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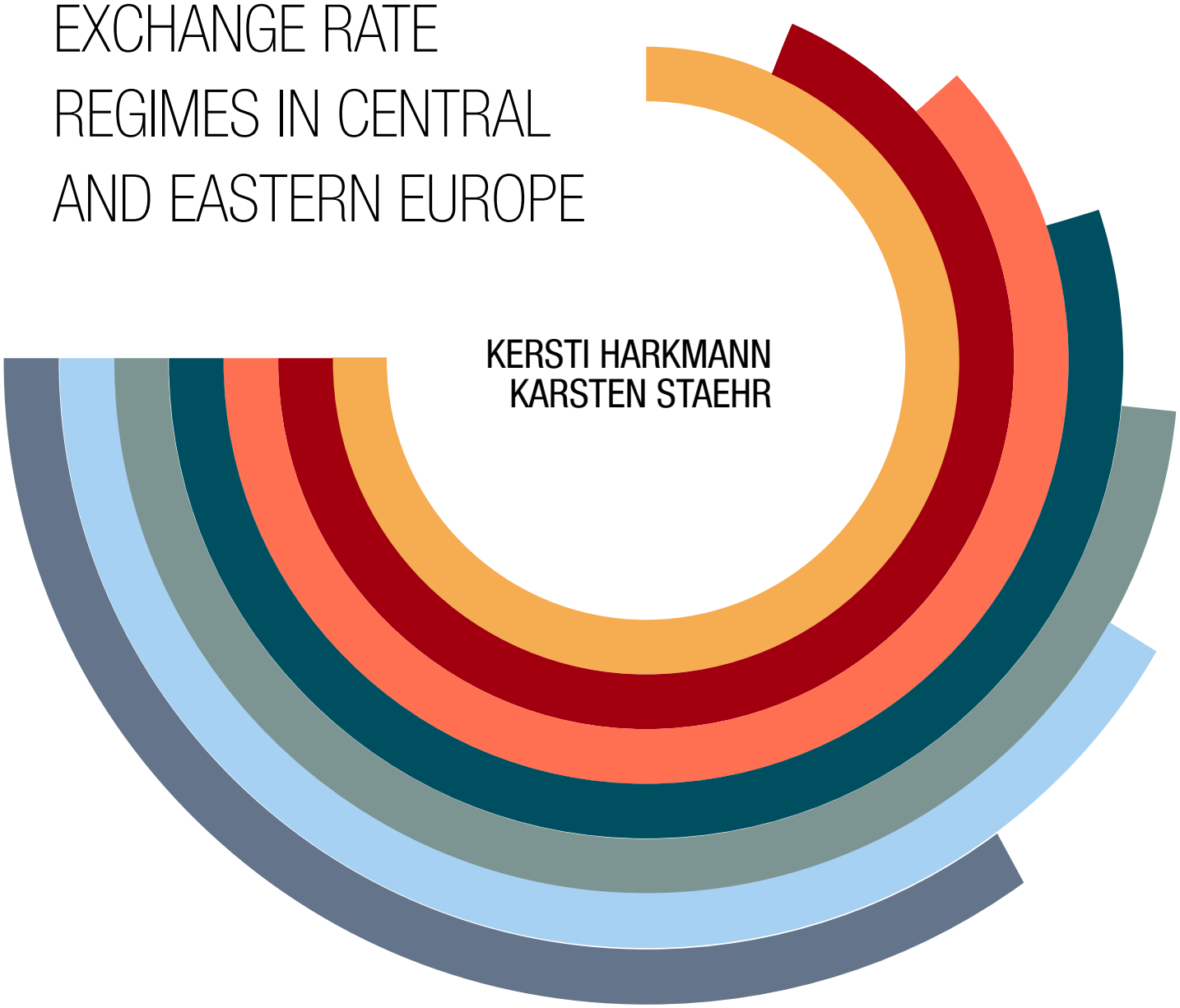

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Current account dynamics and exchange rate regimes in Central and Eastern Europe

Kersti Harkmann and Karsten Staehr*

Abstract

The paper seeks to determine the factors that drive the current account dynamics of the 11 EU members from Central and Eastern Europe (CEE). Panel data models are estimated on annual data for the period 1997–2017 and both domestic pull factors and external push factors are included. The models are, as a key innovation, estimated separately for floating and fixed exchange rate regimes. The current account exhibits substantial persistence in both cases. For the floaters, the current account has been driven by domestic factors while external factors appear unimportant. For the fixers, the current account has mainly been driven by external factors, suggesting there is substantial vulnerability to external developments. The analysis underscores the importance of the exchange rate regime for the drivers of the current account balance in the CEE countries.

JEL Codes: F32, F33, P33

Keywords: current account balance, exchange rate regime, economic policies, Central and Eastern Europe

The views expressed are those of the authors and do not necessarily represent the official views of Eesti Pank, the European Central Bank or other parts of the Eurosystem.

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Non-technical summary

This paper seeks to determine the factors that drove the current account dynamics in the 11 EU countries from Central and Eastern Europe (CEE) in the period 1997–2017. The current account balance in these countries exhibited large variability over the two decades and large deficits have at times jeopardised economic and financial stability. Understanding the factors driving the current account is also important for policy-making given that the countries must adhere to the requirements of the Macroeconomic Imbalance Procedure, which sets narrow limits for the current account balance.

The empirical investigation comprises panel data estimations for the 11 CEE countries using annual data for the period 1997–2017. The current account balance in per cent of GDP is modelled as a function of its lagged value and a number of explanatory variables. The explanatory variables are grouped as internal pull factors, including economic policy measures, and external push factors that capture economic conditions in the euro area core.

Although the CEE countries share many institutional and economic features, they have at various times chosen different exchange rate regimes; some have let their currency float, some have adopted tight pegs and some have adopted the euro. The key innovation of the paper is that the current account estimations are carried out separately for the floating and fixed exchange rates in a country at any given time. The separate estimations make it possible to assess how the different exchange rate regimes have affected the dynamics and the drivers of the current account balance in the countries.

The results for the floaters and the fixers are very different. The persistence of the current account balance is substantial and almost similar for the two groups. Internal pull factors such as the output gap, the relative income level and perhaps the net international investment position are key drivers for the floaters, while external push factors reflecting economic developments in the euro area core appear unimportant. For the fixers, however, developments in the euro area core and changes in international cost competitiveness are important, while internal factors have no discernible effect. These results are robust to changes in model specifications, time samples and coding of the exchange rate regime.

The overall message is that the exchange rate regime has been of key importance for the factors driving the current account in the countries from Central and Eastern Europe. Domestic developments have driven the current account dynamics for the floaters while external developments have been important for the fixers. Moreover, the current account balance exhibits substantial persistence for both groups. These findings are evidently of importance for forecasting and monitoring, and may also help delineate the scope and efficiency of policy measures intended to address possible imbalances.

Contents

1. Introduction

This paper seeks to determine the factors that drove the current account dynamics in the 11 EU countries from Central and Eastern Europe (CEE) in the period 1997–2017. The current account balance in these countries exhibited large variability over the two decades and large deficits have at times threatened economic and financial stability. Understanding the factors driving these developments is important in academic terms and also for policy-making in the countries.

