subsequent European debt crisis, the set of rules was elaborated, and the margin substantially constrained. The European Fiscal Compact 2012 as well as the so-called "six-pack" aimed at a significant reduction in government spending, while the "two-pack" gave the Commission a far-reaching overview of national budgets (Fuller 2018: 177). The new regime has had moderate success, reflected in the emergence of fiscal balance as a significant driver of the current account after the global financial crisis. Despite the improvement of both, it suffers from a variety of problems. This involves pro-cyclicality, numerous exceptions for discretionary fiscal policy, a wide margin of discretion from the side of the European Commission in the assessment and approval of flexibility mechanisms, the problem of unreliable forecasts and real-time data as well as a generally overly complex and partially

inconsistent fiscal framework (Christofzik et al. 2018; European Court of Auditors 2018; European Fiscal Board 2019).

### ***6.1.2. Macroeconomic Imbalance Procedure***

Part of the "six-pack" 2011 were two regulations that launched the macroeconomic surveillance framework. Previously, the focus lay on the public sector, i.e. its budget balance and debt. With the MIP, a scoreboard consisting of fourteen indicators has been introduced. It is designed to identify and prevent imbalances at an early stage (Kollmann et al. 2014: 6). The interdependencies between national economic policies, already recognized as a "matter of common concern" in Article 121 of the Treaty on the Functioning of the European Union, should thus be accommodated (Pierluigi & Sondermann 2018: 37). The strength of the Macroeconomic Imbalance Procedure therefore lies mainly in prevention rather than correction (Gros & Busse 2013: 1–2).

Among these indicators we find the current account (besides the level of the NIIP, REER, unit labor cost change, private sector credit flow, unemployment rate and more), for which a threshold of -4% downwards and +6% upwards was set.<sup>20</sup> The reason for the asymmetry is rooted in a supposedly more harmful deficit, compared to a surplus.

The imbalance detection and severity assessment are divided into two steps. If the annual Alert Mechanism Report finds that one or more of the thresholds provided by the scoreboard is exceeded on a sustained basis, a political decision-making process between the European Council and the European Commission prompts a further analysis, called country reports.<sup>21</sup> In this second stage, the European Commission provides a severity

---

<sup>20</sup> An overview of the 2018 MIP scoreboard for the euro countries of the annual 2020 Alert Mechanism Report can be found in the appendix F, Table 14.

<sup>21</sup> Before 2015, they were called In-Depth Reviews.

assessment of the imbalances. As part of the preventive arm, the member state concerned receives recommendations for correction from the European Council and the Commission. If excessive imbalances and repeated failures are found, the corrective arm begins, and financial sanctions can be imposed. However, these have never been inflicted before, although numerous countries violated the rules and did not comply with the recommendations. After years of application, a serious lack of enforcement of the existing rules becomes apparent (Pierluigi & Sondermann 2018: 8). In the first five years, the number of countries with macroeconomic imbalances grew from 12 to 19 - without initiating an excessive imbalance procedure (European Fiscal Board 2019: 5). In addition, the following weaknesses of the MIP become apparent.

In contrast to the fiscal rules, assessment of what share or what effort the government has made to reduce imbalances is difficult (Pierluigi & Sondermann 2018: 41). Many of the scoreboard's fourteen indicators, such as the real effective exchange rate, the four different unemployment rates or the domestic credit growth, cannot be directly governed by policy. As my analysis of the current account has shown, it itself is driven by a variety of determinants – whose driver qualities may change over time. Even the policy-made budget balance exerting a robust influence is unlikely to be sufficient for a meaningful adjustment. Atoyán et al. (2013: 6) argue that the emergence of CA widening before the crisis and the rebalancing afterwards was motivated primarily by dynamics of private savings. Behringer & van Treeck (2019: 9) on the other hand found not households or the public sector but corporate net lending being the main contributor to the build-up of current account surpluses in countries like China, Japan and Germany prior to the global financial crisis. The potential policy influence for such drivers seems to be comparatively small.

Moreover, the threshold for the current account of -4% and +6% for deficits and surpluses respectively has often been described as "arbitrary" (see Gros & Busse 2013: 1; Priewe 2018: 70). In fact, it lacks any economically justified calculation or basis. One might suspect that the non-imposition of sanctions reflects this uncertainty and the associated political unwillingness to act on such a basis.<sup>22</sup> Coutinho et al. (2018) therefore proposed two new criteria instead of the rigid and economically unfounded thresholds - applicable to all countries. On the one hand, the current account should serve the purpose of NIIP stabilization (or reduction of net foreign liabilities to a given prudential target), which plays a much more central role in the assessment of macroeconomic risks and external sustainability. On the other hand, a regression - similar to that carried out in this thesis - is aimed at identifying country-specific current account "norms", which should allow an assessment of a deviation from the "fundamentals".

Overall, the MIP scoreboard may be a good early warning system, which would have predicted the European sovereign debt crisis (Pierluigi & Sondermann 2018: 5). However, one cannot automatically conclude that it could have prevented it, given the lack of enforcement and compliance by member states and the difficulty of addressing and governing macroeconomic indicators.

It is tempting to hold a flawed or inadequate design of this surveillance system accountable for the existing current account imbalances in the European Union. However, before one can make a final statement on this issue, one should consider when and why imbalances become problematic in the first place.

---

<sup>22</sup> Such a problem already exists in the European Fiscal Frameworks, where a breach of the fiscal rules and the failure to take "effective action" is much easier to prove by comparison. Nevertheless, former Commission President Jean-Claude Juncker, when asked 2016 why France would not be sanctioned in accordance with the rulebook despite repeated inaction, replied: "Because it is France" (Müller et al. 2016).

## **6.2. When and why are (current account) imbalances problematic?**

The question to what extent current account imbalances affect macroeconomic stability, the economy and, consequently, policy is not a simple one to answer. Based on the findings of this work, I can argue for at least a weak relationship. But through what channels exactly does this have an adverse effect, and at what point in time or under what circumstances do imbalances become problematic?

Former president of the EU's Economic and Financial Committee, Thomas Wieser, defined a macroeconomic imbalance as “the (negative or positive) position of a domestic, external or financial variable... [which] may – if uncorrected over time – make the national savings-investment balance so untenable that it self-corrects abruptly, thereby causing significant adjustment shocks” (cited in Pierluigi & Sondermann 2018: 6). The associated risks appear to be disproportionately greater for deficit countries and different from those for surplus countries, hence the need for a separate examination.

### ***6.2.1. Current account deficits***

The abrupt self-correction is often attributed to the much feared so-called "sudden stop". This refers to the sudden and large cut-off of capital inflows or simultaneous withdrawal of capital. In another version, “the rate of return required by foreign investors sharply increases and the economy has therefore to suddenly ‘devalue’ or contract demand abruptly to repay its debts” (Romelli et al. 2018: 139) which generally entails output decline and other potential effects such as financial sector deleveraging, bankruptcies, distress in private and sovereign debt markets (Coutinho et al. 2018: 7). Aggregate demand collapses. This is often preceded by a prior downgrading of sovereign creditworthiness - as happened in the euro crisis - and corresponding concerns about countries' solvency.

Yet even ahead of this extreme case, current account deficits may have both domestic and external macro implications (Obstfeld 2012: 13). Other macroeconomic factors such as interest rates, terms of trade and real effective exchange rate as well as unemployment are influenced to a certain extent. The latter might require explaining. An increase in the deficit reflects, *inter alia*, a relative loss of weight of the domestic export sector, while the non-tradable sector is expanding. Since perfect labor mobility is usually not given, this change inevitably leads to a higher unemployment rate. Sustainable imbalances can thus distort a country's economic structure in the medium- and long-term (Lane 2013: 2–3).

The current account also serves as a good indicator of distortions, such as a sharp increase in private credit - which can itself cause a host of issues – or the dynamics of the net international investment position. My main regression has identified the former as one of the key drivers of the current account. In fact, the CA incorporates many of the individual indicators of macroeconomic stability of the MIP scoreboard, which have proved to be significant in this analysis. This includes the credit variable, the real effective exchange rate, ULC (comparable to my wage-productivity-growth differential) and the change in the age dependency ratio. A change in the current account thus provides some insight into the troublesome development of the underlying determinants. On the other hand, the value of a single overall indicator can be called into question.

Irrespective of this, economists agree that a balanced current account in itself is not desirable. As already recognized by Blanchard & Giavazzi (2002), good imbalances exist - namely when lender countries benefit from better investment opportunities in recipient countries, which in turn obtain better and cheaper access to financing. Imbalances thus have a welfare-enhancing role by promoting intertemporal smoothing and this enormous

advantage must not be lightly abandoned and condemned. Starting from this point, the important question arises as to when CA imbalances start to pose a problem.

Current account imbalances create a risk if they become excessive, persistent and subsequently unsustainable. However, the difficulty lies in determining when this is the case. In principle, it can be said that the vulnerability of a country is high when it faces a high external deficit - the maintenance and repayment of which is getting increasingly challenging. From a theoretical perspective, this occurs when the present discounted value of future trade surpluses – and other forms of income - are below the current net foreign liabilities (Devadas & Loayza 2018: 1). Under such conditions, it not only loses profitable domestic investment opportunities, it is also exposed to the threat of a "sudden stop" if investor confidence drops. However, as long as capital inflows are available or can be drawn from official reserves, an adjustment is not bound to take place (Herrmann & Jochem 2013: 2). At this point, it must be stressed that the countries' respective starting positions and general circumstances may differ widely. The rating of sovereign bonds by the three major US rating agencies S&P, Fitch and Moody's - which many investors rely heavily on - is derived from a multitude of factors. However, decisions to upgrade or downgrade often lack transparency and plausibility. In Moody's rating methodology, for example, this is caused by the subsequent adjustment of its four broad factors by its analysts or the weighting of their indicators (see Moody's Investor Service 2018). The type of capital flow also plays a role. Foreign direct investments, for instance, respond less sensitively than short-term investments. Finally, special features may apply, such as the status of the dollar as a world currency, which allows the US to run high and persistent current account deficits.

It becomes apparent that the underlying drivers of the current account are essential for assessing whether the imbalance is excessive. In my analysis, I have searched for the drivers of all EU countries together (as well as for certain subsamples). The results provide information on general trends, and changes over time, but do not allow for a recommendation on precise target balances - especially not in a one-size-fits-all approach. Although the calculation of fundamentals and deviations from those for each individual country would look more promising in this respect, the many uncertainties surrounding their accurate determination raise questions as to whether this would be conducive. Instead, for this case, it could be of more use to address a particular driver thought of to play a bigger role. The result of the auxiliary regression in table 1 has shown that the outliers Greece and the Baltics drove mainly the results of the whole panel concerning the impact of current accounts on macroeconomic instability. Private credit flows appear to have had a much more substantial impact on the vulnerability of economies than CA deficits. This ties in closely with the institutional framework of the European Union, and even more so with the EMU.

### ***6.2.2. Flaws of the EMU and current account surpluses***

In the European Single Market, which guarantees the free movement of goods, labor, services and capital, balance of payment dynamics should in theory be irrelevant. Countries with the same currency also lose much of the exposure to speculative attacks. However, the absence of a designated lender of last resort to provide liquidity in the event of a crisis undermines this (Giavazzi & Spaventa 2010: 11). The European Central Bank only hesitantly assumed this extremely important role in the European debt crisis, with fierce criticism coming from Germany. In general, the countries of the euro area face specific challenges due to their institutional environment. Much has already been debated

as to whether - from a theoretical perspective - the EMU meets the criteria set by Mundell (1961) in his well-known theory of the "optimal currency area". Important prerequisites for a functioning common currency are therefore a high extent of trade, the similarity of the shocks and cycles, a high degree of labor mobility and a system of risk-sharing – usually through fiscal transfers (Frankel & Rose 1998: 1011). There is widespread agreement in the literature that these conditions are not sufficiently met, and often even a poor design of the EMU is held responsible for the outbreak or rather the severity of the euro crisis. Fiscal transfers within the Union, but also other means of the urgently needed financing, such as the so-called Eurobonds were refused by the surplus countries. Moreover, it is argued that the economic structure of the member states is too different and that labor mobility, both between and within countries, is clearly too low (Jäger & Hafner 2013: 320). Financial integration would be too high in comparison, leading to huge financial flows due to reduced risk premiums, low transaction costs and high transparency, which would cause asset bubbles and negative spill-overs (see Eichengreen 2010: 2; Giavazzi & Spaventa 2010: 14; Fuller 2018: 175). Those can contribute, in combination with the free movement of capital, to the build-up of current account imbalances and act destabilizing (Brissimis et al. 2013: 300). The results of the comparison between the drivers of the euro countries and the remaining EU countries supports this hypothesis. Although domestic credit flows to the private sector have consistently been significant, they do not play a role in countries with their own currencies (see table 12). For EMU members, however, the conventional adjustment path for imbalances due to nominal exchange rate rigidity has been removed (Schoder et al. 2011: 2). The instrument of currency devaluation is no longer available to countries within a monetary union. Country-specific asymmetric shocks thus result in more lasting

imbalances between Member States. Different approaches to their resolution have in the past led to strong political confrontations between creditor and debtor countries (Lane 2013: 4–5). However, the alternative option via the interest rate in the event of fixed exchange rates is also very limited in the euro area, as commercial banks can still finance themselves using open market operations (Herrmann & Jochem 2013: 3). In the event that current account deficits are driven by domestic spending, a real currency appreciation may even emerge that depresses the domestic real interest rate and creates incentives for further borrowing (Obstfeld 2012: 13). Price stability and balanced budgets - which correspond to the *German view* - but without the means of fiscal transfer create a particular environment for the development of current accounts.

The risks for countries with current account surpluses need therefore to be considered in the context of the European Union and the EMU. In principle, compared to CA deficits they are less problematic per se – but specific challenges arise. Germany, as the country with the strongest economy in the EU and a current account surplus of 7.25% of GDP in 2019<sup>23</sup> - the world's highest in absolute terms - causes a so-called "deflationary bias" on the Eurozone. The euro is considerably overvalued, especially for the crisis countries, which are finding it difficult to increase their exports as a result. Also, inflation tends to be too low for them. The strong economic position of the surplus countries as creditors reflects in a strong and dominant political voice, which has led to adjustments being made only on the deficit side. What remains is the so-called "internal devaluation", which consists of fiscal austerity, wage deflation, structural reforms aimed at labor market flexibility and cuts in social spending (Priewe 2018: 66). The "core" countries have

---

<sup>23</sup> Deutsche Bundesbank (2020). *Germany's current account surplus falls to €245.5 billion in 2019*. 23 March. Available at: <https://www.bundesbank.de/en/tasks/topics/germany-s-current-account-surplus-falls-to-245%C2%BD-billion-in-2019-829058> (Accessed 2 July 2020).

essentially exported their export-oriented growth model to the peripheral economies, which are expected to generate surpluses the same way. It does not take into account the interdependence with the demand-driven growth model of the periphery (Fuller 2018: 175). The “internal devaluation” in deficit countries not only inflicts damage there but in the medium term the complementarity of the two approaches in the EU is dissolved - with an uncertain outcome. After all, a surplus can also be understood as a weakness in aggregate demand, to which Germany and others contribute - with effects on economic growth and the prosperity of the entire continent. For surplus countries themselves, the most direct and greatest risk factor lies in the loss of financial wealth beyond the control of domestic policies (Coutinho et al. 2018: 5) which appears to drive their policy-making. In short, it becomes evident that imbalances in the European Union certainly produce negative effects. The deficit countries bear the greater risk of a "sudden stop", an abrupt end to capital inflows due to an external or domestic shock. The problems for the surplus countries stem mainly from their interdependence with those economies that they rely on for their exports. However, imbalances are not problematic per se, but within the European Union, and especially between the countries with the euro, the weaknesses in institutional design are becoming apparent. The lack of understanding among the "core" countries, under German leadership, of the overall situation and the actual significance of the current account is likely to prompt further divergence among the member states - both economically and politically. A single monetary policy for these highly heterogeneous economies exacerbates the problem.