The importance of the current account balance for economic and financial stability has been advanced in numerous studies. Cardarelli et al. (2010) consider a large sample of countries and observe that capital inflows often lead to real exchange rate appreciation and a boom-bust cycle. Between the mid-1990s and 2008 there were two waves of rapidly increasing capital flows, and both periods ended in financial crises, with the Asian crisis in 1997–1998 and the global financial crisis that broke out in 2008. In many cases large deficits have been succeeded by large surpluses within a very short time and these *sudden stops* have typically been followed by financial strain and economic setbacks (Calvo 1998, Edwards 2002).[1] Obstfeld (2012a, 2012b) argues that when seeking to ensure economic and financial stability, it is important to monitor and study the drivers not only of gross capital flows but also of net flows, which are customarily proxied by the current account balance.

Current account developments also matter in monetary unions like the euro area.[2] Jaumotte and Sodsriwiboon (2010) find that current account deficits in the South European euro countries in 2008 exceeded levels that could be explained by fundamentals, indicating possible threats to financial and economic stability. Chen et al. (2013) argue that long-lasting current account imbalances contributed to the financial strain in the euro area after 2009. Using data for the whole of the EU and the euro area, Gabrisch and Staehr (2015) find that current account developments have had a substantial impact on the price competitiveness of the EU countries and various subgroups of EU countries.

The current account balance is also important for policymaking. Numerous initiatives have been introduced at national and international levels to monitor and possibly correct current account imbalances. Since 2012, the current account developments in individual EU countries have been monitored by the European Commission as a part of enhanced surveillance procedures (European Commission 2012). The scoreboard of the EU's Macroeconomic Imbalance Procedure (MIP) stipulates that the three-year moving average must lie within –4 to 6 per cent of GDP. The International Monetary Fund es-

[1] These findings also apply to the CEE countries, where the current account balance has been important for business cycle developments since the mid-1990s (Staehr 2018).

[2] Giavazzi and Spaventa (2011) show in a theoretical model that capital inflows may not be allocated efficiently between the traded and non-traded sectors and thus may lead to unsustainable imbalances being accumulated. Excessive inflows to the non-traded sector may, for instance, lead to high inflation and a deterioration of competitiveness, which later hampers debt servicing.

tablished the External Balance Assessments scheme in 2012, which seeks to identify current account imbalances based on empirical modelling of the current account (Phillips et al. 2013).

This paper considers the factors that have driven the current account dynamics of the CEE countries over the period 1997–2017. Although the countries share many institutional and economic features, they have at various times chosen different exchange rate regimes; some have let their currency float, some have adopted tight pegs and some have adopted the euro. This paper examines how much the different exchange rate regimes have affected the dynamics and the drivers of the current account balance in the countries.

The empirical investigation comprises panel data estimations for the 11 CEE countries using annual data for the period 1997–2017. The current account balance in per cent of GDP is modelled as a function of its lagged value and a number of explanatory variables. The explanatory variables are grouped as internal pull factors, including economic policy measures, and external push factors that capture economic conditions in the euro area core. Crucially, the estimations are generally carried out separately for the cases of floating and fixed exchange rate regimes at any given time.

Section 2 briefly reviews the literature on the determinants of the current account balance and the importance of the exchange rate regime. This paper contributes to this literature in a number of areas. First, the study updates previous studies by including data from the years after the outbreak of the global financial crisis. Second, the estimations allow for persistence in the current account balance by including the lagged dependent variable. Persistence in the current account balance may have important policy implications. Third, the paper includes a number of factors that reflect external economic and financial conditions. Finally, but arguably most importantly, the study considers the role of the exchange rate regime not only for the persistence of the current account balance but also for the factors that drive its dynamics.

The rest of the paper is organised as follows. Section 2 surveys studies of immediate relevance for the paper, including studies on the importance of the exchange rate regime for the current account. Section 3 presents the data used in the analysis. Section 4 contains, for reference, estimations with no distinction between floating and fixed exchange rate regimes. Section 5 presents separate estimations for the floaters and fixers. Section 6 provides additional estimations confirming the robustness of the results. Finally, Section 7 summarises the empirical findings.

2. Background and literature

By definition, in any given time period, the current account balance, the capital account balance and the financial account balance sum to zero, ignoring errors and omissions. The capital account depicts various unilateral transfers, while the financial account consists of net foreign direct investments, net portfolio investments, net financial derivative investments, and

other investments including loans, plus the net draw down of foreign currency reserves.[3] It follows that the current account balance essentially mirrors the capital and financial account balances and so depicts the net resource flows from a country. A positive current account balance is associated with a net resource outflow, customarily referred to as a capital outflow, while a negative current account balance is associated with a net resource inflow, referred to as a capital inflow.

The national account statistics defines the current account balance in terms of a number of macroeconomic variables. The main theories of the current account balance take these definitions as their starting points. The current account balance is the sum of the trade balance, net international factor income and some current transfers. This implies that factors affecting the trade balance will ceteris paribus also affect the current account balance.[4] The national accounts stipulate that the current account balance is equal to net saving, which is saving minus investment.[5] Finally, the current account balance amounts to the change in the net international investment position adjusted for valuation changes. Even small changes in international portfolios may lead to large changes in the current account balance.[6]

These explanations suggest that domestic developments are of importance for the current account balance, while external factors may also be at play. Kindleberger (1978) introduced the concepts of "pull" and "push" factors that drive capital flows and hence current accounts. Capital flows may result from pull factors from the country itself or push factors stemming from outside the country. The distinction between pull and push factors is central from a policy standpoint. Basu (1991) contends that push factors are more common and uses terms such as *credit rationing* and *loan pushing* to describe how external push factors may affect capital flows.

The discussion above illustrates the potentially very large number of possible linkages between internal and external economic developments and the current account balance. A whole range of macroeconomic developments might affect the current account balance, and the direction of causality can in some cases be difficult to ascertain. This study considers the importance of the exchange rate regime for the persistence of the current account and the internal and external drivers of it in the CEE countries, and so it relates to several areas of academic literature.

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[3] The definitions follow the standard in the sixth edition of the Balance of Payments and International Investment Position Manual, BPM6 (IMF 2009). Confusingly, the financial account, together with the capital account, was earlier labelled the capital account. The earlier labelling survives in the term *capital flows* which customarily include flows under both the financial account and the capital account.

[4] The elasticity approach links the prices of exports and imports and the trade balance. The Marshall-Lerner condition posits that a real depreciation leads to an improvement of the trade balance and hence the current account balance if the sum of the numerical import and export price elasticities exceeds one.

[5] The absorption approach asserts that higher domestic absorption crowds out net exports and so reduces the current account balance. The intertemporal approach models consumption and investment as the result of allocation decisions over time.

[6] The portfolio-balance approach posits that investors allocate capital based on preferences for currency and country characteristics for instance.

The first area considers the importance of external push factors for current account developments. Numerous studies for emerging market economies have confirmed the importance of such external factors (Calvo et al. 1996, Fernandez-Arias 1996, Chuhan et al. 1998 and Atoyan et al. 2012). Fratzscher (2012) finds in a sample of 50 countries that push factors were especially important at the height of the global financial crisis in 2008, while pull factors were more important during stable periods. Kim and Pyun (2018) show that countries with fixed exchange rates and free capital movements were more vulnerable to global shocks during the global financial crisis than countries with restrictions on capital movements were.

The second area of literature focuses on factors that drive the current account. The studies typically use panel data estimations but they differ in their empirical methodology and the variables included. Some studies, including Chinn and Prasad (2003), Gruber and Kamin (2007) and Martin (2016), adopt a broad perspective and include countries from various regions. Only a few studies focus on the CEE countries.

Aristovnik (2008) uses data from a large number of transition countries for the period 1992–2003 and analyses the short-term drivers of the current account. Convergence effects and economic growth are important, but so are policy-related factors such as the budget balance. Jevcak et al. (2010) consider capital flows to the CEE countries before and during the global financial crisis. They find that current account developments have in large part been affected by external factors like euro area interest rates and risk sentiment in the euro area, but domestic developments and policies have also played a role.

The third area of literature consists of studies that seek to assess the sustainability of the current account balance. For the CEE countries, some studies adopt mainly descriptive approaches (Roubini and Wachtel 1999, Lane and Milesi-Ferretti 2006, Bakker and Gulde 2010), while others estimate equilibrium or benchmark norms for the current account balance using panel data estimations and then compare the actual current account balance with the computed norm (Zorzi et al. 2009).[7]

Among the studies considering the CEE countries, Rahman (2008) contends that before the global financial crisis the current account balance exceeded the norm for several CEE countries, and attributes this to "EU-phoria" in the countries joining the EU. Comunale (2018) concludes that the current account deficits of the CEE countries have generally moved closer to their computed norms after the global financial crisis, which should have lessened possible sustainability concerns.[8]

[7] The underlying panel data estimations seek to ascertain the quantitative importance of various drivers of the current account balance. These estimations have many similarities with those discussed in the part on the second strand of literature.

[8] The same conclusion is reached by Cuestas (2013) after a careful examination of the time series properties of the current account balance in each of 10 CEE countries.

The fourth area of literature to which this paper contributes focuses on the consequences of the exchange rate regime and in particular the importance of the regime for the susceptibility and persistence of the current account balance.[9] Friedman (1953) argued that floating exchange rate regimes facilitate current account adjustment and help isolate the current account from various economic shocks. Kindleberger (1976) concluded that the experiences after the break-up of the Bretton-Woods system did not fully support this assertion. Debates about the choice of exchange rate regime typically flare up after exchange rate crises or other disruptions to international economic relations.

The empirical literature in the area typically considers the importance of the exchange rate regime for current account adjustment by estimating current account specifications with separate coefficients of the lagged dependent variable for different exchange rate regimes, typically floaters and fixers.[10] Several studies find that the exchange rate regime matters for current account adjustment. More flexible exchange rate regimes support faster adjustment while fixed exchange rate regimes lead to slower adjustment (Ghosh et al. 2013, Gervais et al. 2016, Martin 2016, Bleaney et al. 2018).

An and Park (2016) extend the literature by studying the impact of the exchange rate regimes of trading partners on how current account imbalances adjust and find that the adjustment is faster if the trading partners maintain floating exchange rate regimes. Contrary to most other studies of current account persistence, Chinn and Wei (2013) find in an empirical study that uses data from 170 countries for more than 30 years of data that the persistence of the current account balance does not vary systematically with the exchange rate regime, or indeed with many other country characteristics.[11]

We have only identified one study for the CEE countries that explicitly considers the importance of the exchange rate regime for the persistence of the current account. Herrmann (2009) finds that the persistence of the current account in a short sample of 11 countries in Central and Eastern Europe is lower in the countries which have seen large exchange rate volatility than in the countries with no or limited variability.

The studies discussed above focus on the importance of the exchange rate regime for the persistence of the current account which provides information on the adjustment after changes in various drivers of the current account. Our study takes this analysis one step further by also considering how far the exchange rate regime matters for the susceptibility of the current account to these drivers.

[9] Staehr (2015) reviews the literature on the choice of exchange rate regime in transition and emerging-market economies.

[10] The studies typically assume that the coefficients of other variables in the current account specification are the same across the different exchange rate regimes.

[11] Pancare and Saborowski (2016) study factors that trigger current account reversals in developed economies and find that the factors triggering such reversals differ in various exchange rate regimes.

3. Data

This section presents the data used in the empirical analysis.[12] The dataset contains data for the 11 CEE countries that joined the EU in 2004, 2007 or 2013.[13] The data are annual and typically available from 1996, although there are missing observations at the beginning of the sample for some variables. The relatively short time dimension and the division of the sample into observations with floating and fixed exchange rate regimes necessitate the use of panel data estimations in the empirical analysis.

3.1 Dependent variable

The dependent variable is the current account balance expressed in per cent of GDP. The variable is labelled CA (Ameco: *UBCA*, *UBCABOP* for Croatia 2013–2017). Figure 1 shows the current account balance CA for each of the 11 countries from 1996 to 2017.

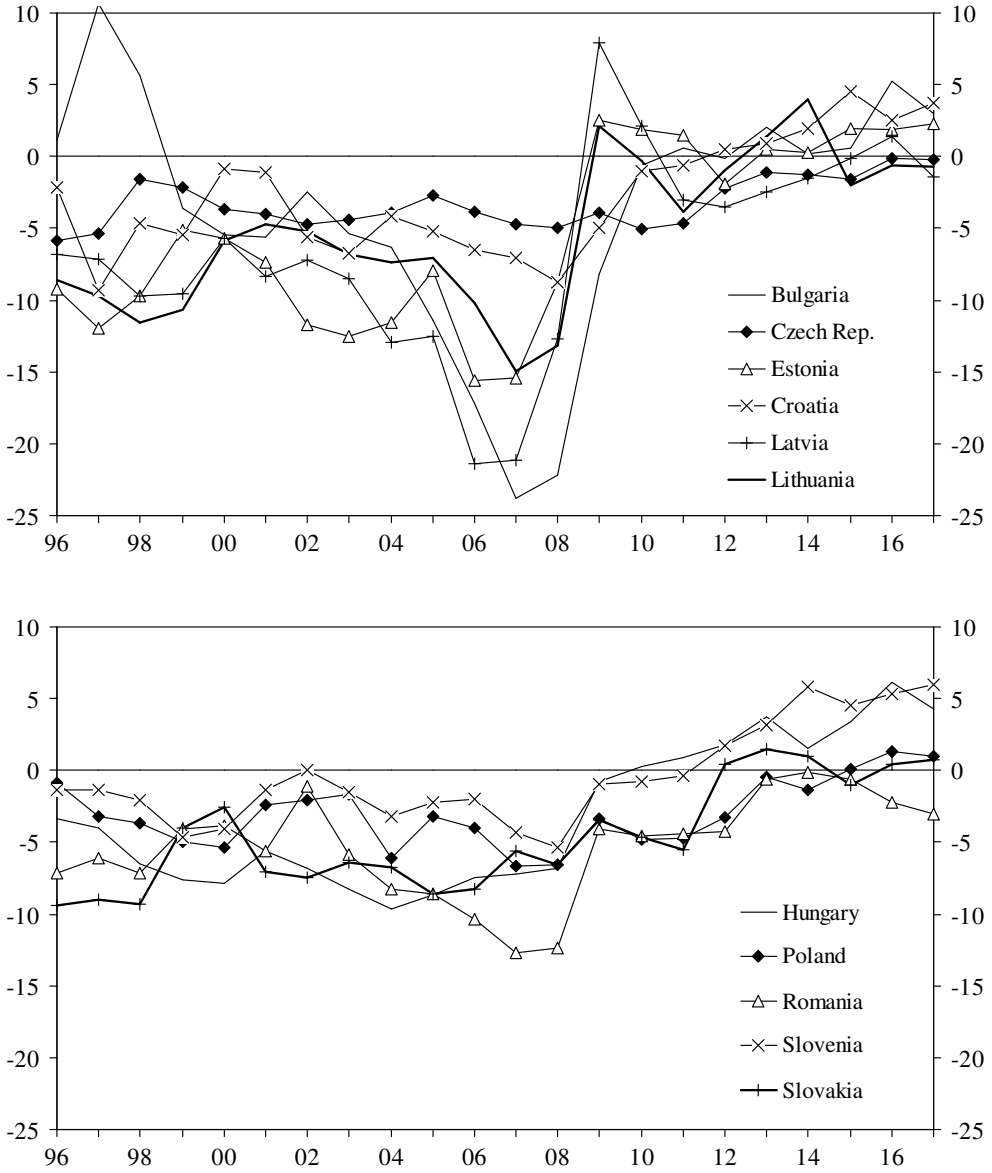
A number of observations are pertinent. First, the *average* current account balance over the period 1996–2017 is negative for all the CEE countries, though with substantial heterogeneity. Slovenia, the country with the highest GDP per capita, exhibits an average deficit of 1.7 per cent of GDP while the average deficit in the Czech Republic is 3.8 per cent of GDP and in Poland 4.0 per cent of GDP. At the other extreme, all three Baltic states had deficits averaging more than 7.0 per cent of GDP over the 23 years.