### ***6.2.3. Revisit other critique of relevance of current accounts***

Before I come to my conclusion, I would like to return briefly to a criticism from the literature review which deals with the actual explanatory power of current account

balances. The current account – as the balance of payments - is a *net* concept. It describes the *net* capital flows without going into the underlying *gross* capital flows. Due to globalization and deepened financial markets including a strongly growing transnational trade in financial products, these have risen sharply in recent decades. This is reflected above all in the significantly higher gross primary income. As a result, countries can now face "sudden stops" not due to traditional shocks, but for example thanks to maturity and currency mismatches with respect to gross financial assets (Devadas & Loayza 2018: 4).

In order to assess the stability of an economy, looking at net flows is therefore insufficient. Contrary to the usual expectations, a range of information exists which the current account simply cannot reveal to us. First, externally financed credit booms cannot be detected in the current account, since it does not record foreign financing but the net resource flow. Against widespread opinion, it is not possible to determine how the expenditure is financed – as it could be done with the domestic economy. A definite classification of the general current account signs should also be treated with caution, since a two-country model is usually assumed (domestic economy and rest of the world).

It is easy to overlook how risks are really distributed, even with a nominally balanced balance sheet (Borio & Disyatat 2015: 25–26). Second, given high gross flows the valuation effect of the important stability measure net international investment position accounts for an even larger share of the annual changes - and thus limits the ability of the CA to provide accurate information on the dynamics of the NIIP. Furthermore, politics often focuses on the balance of trade and subsequently blames a deficit on a weak export sector. This often overlooks the specific economic structure of a country, such as a predominance of services, which - with the major exception of financial services - is often largely confined to the domestic economy.

As mentioned already, the balance of payments only provides us with information on a country's transactions with the rest of the world. Yet, even here, it may be that the balance sheets are not very informative due to their design. Rapid globalization has led to a situation where a small number of multinational companies account for a high proportion of the economic activity of many countries. However, the BoP is based on the residency principle - in contrast to the nationality principle - so that a large proportion of largely external assets and liabilities can belong to foreign nationals without contributing significantly to the nation in which the headquarters is located (Obstfeld 2012: 6–7).

In conclusion, net current account flows cannot teach us much about the volume and direction of capital flows, how economic activity is financed, the role countries play in financial intermediation, lending and borrowing as well as risks of financial stability and mechanisms involved (Borio & Disyatat 2015: 3). However, this does not mean that the current account is irrelevant. I just want to draw attention to the limitations of it so that I can form an appropriate conclusion of my findings.

## 7. Conclusion

This master thesis pursued two main objectives. The first was to identify the drivers of the current account balance in the 28 countries of the European Union for the period 1999-2018. The second to address the prominent question of whether and to what extent the current account balance is relevant for economic policy. For more than twenty years, the literature has been concerned with determining the important influencing factors for highly different groups of countries all over the world. However, it was not until the global financial crisis of 2008 and the subsequent European sovereign debt and banking crisis that a large number of studies about current account drivers and imbalances more generally were produced, with widely varying results. Against this background, I contribute, among other things, by including the EU countries with their own currencies – in comparison to the often-used Eurozone panel - and a period that can be divided equally into a pre-GFC and post-GFC period.

The employment of a country-specific fixed effects panel regression with heteroscedastic-robust standard errors yielded the following results. Fiscal balance, domestic credit to GDP ratio, total age dependency ratio and the output gap can be clearly identified as the main driving forces of the current account. Coming from the extended set of determinants, terms of trade, foreign direct investment and the self-calculated wage-productivity-growth differential can be added to the list. The directions of the effect are largely in line with the ones expected as well as with the literature. Only for the oil price an unexpected positive effect was reported, which, however, can easily be ignored.

At the same time, an additional panel regression - which tested the *German view* - only partially confirmed the strong negative impact of current account deficits on

macroeconomic stability. When the outliers Greece and the Baltic states were excluded, which in comparison with the rest of the EU countries suffered an excessive GDP loss during the crisis, the current account lost much of its significance as a driver of GDP volatility. Overall, high foreign debt, current account deficits, and positive deviations from the inflation target provide only limited explanation – as the extremely low adjusted  $R^2$  showed. Moreover, a weak positive correlation at most remains between the average pre-crisis current account and GDP loss drops.

This raises the legitimate question of how damaging current account imbalances within the European Union are in fact. After the outbreak of the global financial crisis, European policy-makers have tightened fiscal rules and introduced the Macroeconomic Imbalance Procedure for future prevention. Some of the reforms were intended to gradually correct the design flaws of the European Monetary Union. The main focus, however, lay on current account imbalances, and in particular the deficit countries that were deemed responsible for the crisis. An arbitrary threshold of -4% and +6% of GDP was implemented for the current account. As my results have clearly demonstrated, imbalances do not need to be bad per se. In general, they facilitate the smoothing of intertemporal consumption and better allocation of investment. Moreover, the determinants tend to differ for certain groups of countries, as well as across time. A look at the drivers before and after the global financial crisis revealed that, in the run-up to the crisis, basically only domestic lending to the private sector and the output gap were responsible for CA development. The budget balance, as well as the age dependency ratio, FDI inflow and the level of the NIIP only started to have a significant impact afterwards. In principle, there is much to suggest that current account imbalances can be problematic – for instance when they turn out to be excessive, and persistent. The institutional

characteristics of the EU and especially the EMU, which severely impede or have completely removed the automatic adjustment of current account imbalances by means of the exchange rate or interest rate channel, certainly justify their observation. The absence of a bailout mechanism - such as a real “lender of last resort” or intra-European fiscal transfers - continues to render "sudden stops" possible. Additionally, major changes in the economic structure and even crises may emerge when not corrected over a long time.

However, the main analysis does not allow me to determine whether the individual drivers identified are at a sustainable level or how they will behave in the long term. This type of assessment must always be country-specific and cannot be generalized - which is why the one-size-fits-all MIP target balances are in fact inappropriate. Furthermore, unlike for fiscal rules, most of the determinants cannot be controlled by policy-makers. Thus, the main regression found domestic credit to the private sector to be one of the key drivers. It also appears that those capital flows were mainly responsible for the unfolding and gravity of the European sovereign debt crisis. In such a case, the current account would at most be able to serve as an indicator. Finally, the current account as a net concept does not deliver information essential for the stability assessment, such as the composition of underlying gross financing flows and positions. Moreover, as a two-country model it does not adequately reflect the distribution of risk, in addition to the calculation inaccuracies caused by the non-timely residency principle of the balance of payments.