Second, many CEE countries experienced substantial deterioration of their current account balance over the years 2002–2007; see also Lane and Milesi-Ferretti (2006). The increasing deficits were particularly pronounced for Bulgaria, the Baltic states and Romania.

Third, the current account balance saw sharp reversals in 2008 and 2009 although to different degrees across the countries. The sudden stops were particularly pronounced for the Baltic states, Bulgaria and Romania but they occurred in all the countries with the possible exception of the Czech Republic and Poland, the two countries that did not experience large increases in their current account deficits before the crisis.[14] The current accounts have been roughly in balance or in surplus after 2009.

[12] All variables are downloaded on 13 August 2018 or immediately afterwards.
[13] The countries are Bulgaria, the Czech Republic, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia.
[14] Lane and Milesi-Ferretti (2006) and others stressed the threat of excessive current account deficits before the crisis. In the end the countries with the highest current account deficits also experienced the sharpest adjustments during the global financial crisis.

Figure 1: Current account balance, per cent of GDP, 1996–2017



3.2 Explanatory variables

The explanatory variables can be divided into two groups: internal pull variables that reflect economic developments or policies in the individual CEE country, and external push variables that reflect developments outside the country.

Seven pull variables are included. The output gap captures the business cycle stance of the economy in per cent of potential output, and is labelled YGAP (Ameco: *AVGDGP*). The GDP growth rate is used as an instrument (Ameco: *OVGD*).

The variable YPPP is the purchasing-power-parity-adjusted GDP per capita in per cent of the weighted average for the 15 EU countries in Western Eu-

rope (Ameco: *HVGNPR*). The net international investment position in per cent of GDP is labelled NIIPx. The data are from Eurostat (code: *tipsii10*), but missing observations at the beginning of the sample period have been imputed using data on the current account balance CA and real GDP growth as suggested by Lane and Milesi-Ferretti (2006). The imputation applies to 44 observations mostly at the beginning of the sample period and means that NIIPx is associated with some uncertainty.

The variable DEU is an impulse dummy which takes the value one in the year in which a CEE country entered the European Union. The countries joined the EU in May 2004, except for Bulgaria and Romania, which joined in January 2007, and Croatia, which joined in 2013.[15] The dummy variable FIXED takes the value one if the country has a strict fixed exchange rate regime or has adopted the euro, and zero otherwise. The variable is computed using the de facto exchange rate classifications in Ilzetzki et al. (2017), so that FIXED = 1 for the observations where the coarse classification takes the value 1 in Ilzetzki et al. (2017), otherwise FIXED = 0.

The variable GREER denotes the annual percentage change in the real effective exchange rate, where the real effective exchange rate is computed using unit labour costs as a deflator (Eurostat: *REER_IC37_ULCT*). The variable is a measure of the external cost competitiveness of a country, where a larger GREER implies a real effective appreciation and ceteris paribus deteriorating cost competitiveness. The cyclically adjusted fiscal balance is the fiscal balance adjusted for the impact of the cyclical stance, and the variable in per cent of GDP is labelled FBALCYC (Ameco: *UBLGAP*).

Two external push variables reflect economic developments in the core of the euro area. The six countries in the euro area core EA6 are taken to be Belgium, Germany, France, the Netherlands, Austria and Finland (De Santis and Cesaroni 2016). The variable CA_EA6 is the simple average of the current account balances in per cent of GDP for the six euro area core countries (Ameco: *UBCA*). The variable YGAP_EA6 is the simple average of the output gap in per cent of potential output for the six euro area core countries (Ameco: *AVGDGP*). These two variables are broad measures of economic developments and sentiment in the countries of the euro area core, development that may spill over to or exert an external push on the current account balance of the CEE countries.

3.3 Summary statistics and discussion

Table 1 shows the definitions of the dependent variable CA and the explanatory variables along with the mean and the standard deviation in the sample period 1996–2017. The CEE countries had on average substantial current account deficits over the sample. The mean of the output gap YGAP is very close to zero, which is a result of the way the variable is computed.

[15] Five CEE countries were approved as candidate countries to the EU in 1997, five more in 1999, and Croatia in 2004.

Table 1: Data definitions and summary statistics 1996–2017

	Definition	Mean	S.D.
CA	Current account balance, per cent of GDP	–3.969	5.207
YGAP	Output gap, per cent of potential output	–0.045	3.693
YPPP	GDP per capita, purchasing power parity adjusted, per cent of EU15	51.079	14.682
NIIPx	Net international investment position, per cent of GDP	–44.963	26.716
DEU	Impulse dummy; 1 in year of EU membership, otherwise 0	0.045	0.209
FIXED	Exchange rate dummy; 1 if strict fixed exchange rate regime, otherwise 0	0.504	0.501
FBALCYC	Cyclically adjusted fiscal balance, per cent of GDP	–2.973	2.683
GREER	Growth rate of real effective exchange rate, per cent	2.508	8.306
CA_EA6	Mean current account balance for EA core countries, per cent of GDP	2.897	0.663
YGAP_EA6	Mean output gap for EA core countries, per cent of potential output	–0.252	1.437

Notes: S.D. denotes the standard deviation.

The income level is around 52 per cent of the EU15 average YPPP but the variable exhibits a trend-wise growth for all the countries except during crisis periods. The average net international investment position NIIPx is negative, mirroring the recurring current account deficits over long periods in many of the CEE countries. Both variables are stock variables without obvious convergence points and furthermore, NIIPx is constructed using imputations. We therefore run various robustness checks to ensure that the results are not unduly affected by these variables.

The average of the exchange rate dummy FIXED is around one half, which implies that the samples of floaters and fixers will be of approximately the same size. The average cyclically-adjusted balance FBALCYC is -3 per cent of GDP, suggesting an overall relatively expansionary stance in the countries. The substantial appreciation of the real effective exchange rate GREER is another notable feature, in part reflecting the rapid real convergence of the CEE countries during parts of the sample period.

A notable feature is that the standard deviation of many of the data series for the CEE countries is very large. The economic developments have been volatile in the CEE countries, as is often seen in emerging-market economies. Among the external push variables, the average of the current account for the euro core countries CA_EA6 is positive and substantial, though with notable variation of time. The average output gap for the euro area countries YGAP_EA6 is slightly negative, basically reflecting the effects of the severe downturn after the global financial crisis.

4. Joint estimations

This section presents the results of the estimations where the whole sample is used so that observations with floating and fixed exchange regimes are included at the same time. These joint estimations will function as reference points to confirm that our results can be compared with those of earlier studies of current account dynamics in Central and Eastern Europe or in other emerging economies.

The empirical model is based on the literature reviewed in Section 2, in particular De Santis and Cesaroni (2016), Martin (2016) and Jevcak et al. (2010). Some models in these studies consider the importance of different country groups, exchange rate regimes or development levels using interaction terms for the lagged dependent variable or selected other variables in the model. A key innovation in this paper is that we estimate the entire model separately for floaters and for fixers (presented in the following sections).

The current account balance is modelled as a linear function of its lagged value and several independent explanatory variables reflecting internal pull and external push factors. The estimations use country fixed effects to control for unobserved time-invariant effects so the marginal effects are identified entirely from the evolution of the variables along the time dimension. As discussed in Subsection 3.1, the dynamics of the current account balance in 2009 after the outbreak of the global financial crisis were dramatic and driven by extraordinary events. To avoid the global financial crisis affecting the results unduly, the estimations typically exclude 2009, but recurring robustness analyses will demonstrate the consequences of this decision.

We estimate the dynamic panel data models using country fixed effects least squares (FE) with the output gap instrumented. The choice of FE follows the literature, where panel models of current account dynamics are typically estimated with fixed effects least squares or some variation of it (Abbas et al. 2011, Chinn and Wei 2013, Communale 2018). De Santis and Cesaroni (2016) use several estimation methods including FE, difference GMM and system GMM and find substantial overlap of the results across the methods. Our choice of estimation method is meant to address the two main challenges afforded by the panel data model of current account dynamics.

The first challenge stems from the inclusion of the lagged dependent variable in the panel, which implies that the estimated coefficients may be subject to the Nickell bias (Nickell 1981). The coefficient of the lagged dependent variable is downward biased if the panel is estimated with FE but the bias declines in the number of time periods. Simulation studies show that the bias of the coefficient of the lagged dependent variable is moderate when FE is used in panels with 20 or more time periods and smaller than for various GMM estimators (Judson and Owen 1999, Bun and Kiviet 2001).[16] More

[16] A drawback of using difference or system GMM is that many observations are lost because differencing and lagged instruments are used. This loss of degrees of freedom is particularly troublesome in the case where the current account models estimated separately for floaters and fixers have relatively few observations.

importantly, this paper focuses mainly on the coefficients of the independent explanatory variables and the Nickell bias of these is essentially negligible when the panel model is estimated using fixed effects least squares (Judson and Owen 1999).

The second challenge is the possibility of reverse causality, in particular from the current account to the business cycle stance, which in this case is proxied by the output gap. Capital inflows may stimulate demand and cause a boom, while outflows may have the opposite effect (Brixiova 2010, Staehr 2018). To reduce the risk of reverse causality affecting the results, we instrument the output gap YGAP with the rate of GDP growth lagged by one and two years, since the current account balance in a given year is unlikely to affect GDP growth in previous years. We also include time fixed effects in the set of instruments as recommended for dynamic panel data estimations by Han and Kim (2014). The explanatory variables YPPP, NIIP and GREER are all lagged by one year in the panel data model, and this should essentially preclude reverse causality to the extent that the present current account balance does not affect past realisations of these variables. Finally, the current account balance is unlikely to affect the cyclically adjusted fiscal balance FBALCYC given that the effect stemming from the cyclical position is already removed from the variable.

Table 2 shows the results of the instrumental variables fixed effects estimations with floaters and fixers jointly in the sample. Column (2.1) provides the benchmark results for the joint sample where the current account deficit is modelled as a function of the lagged dependent variable and six independent internal pull variables and two external push variables. The crisis year 2009 is excluded from the sample.

The coefficient of the lagged dependent variable is 0.66 and statistically significant, suggesting there is substantial persistence of the current account balance for the CEE countries. The size of the coefficient is in line with findings in numerous other studies of current account dynamics, including Aristovnik (2008), Zorzi et al. (2009) and De Santis and Cesaroni (2016).

The coefficient of the output gap is negative and statistically significant; domestic booms are associated with a deteriorating current account balance. The result is again in line with the literature.

As expected, a higher development level leads to an improvement in the current account but the effect is imprecisely estimated. This finding is consistent with the convergence hypothesis, which states that capital flows to poor countries to finance investments with high marginal productivity.[17] The coefficient of the net international investment position is economically and statistically insignificant, suggesting there is very modest feedback from the stock of international assets.

[17] At least until the outbreak of the global financial crisis, capital generally flowed downstream to emerging Europe, which is in contrast to the experiences in many emerging economies in other regions (Abiad et al. 2009).

Table 2: Current account estimations, floaters and fixers together

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)
CA(–1)	0.658*** (0.050)	0.536*** (0.045)	0.652*** (0.049)	0.705*** (0.047)	0.661*** (0.050)
YGAP	–0.222*** (0.079)	–0.374*** (0.078)	–0.236*** (0.076)	–0.130* (0.047)	–0.222*** (0.079)
YPPP(–1)	0.058* (0.031)	0.093*** (0.032)	0.071*** (0.022)	..	0.062* (0.032)
NIIPx(–1)	–0.006 (0.011)	–0.004 (0.012)	..	..	–0.007 (0.011)
DEU	–1.562* (0.802)	–1.832** (0.871)	–1.569* (0.801)	–1.568* (0.815)	–1.573* (0.803)
FIXED	..	..	..	..	–0.436 (0.703)
FBALCYC	0.016 (0.084)	–0.028 (0.088)	0.008 (0.083)	0.019 (0.084)	0.018 (0.084)
GREER(–1)	–0.020 (0.021)	–0.005 (0.022)	–0.022 (0.020)	–0.030 (0.021)	–0.020 (0.021)
CA_EA6	–0.888*** (0.317)	–0.797** (0.343)	–0.857*** (0.313)	–1.023*** (0.314)	–0.882*** (0.318)
YGAP_EA6	–0.234 (0.169)	–0.409** (0.167)	–0.224 (0.169)	–0.420*** (0.160)	–0.243 (0.170)
R^2	0.820	0.782	0.819	0.812	0.820
Regime	All	All	All	All	All
Time	1997–2017, excl. 2009	1997–2017	1997–2017, excl. 2009	1997–2017, excl. 2009	1997–2017, excl. 2009
Countries	11	11	11	11	11
No. obs.	215	226	215	215	215

Notes: Panel data estimations with country fixed effects and YGAP instrumented. The dependent variable is the current account balance, CA. Standard errors are shown in brackets. Superscripts ***, **, * denote that the estimated coefficient is statistically different from 0 at the 1, 5 and 10 per cent levels of significance respectively.

The coefficient of the impulse dummy that indicates the year of EU membership is negative and statistically significant at the 10 per cent level. Taken literally the result implies that EU membership has been accompanied by an increase in capital inflows of approximately 1.5 percentage points of GDP in the year of accession, but the effect is of course imprecisely estimated. Rahman (2008) and Bakker and Gulde (2010) also find that EU accession or the prospect of EU accession led to larger capital inflows.