In summary, the drivers of current account imbalances cannot be considered to play an undue role as they themselves affect macroeconomic stability within the EU only to a limited degree. They may indeed assume detrimental proportions, much of which owes to the institutional framework of the European Union. However, flat-rate thresholds do

not remedy this situation, which is linked to the difficulty of establishing the sustainable level of the underlying drivers. Each country draws on different conditions. In the European Union, for example, mainly two growth models coincide. It should be stressed that the "German" export-oriented model with corresponding surpluses by no means is fundamentally superior.

Due to the limited informative value for stability, and the problem of the targeted governance of the indicators, current account imbalances should not be of high relevance for economic policy. They should continue to be monitored, ideally in conjunction with the underlying gross flows, given their warning qualities. However, the attention they have received in the European Union does not seem justified.

## References

- Arellano, M. (1987) Computing Robust Standard Errors for Within-Groups Estimators. *Oxford Bulletin of Economics and Statistics* 49 (4), 431–434.
- Ariç, K. H., Tuncay, M. & Sek, S. K. (2017) Current Account Dynamics of Central European Countries. *European Journal of Economic Studies* 6 (2), 78–84. DOI:10.13187/es.2017.6.78.
- Atoyán, R., Manning, J. & Rahman, J. (2013) Rebalancing: Evidence from Current Account Adjustment in Europe. *IMF Working Paper* WP/13/74.
- Avdjiev, S., Everett, M., Lane, P. R. & Shin, H. S. (2018) Tracking the international footprints of global firms. *BIS Quarterly Review*, 47–66.
- Behringer, J. & van Treeck, T. (2019) The Corporate Sector and the Current Account. *FMM Working Paper* (43-2019). IMK at the Hans Boeckler Foundation, Macroeconomic Policy Institute.
- Belke, A. & Dreger, C. (2013) Current Account Imbalances in the Euro Area: Does Catching up Explain the Development? *Review of International Economics* 21 (1), 6–17. DOI:10.1111/roie.12016.
- Bibow, J. (2017) How Germany’s Anti-Keynesianism Has Brought Europe to Its Knees. *Levy Economics Institute Working Paper* (886). Available at: [http://www.levyinstitute.org/pubs/wp\\_886.pdf](http://www.levyinstitute.org/pubs/wp_886.pdf).
- Blanchard, O. & Giavazzi, F. (2002) Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle? *Brookings Papers on Economic Activity* (2), 147–209.
- Borio, C. & Disyatat, P. (2015) Capital flows and the current account: Taking financing (more) seriously. *BIS Working Papers* (525), 1–45.
- Brancaccio, E. (2012) Current Account Imbalances, the Eurozone Crisis, and a Proposal for a “European Wage Standard”. *International Journal of Political Economy* 41 (1), 47–65. DOI:10.2753/IJP0891-1916410102.
- Brissimis, S. N., Hondroyannis, G., Papazoglou, C., Tsaveas, N. T. & Vasardani, M. A. (2013) The determinants of current account imbalances in the euro area: a panel estimation approach. *Economic Change and Restructuring* 46 (3), 299–319. DOI:10.1007/s10644-012-9129-0.

- Bussière, M., Fratzscher, M. & Müller, G. J. (2005) Productivity shocks, budget deficits and the current account. *ECB Working Paper series* (509).
- Calderón, C., Chong, A. & Loayza, N. (1999) Determinants of Current Account Deficits in Developing Countries. *Central Bank of Chile Working Papers* (51), 1–41.
- Ca’Zorzi, M., Chudik, A. & Dieppe, A. (2012) Thousands of Models, One Story: Current Account Imbalances in the Global Economy. *ECB Working Paper series* (1441).
- Chia, W. M. & Alba, J. D. (2005) Terms-of-Trade Shocks and the Current Account. *Journal of Economic Integration* 20 (4), 789–808.
- Chinn, M. D. & Prasad, E. S. (2003) Medium-term determinants of current accounts in industrial and developing countries: an empirical exploration. *Journal of International Economics* 59 (1), 47–76. DOI:10.1016/S0022-1996(02)00089-2.
- Christofzik, D. I., Feld, L. P., Reuter, W. H. & Yeter, M. (2018) Uniting European fiscal rules: How to strengthen the fiscal framework. *Working Papers* 2018 (4). German Council of Economic Experts / Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung.
- Comunale, M. & Hessel, J. (2014) Current account imbalances in the Euro area: Competitiveness or financial cycle? *DNB Working Paper* (443).
- Coutinho, L., Turrini, A. & Zeugner, S. (2018) Methodologies for the Assessment of Current Account Benchmarks. *European Economy Discussion Papers* (086). Publications Office of the European Union, Luxembourg. DOI: 10.2765/80914.
- Danish Energy Agency (2018) *Denmark becomes a net importer of oil*. 30 August. Available at: <http://www.mynewsdesk.com/danish-energy-agency/pressreleases/denmark-becomes-a-net-importer-of-oil-2664347> (Accessed: 1 July 2020).
- Dapena, J. P. (2006) Volatility of GDP, Macro Applications and Policy Implications of Real Options for Structure of Capital Markets. *Documento de Trabajo* (320). DOI:10.2139/ssrn.997143.
- Das, D. K. (2016) Determinants of current account imbalance in the global economy: a dynamic panel analysis. *Journal of Economic Structures* 5 (8). DOI:10.1186/s40008-016-0039-6.
- Debelle, G. & Faruquee, H. (1996) What Determines the Current Account? A Cross-Sectional and Panel Approach. *IMF Working Paper* (96/58).

- Devadas, S. & Loayza, N. (2018) When is a Current Account Deficit Bad? *Research & Policy Briefs* (17), 1–4. World Bank Group.
- Easterly, W., Islam, R. & Stiglitz, J. E. (2000) Explaining Growth Volatility. Washington D.C.
- Ehmer, P. (2014) The impact of diverging economic structure on current account imbalances in the euro area. *Discussion Papers* (27). University Witten/Herdecke.
- Eichengreen, B. (2010) Imbalances in the Euro Area. Unpublished, University of California at Berkeley. Available at: [https://eml.berkeley.edu/~eichengr/Imbalances\\_Euro\\_Area\\_5-23-11.pdf](https://eml.berkeley.edu/~eichengr/Imbalances_Euro_Area_5-23-11.pdf).
- Erauskin, I. (2015) Savings, the size of the net foreign asset position, and the dynamics of current accounts. *International Review of Economics & Finance* 39, 353–370. DOI: 10.1016/j.iref.2015.07.002.
- European Commission (2019a) Alert Mechanism Report 2020 - Statistical Annex SWD(2019) 630 final.
- European Commission (2019b) Country Report Germany 2019: Including an In-Dept Review on the prevention and correction of macroeconomic imbalances. *European Economy* 2012 (9). Publications Office of the European Union, Luxembourg. DOI: 10.2765/19685.
- European Commission (2020) *AMECO database*. Directorate-General of Economic and Financial Affairs. Available at: [https://ec.europa.eu/economy\\_finance/ameco/user/serie/SelectSerie.cfm](https://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm).
- European Court of Auditors (2018) *Is the main objective of the preventive arm of the Stability and Growth Pact delivered?* Special Report 18/2018. Available at: <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=46430>.
- European Fiscal Board (2019) *Assessment of EU fiscal rules: with a focus on the six and two-pack legislation*. European Fiscal Board, Brussels. Available at: [https://ec.europa.eu/info/sites/info/files/2019-09-10-assessment-of-eu-fiscal-rules\\_en.pdf](https://ec.europa.eu/info/sites/info/files/2019-09-10-assessment-of-eu-fiscal-rules_en.pdf).
- Eurostat (2020). *Database*. Available at: <https://ec.europa.eu/eurostat/data/database>.
- Eurostat (2019) *Balance of payments - International transactions (BPM6) (bop\_6)*. 15 May. Available at: [https://ec.europa.eu/eurostat/cache/metadata/en/bop\\_6\\_esms.htm](https://ec.europa.eu/eurostat/cache/metadata/en/bop_6_esms.htm) (Accessed: 27 March 2020).

- Frankel, J. A. & Rose, A. K. (1998) The Endogeneity of the Optimum Currency Area Criteria. *The Economic Journal* 108 (449), 1009–1025.
- Fuller, G. W. (2018) Exporting Assets: EMU and the Financial Drivers of European Macroeconomic Imbalances. *New Political Economy* 23 (2), 174–191.
- Gaulier, G. & Vicard, V. (2012) Current account imbalances in the euro area: competitiveness or demand shock? *Banque de France - Quarterly Selection of Articles* (27), 5–26.
- Gehring, A. (2015) New evidence on the determinants of current accounts in the EU. *Empirica* 42 (4), 769–793. DOI: 10.1007/s10663-014-9276-9.
- Giavazzi, F. & Pagano, M. (1990) Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries. *NBER Macroeconomics Annual 1990* 5, 75–122.
- Giavazzi, F. & Spaventa, L. (2010) Why the current account matters in a monetary union: Lessons from the financial crisis in the Euro area. *CEPR Discussion Paper* 8008.
- Gnath, K., McKeon, M. & Petersen, T. (2018) *Germany's Current Account and Trade Surpluses: A Technical Debate Enters the Geopolitical Limelight*. Bertelsmann Stiftung GED Study.
- Gossé, J.-B. & Serranito, F. (2014) Long-run determinants of current accounts in OECD countries: Lessons for intra-European imbalances. *Economic Modelling* 38, 451–462. DOI: 10.1016/j.econmod.2014.01.008.
- Graff, M., Tang, K. K. & Zhang, J. (2012) Does Demographic Change Affect the Current Account? A Reconsideration. *Global Economy Journal* 12 (4). DOI:0.1515/1524-5861.1885.
- Grömling, M., Matthes, J., Peters, H., Harms, P., Horn, G. & Lindner, F. (2016) Der deutsche Leistungsbilanzüberschuss — Fluch oder Segen? *Wirtschaftsdienst* 96 (11), 787–805. DOI:10.1007/s10273-016-2052-7.
- Gros, D. & Busse, M. (2013) The Macroeconomic Imbalance Procedure and Germany: When is a current account surplus an ‘imbalance’? *CEPS Policy Brief* 301. Available at: <https://www.ceps.eu/ceps-publications/macro-economic-imbalance-procedure-and-germany-when-current-account-surplus-imbalance/>.
- Hlavac, Marek (2018) stargazer: Well-Formatted Regression and Summary Statistics Tables. R package version 5.2.2. <https://CRAN.R-project.org/package=stargazer>.

- Herrmann, S. & Jochem, A. (2013) Current account adjustment in EU countries: Does euro-area membership make a difference? *Deutsche Bundesbank Discussion Paper* (49).
- Herwartz, H. & Siedenburt, F. (2007) Determinants of Current Account Imbalances in 16 OECD Countries: An Out-Of-Sample Perspective. *Review of World Economics* 143 (2), 349–374.
- International Monetary Fund (2020) *World Economic Outlook Database*. April 2020 edition. Available at: <https://www.imf.org/external/pubs/ft/weo/2020/01/weodata/index.aspx>.
- Işık, N., Yılmaz, S. S. & Kılınc, E. C. (2017) The Relationship between Current Account Balance and Types of Credits: An Application on Selected OECD Countries. *Çankırı Karatekin University, Journal of The Faculty of Economics and Administrative Sciences* 7 (2), 105–126.
- Jager, J. & Hafner, K. A. (2013) The Optimum Currency Area Theory and the EMU. *Intereconomics* 48 (5), 315–322. DOI: 10.1007/s10272-013-0474-7.
- Kollmann, R., Ratto, M., Röger, W., Veld, J. in 't & Vogel, L. (2014) What drives the German current account? And how does it affect other EU member states. *European Economy Economic Papers* 516. European Commission Directorate-General for Economic and Financial Affairs, Brussels. DOI: 10.2765/69915.
- Kovačević, R. (2017) Current Account determinants in Southeast European (SEE) countries - panel approach. *Proceedings of Rijeka Faculty of Economics: Journal of Economics and Business* 35 (2), 391–424.
- Lane, P. R. (2013) Capital flows in the euro area. *European Economy Economic Papers* 497. European Commission Directorate-General for Economic and Financial Affairs, Brussels. DOI: 10.2765/43795.
- Lapavistas, C., Kaltenbrunner, A. & Lindo, D. et al. (2010) Eurozone crisis: beggar thyself and thy neighbour. *Journal of Balkan and Near Eastern Studies* 12 (4), 321–373.
- Loayza, N. V., Rancière, R., Servén, L. & Ventura, J. (2007) Macroeconomic Volatility and Welfare in Developing Countries: An Introduction. *The World Bank Economic Review* 21 (3), 343–357.

- Mahnaz, A., Tusawar Iftikhar, A. & Rozina, S. (2019) Empirical investigation of foreign direct investment and current account balance in East Asian economies. *Pakistan Journal of Commerce and Social Sciences* 13 (3), 779–795.
- ‘Metadata Glossary – Domestic credit to private sector (% of GDP)’, *The World Bank Databank*. Available at: <https://databank.worldbank.org/metadataglossary/world-development-indicators/series/FS.AST.PRVT.GD.ZS>.
- Micossi, S., D’Onofrio, A. & Peirce, F. (2018) On German External Imbalances. *CEPS Policy Insights* 2018 (13), 1–20.
- Moody’s Investor Service (2018) *Rating Methodology: Sovereign Bond Ratings*. 27 November.
- Müller, P., Pauly, C., Reiermann, C. & Neukirch, R. (2016) Juncker’s Leadership Style Under the Microscope. *Der Spiegel*, 17 June. Available at: <https://www.spiegel.de/international/europe/eu-commission-president-juncker-under-fire-a-1098232.html> (Accessed: 25 May 2020).
- Mundell, R. A. (1961) A Theory of Optimum Currency Areas. *The American Economic Review* 51 (4), 657–665.
- Obstfeld, M. (2012) Does the Current Account Still Matter? *American Economic Review* 102 (3), 1–23.
- Pierluigi, B. & Sondermann, D. (2018) Macroeconomic imbalances in the euro area: where do we stand? *ECB Occasional Paper Series* (211). DOI: 10.2866/524051.
- Priewe, J. (2018) A time bomb for the Euro? Understanding Germany’s Current Account Surplus. *IMK Studies* (59). Hans-Böckler-Stiftung, Düsseldorf.
- Romelli, D., Terra, C. & Vasconcelos, E. (2018) Current account and real exchange rate changes: The impact of trade openness. *European Economic Review* 105, 135–158.
- Schnabl, G. & Wollmershäuser, T. (2013) Fiscal divergence and current account imbalances in Europe. *CESifo Working Paper* (4108). Center for Economic Studies and Ifo Institute (CESifo), Munich.
- Schoder, C., Proaño, C. R. & Semmler, S. (2011) Are Current Account Imbalances between EMU Countries Sustainable? Evidence from Parametric and Non-Parametric Tests. *Schwartz Center for Economic Policy Analysis and Department of Economics Working Paper Series* 2011 (6).