A discretionary fiscal stance does not appear to affect the current account balance in discernible ways in the present sample of CEE countries. Empirical studies typically find either no effect or a relatively small positive effect (Abbas et al. 2011). Atoyan et al. (2012) estimate the coefficient of the fiscal balance to be around 0.25 in a panel of European emerging-market economies, but this study does not include the lagged dependent variable.

The coefficient of the change in the real effective exchange rate is negative but neither economically nor statistically significant. The literature finds a range of different results and the absence of a statistically significant linkage

is not unusual. Gabrisch and Staehr (2015) find no link from cost competitiveness to the current account balance for the EU countries or for the subset consisting of the CEE countries.

Among the external push factors, it is notable that the coefficient of CA_EA6, the average current account balance of the core euro area countries, is negative and statistically significant. The estimate of –0.9 is considerable, especially given the substantial persistence of the current account balance in the CEE countries. Current account developments in the well-off countries of the euro area core appear to spill over to the EU countries in Central and Eastern Europe.

The coefficient of YGAP_EU is not statistically significant, but the negative sign is noteworthy. A boom in the euro area core is likely to be accompanied by increasing imports which, ceteris paribus, should increase exports from the CEE countries and have a positive effect on their current account balances. The negative sign suggests that a boom in the euro area core may be associated with other factors that in the end prevail over the direct trade effect (Kindleberger 1978, Basu 1991). In any case, the coefficient is not statistically significant in the full sample containing both floaters and fixers.

The other columns in Table 2 depict robustness analyses of the baseline results. Column (2.2) presents the results when the crisis year 2009 is included in the sample. The results are overall qualitatively unchanged but the coefficient of YGAP increases somewhat in numerical terms and the coefficient of YGAP_EA6 is now statistically significant. These changes suggest that the inclusion of 2009 with its extreme events does not change the findings in qualitative terms and perhaps actually "strengthens" the findings.

The net international investment position contains a notable amount of imputed variables and exhibits trending dynamics for some of the countries. Column (2.3) provides evidence for the assertion that the estimation results remain largely unaffected if the variable is excluded. Column (2.4) shows the results when both the net international investment position and the relative income level are excluded. The estimated coefficient of YGAP changes slightly, but all qualitative results remain unchanged.

Finally, column (2.5) shows the results when the exchange rate dummy FIXED is added to the baseline model. The coefficient of the variable is neither economically nor statistically significant. The exchange rate regime does not appear to matter for the overall level of the current account balance. This does not mean however that the exchange rate regime is unimportant for the factors driving the current account.

The results in Table 2 provide insights into the factors driving the dynamics of the current account balance in the sample of CEE countries when both floaters and fixers are included. There is substantial persistence and the business cycle stance, the income level, entry to the EU and economic developments in the euro area core matter for the current account dynamics. It can be concluded that the results for the CEE countries are broadly in line with those

obtained in studies considering developed and emerging economies, including those discussed in Section 2.

5. Floaters and fixers

This section presents the key results of this paper as the current account estimations are run separately for the floaters and the fixers. Although several of the countries have retained their exchange rate regime throughout the sample period, there are nevertheless changes for several countries. These countries move in and out of the two subsamples depending on their exchange rate regime at any given time.

Table 3 shows the outcome for the floaters when the model is estimated with country fixed effects and YGAP is instrumented. (The results when the model is estimated without YGAP being instrumented are shown in Table A.1 in Appendix A.)

Table 3: Current account estimations, floaters

	(3.1)	**(3.2)**	**(3.3)**	**(3.4)**
CA(–1)	0.569***	0.472***	0.629***	0.634***
	(0.084)	(0.095)	(0.078)	(0.082)
YGAP	–0.325***	–0.532***	–0.274***	–0.181**
	(0.092)	(0.096)	(0.088)	(0.086)
YPPP(–1)	0.181***	0.241***	0.086***	..
	(0.060)	(0.068)	(0.031)	
NIIPx(–1)	0.038*	0.040	..	..
	(0.021)	(0.024)		
DEU	–2.044**	–2.199**	–1.790**	–1.882**
	(0.891)	(1.052)	(0.895)	(0.937)
FBALCYC	0.181	0.039	0.154	0.193*
	(0.110)	(0.121)	(0.111)	(0.115)
GREER(–1)	0.011	0.036	0.015	0.007
	(0.022)	(0.025)	(0.022)	(0.023)
CA_EA6	–0.048	0.077	–0.373	–0.468
	(0.393)	(0.458)	(0.355)	(0.370)
YGAP_EA6	0.138	–0.115	0.090	–0.073
	(0.183)	(0.190)	(0.184)	(0.183)
R^2	0.847	0.793	0.840	0.823
Regime	Float	Float	Float	Float
Time	1997–2017, excl. 2009	1997–2017	1997–2017, excl. 2009	1997–2017, excl. 2009
Countries	7	7	7	7
No. obs.	103	108	103	103

Notes: Panel data estimations with country fixed effects and YGAP instrumented. The dependent variable is the current account balance, CA. Standard errors are shown in brackets. Superscripts ***, **, * denote that the estimated coefficient is statistically different from 0 at the 1, 5 and 10 per cent levels of significance respectively.

The results in column (3.1) reveal that the persistence is broadly unchanged when there are only floaters in the sample. The coefficient of the output gap is negative, as before, while the coefficient of the lagged income variable YPPP is positive and large. The net international investment position of the CEE countries may also have an effect; the estimated coefficient is positive, though imprecisely estimated, indicating a positive feedback loop. It is notable that the coefficients of CA_EA6 and YGAP_EA6 are both economically and statistically insignificant, so external factors appear to have no discernible impact on the current account for the floaters.

The results are robust. The only partial exception is that the coefficient of the lagged income level YPPP is much smaller when the lagged net international investment position NIIPx is excluded in column (3.3). There is substantial correlation between these two non-stationary variables.

The overall conclusion is that the current account balance for the floaters has primarily been driven by domestic factors such as the output gap, the income level and perhaps the net international investment position. External factors do not however appear to have had any discernible effect on the current account in this sample. Overall, the floating exchange rate appears to have successfully isolated the current account balance from external factors, albeit at the cost of substantial exposure to internal factors.

The results for the cases of fixed exchange rate regimes are very different. Table 4 shows the results of the estimations for the fixers. As before, the model is estimated using estimations with country fixed effects and output gap instrumented. (The results without instrumentation are shown in Table A.2 in Appendix A.) The coefficient of the lagged dependent variable is 0.6, so the persistence is essentially similar to that found in the joint sample. In this case, however, the coefficients of the internal pull variables are all insignificant in both economic and statistical terms.

The coefficients of the two external push variables CA_EA6 and YGAP_EA6 are sizable and statistically significant, indicating that the current account balance of the fixers was susceptible to changes in the current account balance and the business cycle stance in the euro area core. The coefficient of YGAP_EA6 is around –0.8 and it is significant at the 1 per cent level, so a boom in the euro area core leads to a substantial deterioration in the current account balance of the CEE countries with a fixed exchange rate. It is notable that this result is obtained in a model in which the output gap of the euro area core YGAP_EA6 appears along with the output gap of the individual CEE countries YGAP, so a possible synchronisation of the business cycles cannot explain the result.[18] The negative coefficient of the output gap in the euro area core is also remarkable because a boom in this core ceteris paribus leads to increased imports, which should improve the current account balance in the CEE countries. The result suggests that possible spillover or sentiment effects dominate.

[18] The correlation between YGAP and YGAP_EA6 is 0.537 for the fixers and 0.438 for the floaters, so more or less the same for the two groups.

Table 4: Current account estimations, fixers

	(4.1)	(4.2)	(4.3)	(4.4)
CA(-1)	0.620***	0.540***	0.605***	0.640***
	(0.068)	(0.056)	(0.068)	(0.064)
YGAP	–0.084	–0.176*	–0.161	–0.110
	(0.103)	(0.102)	(0.106)	(0.094)
YPPP(-1)	0.041	0.066	0.059	..
	(0.040)	(0.041)	(0.035)	
NIIPx(-1)	–0.004	–0.004	..	..
	(0.015)	(0.016)		
DEU	–1.603	–1.637	–1.639	–1.577
	(1.263)	(1.294)	(1.266)	(1.267)
FBALCYC	–0.005	0.002	–0.021	–0.031
	(0.127)	(0.130)	(0.124)	(0.125)
GREER(–1)	–0.104***	–0.093**	–0.103***	–0.111***
	(0.037)	(0.038)	(0.036)	(0.035)
CA_EA6	–1.635***	–1.651***	–1.555***	–1.648***
	(0.495)	(0.509)	(0.496)	(0.491)
YGAP_EA6	–0.789***	–0.903***	–0.702**	–0.828***
	(0.275)	(0.260)	(0.278)	(0.262)
R^2	0.839	0.818	0.836	0.834
Regime	Fixed	Fixed	Fixed	Fixed
Time	1997–2017, excl. 2009	1997–2017	1997–2017, excl. 2009	1997–2017, excl. 2009
Countries	8	8	8	8
No. obs.	112	118	112	112

Notes: Panel data estimations with country fixed effects and YGAP instrumented. The dependent variable is the current account balance, CA. Standard errors are shown in brackets. Superscripts ***, **, * denote that the estimated coefficient is statistically different from 0 at the 1, 5 and 10 per cent levels of significance respectively.

The coefficient of the lagged growth rate of relative unit labour costs is also statistically significant. The coefficient estimate implies a relatively modest effect in quantitative terms, as a reduction of 10 per cent in relative unit labour costs is followed by an improvement of 1 percentage point in the current account balance the following year. Note also that GREER is affected by developments in unit labour costs in the CEE countries, and also by developments in the external trading partners. This means external developments also affect the current account balance indirectly through the GREER variable.

The very different results for the floaters and fixers are notable. The persistence of the current account balance is more or less the same across the two exchange rate regimes, but the drivers differ markedly. The current account of the floaters is driven mainly by internal factors such as the output gap, the relative income level and perhaps the net international investment position. The current account of the fixers meanwhile is driven by external factors reflecting economic developments in the euro area core and by changes in internal cost competitiveness, which is determined in part by external developments.

The overall conclusion is that the floating exchange rate regimes have isolated the current account from external developments but not from internal ones, while the fixed exchange rate regimes have isolated the current account from internal developments but not external ones. In other words, the exchange rate regimes have been of pivotal importance for the drivers and the dynamics of the current account balance in the CEE countries in the period since the mid-1990s.

6. Robustness analyses

The previous section established that the drivers of the current account dynamics in the CEE countries differed markedly for the two exchange rate regimes. This section considers the robustness of this result to inclusion of additional explanatory variables, to changes in the time sample, and to changes in the definition of the exchange rate dummy.

The empirical model of the current account used in this paper included a relatively small number of explanatory variables, as is typically the case in the literature. This choice is made because of the limited number of observations, but the possible omission of relevant variables may not affect results unduly given that the lagged dependent variable and country fixed effects are included in the model. Table 5 shows the results when we expand the model with additional variables that have been used in earlier studies.

Columns (5.1) and (5.2) show the results when the interest rate spread DISN is included in the model. The spread is computed as the difference between the nominal short-term interest rate in the CEE countries and the average in the EU15 countries from Western Europe. The short-term interest rate is sourced from Ameco (code: *ISN*) but there are many missing observations, especially for Croatia and some other countries at the beginning of the sample. The coefficient of DISN is statistically insignificant for both the floaters and the fixers. The other results are essentially unchanged although the coefficient of the lagged changes in cost competitiveness ceases to be statistically significant for the fixers.

Columns (5.3) and (5.4) reveal that very little changes when we include VIX, the index of implied volatility in US financial markets *(*Bloomberg: *VIX Index*). Other studies, including Fratzscher (2012), have shown that the variable may help explain current account developments during periods of instability. In this case the coefficient of VIX is statistically insignificant and its inclusion has virtually no impact on the other estimation results. The same applies when VDAX, the implied volatility in German financial markets is included (not shown). We have also tried to include various stock market indexes for the USA and Europe but none appears to be of importance for the current account dynamics of the CEE countries (not shown).

Table 5: Current account estimations, additional controls

	(5.1)	(5.2)	(5.3)	(5.4)	(5.5)	(5.6)
CA(–1)	0.549***	0.571***	0.579***	0.620***	0.569***	0.635***
	(0.101)	(0.084)	(0.089)	(0.073)	(0.084)	(0.071)
YGAP	–0.328***	–0.144	–0.305***	–0.076	–0.295***	–0.076
	(0.111)	(0.124)	(0.097)	(0.117)	(0.093)	(0.104)
YPPP(–1)	0.192***	0.072	0.200***	0.037	0.171***	0.033
	(0.069)	(0.047)	(0.068)	(0.045)	(0.061)	(0.042)
NIIPx(–1)	0.041	–0.008	0.043	–0.006	0.040*	–0.004
	(0.027)	(0.018)	(0.023)	(0.016)	(0.021)	(0.015)
DEU	–2.061**	–1.534	–1.984**	–1.580	–1.853**	–1.528
	(0.932)	(1.269)	(0.915)	(1.346)	(0.903)	(1.270)
FBALCYC	0.191	0.075	0.208*	–0.011	0.176	–0.020
	(0.119)	(0.160)	(0.118)	(0.038)	(0.110)	(0.129)
GREER(–1)	0.009	0.010	0.011	–0.104***	0.003	–0.104***
	(0.024)	(0.047)	(0.022)	(0.038)	(0.022)	(0.037)
CA_EA6	–0.032	–1.649***	0.010	–1.536***	–0.085	–1.534***
	(0.427)	(0.606)	(0.421)	(0.540)	(0.393)	(0.515)
YGAP_EA6	0.132	–0.845***	0.128	–0.857***	0.121	–0.792***
	(0.204)	(0.307)	(0.203)	(0.322)	(0.183)	(0.275)
DISN	0.003	0.288	..	..	..	..
	(0.032)	(0.246)				
VIX			0.022	0.017	..	..
			(0.047)	(0.067)		
GFD	..	..	..	..	–0.072	–0.057
					(0.059)	(0.079)
R^2	0.848	0.857	0.836	0.831	0.849	0.840
Regime	Float	Fixed	Float	Fixed	Float	Fixed
Time	1997–2017, excl. 2009	1997–2017, excl. 2009	1997–2017, excl. 2009	1997–2017, excl. 2009	1997–2017, excl. 2009	1997–2017, excl. 2009
Countries	7	8	7	8	7	8
No. obs.	96	96	100	104	103	112

Notes: Panel data estimations with country fixed effects and YGAP and DISN instrumented. The dependent variable is the current account balance, CA. Standard errors are shown in brackets. Superscripts $^{***, **, *}$ denote that the estimated coefficient is statistically different from 0 at the 1, 5 and 10 per cent levels of significance respectively.