- Siddiqui, D. A., Ahmad, M. H. & Asim, M. (2013) The causal relationship between Foreign Direct Investment and Current Account: an empirical investigation for Pakistan economy. *Theoretical and Applied Econometrics* 20 (8(585)), 93–106.
- UNCTAD (2020) *Foreign direct investment: Inward and outward flows and stock, annual*. Database. Available at: <https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96740> (Accessed: 11 March 2020).
- Unger, R. (2017) Asymmetric credit growth and current account imbalances in the euro area. *Journal of International Money and Finance* 73, 435–451.
- US Energy Information Administration (2020) *Europe Brent Spot Price FOB*. Database. Available at: <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RB RTE&f=A> (Accessed: 8 March 2020).
- ‘Why Germany’s current-account surplus is bad for the world economy’ 2017, *The Economist*, 8 July. Available at: <https://www.economist.com/leaders/2017/07/08/why-germanys-current-account-surplus-is-bad-for-the-world-economy> (Accessed: 12 February 2020).
- Wolf, M. (2016) Germany is the eurozone’s biggest problem. *Financial Times*, 10 May. Available at: <https://www.ft.com/content/7fcb38e8-15f5-11e6-9d98-00386a18e39d> (Accessed: 15 February).
- World Bank (2020) *World Development Indicators*. The World Bank Group, Washington D.C. Available at: <https://databank.worldbank.org/source/world-development-indicators#>.
- Yang, L. (2011) An Empirical Analysis of Current Account Determinants in Emerging Asian Economies. *Cardiff Economics Working Papers* (E2011/10). Cardiff University, Cardiff.

## Appendices

Appendix A: Additional information on macroeconomic instability panel regression

Table 5: Summary statistics for instability drivers

Summary statistics for instability drivers						
Statistic	N	Mean	St. Dev.	Min	Median	Max
GDP growth	616	2.674	3.480	-14.814	2.784	25.163
GDP vol (3-year)	560	1.975	2.030	0.042	1.309	13.208
GDP vol (5-year)	504	2.401	1.955	0.269	1.773	11.462
CA	697	-1.071	5.559	-23.872	-0.839	15.281
NIIP	536	-34.616	48.050	-198.400	-31.100	73.300
Inflation deviation	696	4.042	41.785	-3.684	0.221	1,059.206

Table 6: Specification tests: Instability regression

Test	Purpose	Null hypothesis	Result
Lagrange FF Multiplier Test for Panel Models (LM test)	Comparison between random effects (RE) and pooled OLS	Variances across entities are zero (no significant difference across units – no panel effect)	H <sub>0</sub> rejected (FE consistent)
F test	Comparison FE and pooled OLS	No fixed effects	H <sub>0</sub> rejected (FE consistent)
Hausman test	Comparison between FE and RE	Both models are consistent/ Individual random effects are exogeneous	H <sub>0</sub> rejected (FE consistent)
	Test on endogeneity		

Table 7: Fixed effects regression: macroeconomic instability (robustness)

<b>Macroeconomic instability (robustness check)</b>				
	<i>Dependent variable: moving GDP volatility</i>			
	Full sample		excl. GR, Baltics	
	3-year	5-year	3-year	5-year
	(1)	(2)	(3)	(4)
CA <sub>t-3</sub>	-0.199*** (0.039)		-0.123*** (0.037)	
NIIP <sub>t-3</sub>	-0.019*** (0.005)		-0.015*** (0.005)	
CA <sub>t-5</sub>		-0.206*** (0.056)		-0.078** (0.035)
NIIP <sub>t-5</sub>		-0.014** (0.007)		-0.011 (0.007)
Inflation deviation	-0.002 (0.049)	-0.009 (0.049)	-0.050 (0.063)	0.014 (0.070)
Observations	446	390	377	329
R <sup>2</sup>	0.172	0.185	0.099	0.057
Adjusted R <sup>2</sup>	0.113	0.117	0.032	-0.024
<i>Note:</i>			* ** ***	p < 0.01

## Appendix B: Data sources and description

Table 8: Data sources and description

Abbrevia tion	Variable	Description	Source(s)
CA	Current account (% of GDP)	<ul style="list-style-type: none"> <li>▪ The dependent variable in my analysis</li> <li>▪ Sum of net exports of goods and services, net primary income, and net secondary income</li> <li>▪ Most of the data are taken from the AMECO database and were supplemented by the IMF data as they are incomplete. These were most similar to those of AMECO.</li> </ul>	AMECO, IMF World Economic Outlook (WEO) April 2020
FISBAL	Fiscal balance	<ul style="list-style-type: none"> <li>▪ General government deficit/surplus in % of GDP</li> <li>▪ <b>Or</b> net lending/net borrowing of general government (% of GDP)</li> </ul>	Eurostat
Trade	Trade (% of GDP)	<ul style="list-style-type: none"> <li>▪ Indicator for <i>trade openness</i></li> <li>▪ Sum of exports and imports of goods and services measured as share of GDP</li> </ul>	World Bank (WDI)
REER	Real effective exchange rate	<ul style="list-style-type: none"> <li>▪ Measure for <i>competitiveness</i></li> <li>▪ The former is a weighted average of a country's currency relative to the index of other major currencies, weighted by trading volume of the base currency Deflated by the consumer price indices relative to panel of 42 trading partners</li> <li>▪ Part of MIP scoreboard indicators</li> <li>▪ Index, 2010=100</li> <li>▪ Euro area trading partners as other option</li> </ul>	Eurostat
credit	Domestic credit to private sector (% of GDP)	<ul style="list-style-type: none"> <li>▪ Proxy for <i>financial deepening</i></li> <li>▪ Financial resources provided by the private sector, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish claim for repayment (Metadata WDI)</li> </ul>	World Bank (WDI)
Age depend	Total age dependency ratio	<ul style="list-style-type: none"> <li>▪ In % of working-age population</li> <li>▪ Ratio of dependents (people &lt; 15 years and &gt; 64 years) to the rest</li> </ul>	World Bank (WDI)
Output gap	Output gap (% of potential GDP)	<ul style="list-style-type: none"> <li>▪ Proxy for point in business cycle</li> <li>▪ gap between actual and potential GDP as % of potential GDP</li> </ul>	AMECO
w-p-g diff	Wage-productivity-growth differential	<ul style="list-style-type: none"> <li>▪ Self-calculated differential of real labor costs growth and real labor productivity growth, based on Eurostat data</li> <li>▪ Similar to ULC – but a differential instead of a ratio</li> </ul>	Eurostat

NIIP	Net international investment position (% of GDP)	<ul style="list-style-type: none"> <li>▪ provides an aggregate view of the net financial position (assets minus liabilities) of a country vis-à-vis the rest of the world</li> <li>▪ used both in lagged and non-lagged form</li> <li>▪ <i>I use it as a proxy for the initial net foreign asset position for which data is difficult to obtain.</i></li> <li>▪ unbalanced / missing data</li> <li>▪ Part of MIP scoreboard indicators</li> </ul>	Eurostat
unempl	Unemployment rate	<ul style="list-style-type: none"> <li>▪ Unemployment rate (% of total labor force)</li> </ul>	Eurostat
FDI	Foreign direct investment (% of GDP)	<ul style="list-style-type: none"> <li>▪ Net FDI <i>flow</i>: inward minus outward flows</li> <li>▪ A negative sign indicates investment outflows exceeding inflows – caused by for instance disinvestment, reinvestment outside the country or other.</li> <li>▪ Own calculation based on FDI net inflow and FDI outflow provided by UNCTAD.</li> </ul>	UNCTAD
ToT	Terms of trade	<ul style="list-style-type: none"> <li>▪ Measure for <i>competitiveness</i></li> <li>▪ Ratio of price index for exports of goods and services to price index for imports of goods and services</li> <li>▪ Index, 2015 = 100</li> </ul>	AMECO
Oil price	Oil price	<ul style="list-style-type: none"> <li>▪ Annual Europe Brent Spot Price FOB</li> <li>▪ In Dollar per Barrel</li> </ul>	US Energy Information Administration (EIA)
RIR	Real interest rate	<ul style="list-style-type: none"> <li>▪ Short-term real interest rates deflated by GDP</li> </ul>	AMECO
Inflation deviation	Deviation of inflation rate from inflation target	<ul style="list-style-type: none"> <li>▪ Computed as <math>r - r^*</math> with <math>r^*</math> being the ECB inflation target of 2%</li> <li>▪ Based on average consumer price index in annual % change</li> </ul>	IMF WEO
Instability	GDP growth volatility	<ul style="list-style-type: none"> <li>▪ Calculated as <ul style="list-style-type: none"> <li>○ Rolling standard deviation of GDP growth</li> <li>○ non-overlapping standard deviation of GDP growth</li> </ul> </li> </ul>	World Bank (WDI)

Table 9: Comparison of direction of effect for CA determinants (theory vs. empirics)

<b>Determinant</b>	<b>Direction of effect (theory)</b>	<b>Direction of effect (empirical)</b>
<b>Fiscal balance</b>	+	+
<b>Trade openness</b>	+/-	+
<b>REER</b>	-	+
<b>Domestic Credit to GDP ratio</b>	-	-
<b>Age dependency ratio</b>	+/-	+
<b>Output gap</b>	-	-
<b>NIP<sub>t-1</sub></b>	+/-	+
<b>Real interest rate</b>	+	+
<b>Unemployment rate</b>	+/-	+
<b>FDI flow</b>	-	-
<b>Terms of trade</b>	+	+
<b>Oil price</b>	-	+
<b>Wage-productivity-growth differential</b>	-	-

## Appendix C: Specification tests for main regression

*Table 10: Specification tests: Current account driver regression*

<i>Test</i>	<i>Purpose</i>	<i>Null hypothesis</i>	<i>Result</i>
Lagrange FF Multiplier Test for Panel Models (LM test)	Comparison between RE and POLS	Variances across entities are zero (no significant difference across units – no panel effect)	H <sub>0</sub> rejected
F test	Comparison FE and pooled OLS	No fixed effects	H <sub>0</sub> rejected
Hausman test	Comparison between FE and RE	Both models are consistent/ Individual random effects are exogeneous	H <sub>0</sub> rejected
Breusch-Pagan test	Test on endogeneity Heteroscedasticity	Homoscedasticity (of residuals)	H <sub>0</sub> rejected
Breusch-Godfrey/Woolridge test	For serial correlation in panel models	No serial correlation	H <sub>0</sub> rejected

Appendix D: Robustness checks for the main regression

Table 11: Robustness check with 3-5-year averages

<b>Determinants of current account (in 3-5-year averages)</b>						
	<i>Dependent variable:</i>					
	CA					
	3-year averages		4-year averages		5-year averages	
	(1)	(2)	(3)	(4)	(5)	(6)
FISBAL	0.240** (0.102)	0.275** (0.112)	0.258** (0.119)	0.308** (0.139)	0.204* (0.120)	0.282** (0.118)
Trade	0.042 (0.027)	-0.010 (0.030)	0.037 (0.028)	-0.007 (0.030)	0.043 (0.028)	-0.010 (0.028)
REER	0.062 (0.052)	0.078* (0.041)	0.097* (0.057)	0.098** (0.048)	0.100 (0.072)	0.064 (0.080)
credit	-0.061*** (0.022)	-0.056** (0.024)	-0.064*** (0.018)	-0.061*** (0.019)	-0.051** (0.024)	-0.085*** (0.023)
Age depend	0.504** (0.236)	0.386** (0.179)	0.474** (0.210)	0.426** (0.170)	0.702** (0.300)	0.500** (0.232)
output gap	-0.689*** (0.086)	-0.420*** (0.117)	-0.641*** (0.094)	-0.261 (0.175)	-0.524*** (0.161)	-0.328* (0.179)
NIIP <sub>t-1</sub>	0.008 (0.017)	0.014 (0.016)	0.008 (0.015)	0.020 (0.013)	0.004 (0.015)	0.019 (0.013)
RIR	0.508* (0.270)	0.087 (0.257)	0.109 (0.309)	-0.047 (0.312)	0.606 (0.513)	0.224 (0.527)
unempl		0.217 (0.134)		0.287** (0.124)		0.151 (0.177)
FDI		-0.104*** (0.039)		-0.070* (0.041)		-0.156*** (0.041)
ToT		0.289** (0.115)		0.375*** (0.140)		0.627*** (0.166)
Oil price		0.016 (0.012)		0.025* (0.015)		0.074*** (0.027)
w-p-g diff		-0.427*** (0.163)		-0.404** (0.157)		-0.476** (0.238)
Observations	132	131	102	101	77	76
R <sup>2</sup>	0.549	0.626	0.568	0.674	0.565	0.774
Adjusted R <sup>2</sup>	0.385	0.460	0.339	0.456	0.194	0.516

Note:

\* \*\* \*\*\* p<0.01

Table 12: CA determinants of Euro area countries vs. non-Euro area countries

<b>Euro Area compared to remaining EU members</b>				
	<i>Dependent variable:</i>			
	CA			
	EA	non-EA	EA	non-EA
	(1)	(2)	(3)	(4)
FISBAL	0.222*** (0.080)	0.063 (0.163)	0.211*** (0.060)	0.182* (0.106)
Trade	-0.002 (0.015)	0.118*** (0.044)	-0.020 (0.013)	0.114** (0.053)
REER	0.034 (0.060)	0.061 (0.037)	0.016 (0.074)	0.053* (0.028)
credit	-0.095*** (0.019)	-0.025 (0.016)	-0.100*** (0.020)	-0.006 (0.016)
Age depend	0.418** (0.172)	0.447 (0.436)	0.410*** (0.148)	0.387 (0.433)
output gap	-0.560*** (0.056)	-0.655*** (0.115)	-0.281*** (0.099)	-0.332 (0.209)
NIIP <sub>t-1</sub>	-0.014 (0.015)	0.056** (0.022)	0.006 (0.014)	0.066*** (0.025)
RIR	0.362** (0.146)	0.497** (0.212)	0.282** (0.130)	0.475** (0.211)
unempl			0.347*** (0.118)	0.412 (0.342)
FDI			-0.014** (0.007)	-0.048 (0.086)
ToT			0.352** (0.155)	0.273*** (0.101)
Oil price			0.021 (0.014)	-0.004 (0.009)
w-p-g diff			-0.117 (0.108)	-0.168* (0.096)
Observations	262	172	262	172
R <sup>2</sup>	0.550	0.514	0.639	0.581
Adjusted R <sup>2</sup>	0.500	0.439	0.590	0.500

Note: \* p < 0.10 \*\* p < 0.05 \*\*\* p < 0.01

Table 13: Pre-GFC vs. post-GFC current account determinants

**Determinants of CA before and after the global financial crisis 2009**

	<i>Dependent variable:</i>			
	CA			
	<2009 (1)	2009- (2)	<2009 (3)	2009- (4)
FISBAL	0.108 (0.176)	0.230** (0.110)	0.103 (0.145)	0.236** (0.099)
Trade	0.028 (0.036)	-0.005 (0.021)	-0.006 (0.040)	-0.016 (0.019)
REER	-0.061 (0.066)	-0.069 (0.066)	-0.015 (0.037)	-0.072 (0.067)
credit	-0.057** (0.024)	-0.067*** (0.021)	-0.064*** (0.023)	-0.066*** (0.020)
Age depend	-0.497 (0.444)	0.400*** (0.126)	-0.644* (0.381)	0.428*** (0.151)
output gap	-0.429*** (0.139)	-0.587*** (0.088)	-0.073 (0.115)	-0.446*** (0.123)
NIIP <sub>t-1</sub>	0.019 (0.032)	0.035** (0.016)	0.010 (0.028)	0.035** (0.014)
RIR	0.378 (0.280)	0.100 (0.101)	0.095 (0.167)	0.155 (0.128)
unempl			0.747*** (0.189)	0.075 (0.105)
FDI			-0.008 (0.005)	-0.024** (0.012)
ToT			-0.158 (0.128)	0.187 (0.131)
Oil price			0.021 (0.020)	0.015 (0.011)
w-p-g diff			0.007 (0.062)	-0.128** (0.058)
Observations	158	276	158	276
R <sup>2</sup>	0.297	0.470	0.494	0.512
Adjusted R <sup>2</sup>	0.117	0.393	0.337	0.429

Note:

\* \*\* \*\*\* p < 0.01

## Appendix E: MIP scoreboard 2018

Table 14: MIP scoreboard 2018

Year2018	External imbalances and competitiveness					Internal imbalances						Employment indicators <sup>1</sup>		
	Current account balance - % of GDP (3 year average)	Net international investment position (% of GDP)	Real effective exchange rate - 42 trading partners, HICP deflator (3 year % change)	Export market share - % of world exports (5 year % change)	Nominal unit labour cost index (2010=100) (3 year % change)	House price index (2015=100), deflated (1 year % change)	Private sector credit flow, consolidated (% of GDP)	Private sector debt, consolidated (% of GDP)	General government gross debt (% of GDP)	Unemployment rate (3 year average)	Total financial sector liabilities, non-consolidated (1 year % change)	Activity rate - % of total population aged 15-64 (3 year change in pp)	Long-term unemployment rate - % of active population aged 15-74 (3 year change in pp)	Youth unemployment rate - % of active population aged 15-24 (3 year change in pp)
Thresholds	-4/6%	-35%	±5% (EA) ±11% (Non-EA)	-6%	9% (EA) 12% (Non-EA)	6%	14%	133%	60%	10%	16.5%	-0.2 pp	0.5 pp	2 pp
BE	0.3	41.3	6.9	-1.5	3.7	1.0	0.8	178.5	100.0	7.0b	-2.9	1.0	-1.5	-6.3
BG	4.0	-35.2	3.9	13.4	18.3p	4.5	3.9	95.0	22.3	6.3	6.8	2.2	-2.6	-8.9
CZ	1.2	-23.5	11.0	11.9	13.5	6.1p	5.3	70.7	32.6	3.0	7.4	2.6	-1.7	-5.9
DK	7.5	48.5	2.6	-1.5	4.0	3.5	2.4	199.4	34.2	5.6	-4.7	0.9	-0.6	-1.6
DE	8.0	62.0	5.3	3.1	5.6	5.1	6.6	102.4	61.9	3.8	2.0	1.0	-0.6	-1.0
EE	2.1	-27.7	7.7	0.8	14.3	2.1	3.7	101.5	8.4	6.0	6.9	2.4	-1.1	-1.2
IE	2.3	-165.0	2.3	77.4	-2.8	8.3	-7.8	223.2	63.6	7.0	5.1	0.8	-3.2	-6.4
EL	-2.2	-143.3	3.6	6.9	1.4p	1.3e	-1.1p	115.3p	181.2	21.5	-5.0	0.4	-4.6	-9.9
ES	2.6	-80.4	4.1	4.6	0.7p	5.3	0.4p	133.5p	97.6	17.4	-2.2	-0.6	-5.0	-14.0
FR	-0.6	-16.4	4.5	-0.2	2.4p	1.5	7.9p	148.9p	98.4	9.5	1.6	0.6	-0.8	-4.0
HR	2.4	-57.9	4.2	22.9	-2.4d	4.6	2.3p	94.0p	74.8	10.9	4.6	-0.6	-6.8	-18.9
IT	2.6	-4.7	3.3	0.3	2.7	-1.6	1.6	107.0	134.8	11.2	-0.1	1.6	-0.7	-8.1
CY	-4.6	-120.8	1.8	16.6	-0.4p	0.2	8.4p	282.6p	100.6	10.8	0.3	1.1	-4.1	-12.6
LV	0.6	-49.0	4.9	8.6	14.7	6.6	-0.2	70.3	36.4	8.6	-3.0	2.0	-1.4	-4.1
LT	-0.1	-31.0	6.4	3.5	16.5	4.6	4.3	56.4	34.1	7.1	8.2	3.2	-1.9	-5.2
LU	4.9	59.8	3.3	10.7	7.9	4.9	-0.5	306.5	21.0	5.8	-2.0	0.2b	-0.5	-2.5
HU	2.1	-52.0	2.0	8.4	12.4	10.9	4.3	69.3	70.2	4.3	-9.2	3.3	-1.7	-7.1
MT	8.9	62.7	4.9	24.0	3.2	5.1p	7.5	129.8	45.8	4.1	2.3	5.9	-1.3	-2.5
NL	9.9	70.7	3.2	1.7	3.0p	7.4	4.5p	241.6p	52.4	4.9	-3.3p	0.7	-1.6	-4.1
AT	2.2	3.7	4.8	3.9	4.7	2.5	3.9	121.0	74.0	5.5	1.7	1.3	-0.3	-1.2
PL	-0.5	-55.8	0.1	25.8	8.1p	4.9	3.4	76.1	48.9	5.0	3.0	2.0	-2.0	-9.1
PT	0.9	-105.6	3.1	9.4	5.3p	8.9	-0.1p	154.3p	122.2	9.1	0.7	1.7	-4.1	-11.7
RO	-3.3	-44.1	-0.7	23.7	33.6p	1.8	1.9p	47.8p	35.0	5.0	3.3	1.7	-1.2	-5.5
SI	5.5	-18.9	2.0	20.4	6.1	7.4	1.3	72.8	70.4	6.6	4.1	3.2	-2.5	-7.5
SK	-2.4	-68.1	2.5	3.2	10.9	5.0	2.0	90.9	49.4	8.1	8.9e	1.5	-3.6	-11.6
FI	-1.4	-2.0	3.0	-3.0	-2.6	-0.2	1.6	142.1	59.0	8.3	19.9	2.1	-0.7	-5.4
SE	2.8	10.3	-4.0	-6.3	7.4	-3.0	9.0	200.0	38.8	6.6	-2.9	1.2	-0.3	-3.6
UK	-4.3	-10.5	-13.0	-3.8	7.8	0.7	5.3	169.1	85.9	4.4	-0.6	1.0	-0.5	-3.3

Figures highlighted are the ones at or beyond the threshold. Flags: b: Break in series. d: Definition differs. e: Estimated. p: Provisional.

1) For the employment indicators, see page 2 of the AMR 2016. 2) House price index e = estimate by NCB for EL. 3) Nominal unit labour cost HR, d: employment data use national concept instead of domestic concept. 4) Unemployment rate for BE: revision in the survey methodology. 5) In Total financial sector liabilities for SK, derivatives are estimated.

Source: European Commission, Eurostat and Directorate General for Economic and Financial Affairs (for Real Effective Exchange Rate), and International Monetary Fund data, WEO (for world volume exports of goods and services)

Source: European Commission 2019a: 14