Finally, columns (5.5) and (5.6) show the results when the variable GFD is included. The variable denotes the growth rate of foreign demand computed as the growth rate of the imports of trading partners weighted with those partners' share in the exports of the CEE countries (Ameco: *VMGSW*). It may be reasonable to expect a positive sign for the coefficient of GFD given that larger export demand would increase exports and thus ceteris paribus improve the current account balance. The estimated coefficients of GFD are negative for both floaters and fixers, though far from statistically significant. The variables GFD and YGAP_EA6 are correlated but the estimated coefficient of YGAP_EA6 is largely unaffected by the inclusion of GFD for both the floaters and the fixers.

Table 6 shows the results when the time sample is changed. The estimations are in this case carried out using fixed effects least squares since the number

of observations in some of the estimation samples is very low. Column (6.1) shows the results for the floaters and column (6.2) for the fixers when the entire period around the global financial crisis, 2007–2010, is excluded. The results are virtually identical to those for the full sample so the period around the global financial crisis does not affect the results unduly.

Table 6: Current account estimations, different time samples

	(6.1)	**(6.2)**	**(6.3)**	**(6.4)**
CA(–1)	0.595***	0.616***	0.379***	0.593***
	(0.100)	(0.091)	(0.127)	(0.082)
YGAP	–0.396***	–0.081	–0.389**	–0.044
	(0.096)	(0.109)	(0.149)	(0.124)
YPPP(–1)	0.169**	0.035	0.230***	0.100
	(0.066)	(0.043)	(0.079)	(0.065)
NIIPx(–1)	0.045*	0.003	0.068**	–0.022
	(0.023)	(0.015)	(0.033)	(0.018)
DEU	–2.351**	0.221	–1.891*	–1.137
	(1.044)	(1.373)	(0.995)	(1.137)
FBALCYC	0.145	0.072	0.260	0.063
	(0.126)	(0.135)	(0.178)	(0.138)
GREER(–1)	0.000	–0.134***	0.015	0.125
	(0.024)	(0.036)	(0.040)	(0.087)
CA_EA6	0.188	–1.950***	–0.345	–1.195*
	(0.440)	(0.622)	(0.630)	(0.637)
YGAP_EA6	–0.020	–0.697**	0.124	–1.315***
	(0.248)	(0.346)	(0.282)	(0.373)
R^2	0.826	0.813	0.925	0.891
Regime	Float	Fixed	Float	Fixed
Time	1997–2017, excl. 2007–2010	1997–2017, excl. 2007–2010	2004–2017, excl. 2009	2004–2017, excl. 2009
Countries	7	8	6	8
No. obs.	87	95	57	86

Notes: OLS panel data estimations with country fixed effects. The dependent variable is the current account balance, CA. Standard errors are shown in brackets. Superscripts ***, **, * denote that the estimated coefficient is statistically different from 0 at the 1, 5 and 10 per cent levels of significance respectively.

Columns (6.3) and (6.4) show the results when the sample starts in 2004, so that the early part of the sample period is removed, a period in which some countries were still in their transition phase or making preparations for accession to the EU. The results are again qualitatively unchanged.

We proceed with robustness checks relating to the coding of the exchange rate dummy. Classifying de facto exchange rate regimes is often contentious given the complexities associated with such classifications. We find the classification in Ilzetzki et al. (2017) reasonable in almost all cases, but we question the classification given to the Latvian exchange rate regime for the years 1996–2009. In the coarse classification of Ilzetzki et al. (2017), the Latvian regime is given the score "3", which can indicate anything from a wide crawling band to managed float, and so the variable FIXED takes the

value 0 for Latvia for this period. The Latvian lat was nevertheless tightly pegged to the SDR and the central parity did not change over the years. Given this, we examine the consequences of changing the value of FIXED to one for Latvia for the years 1996–2009. The changed classification of the exchange rate dummy does not materially affect the results for either floaters or fixers (not shown). We have experimented with other minor changes in the coding of the exchange rate dummy but the results remain qualitatively unchanged (not shown).

We have treated the exchange rate regime as an exogenous or predetermined variable since it is unlikely that current account developments will lead to concurrent changes in the exchange rate regime. However, there is still a risk that concomitant factors that affect the choice of exchange rate regime may also affect the drivers of the current account balance. The openness to trade and the size of the economy are among the factors that may affect the choice of exchange rate regime (Chinn and Wei 2013, Markiewicz 2006).

The correlation between total trade (export plus import) in percent of GDP and the exchange rate dummy FIXED is 0.17, which suggests that the degree of trade openness is unlikely to be of importance for the results. The size of the economy is proxied by GDP PPP in the CEE countries in percent of the total for the EU15. The correlation coefficient between the size measure and the exchange rate dummy FIXED is –0.50. In light of this we have run several robustness checks. First, in order to get a more homogeneous sample we removed the two smallest and the two largest countries from the sample (Estonia, Latvia, Romania, Poland) and this does not change the results in qualitative terms. Second, we split the sample in two based on the size of the economies but the results were not very clear for the group containing the largest economies since most coefficients were very imprecisely estimated. Third, for the groups of large and small economies we considered the floaters and fixers separately, and the results are again in line with those found in Section 5 although this conclusion is circumscribed by the low number of observations in the different subsamples.

The final round of robustness checks relate to the choice of proxies for external push factors. The two variables CA_EA6 and YGAP_EA6 capture important parts of economic developments and sentiments in the euro area core. We have experimented with different compositions of the euro area core by excluding individual countries such as Finland and France, but the results change little. We have also experimented with a variable defined as either the current account balance of Spain or the average current account balance in Greece, Spain, Italy and Portugal, the four countries in the southern periphery of the euro area (De Santis and Cesaroni 2016). If either of these two variables is included in the estimations, the coefficient is small and statistically insignificant for the floaters but positive and statistically significant for the fixers (not shown). These results are another confirmation that the current account balance has been isolated from external developments when countries have a floating exchange rate regime, while this is not the case when countries have a fixed exchange rate regime.

7. Final comments

The CEE countries have experienced large deficits and pronounced fluctuations in their current account balance since the mid-1990s. This paper assesses the importance of internal pull and external push factors for the current account dynamics under different exchange rate regimes. We use annual data for the period 1997–2017 and estimate dynamic panel data models with country fixed effects. The panels are generally estimated with instrumental variables to address possible reverse causality. Using the classification of de facto exchange rate regimes by Ilzetzki et al. (2017) we construct a dummy variable that indicates for any given year whether a country has a floating or a fixed exchange rate regime.

The estimations are carried out for the floaters and the fixers separately and comparison of the results provides notable insights. The persistence of the current account balance is substantial and almost similar for the two groups. Internal pull factors such as the output gap, the relative income level and perhaps the net international investment position are key drivers for the floaters, while external factors appear unimportant. For the fixers, however, external push factors proxying economic developments in the euro area core and changes in international cost competitiveness are important, while internal factors have no effect. These results are robust to changes in model specifications, time samples and coding of the exchange rate regime.

The overall message is that the exchange rate regime has been of key importance for the factors driving the current account in the countries from Central and Eastern Europe. Domestic developments have driven the current account dynamics for the floaters while external developments have been important for the fixers. Moreover, the current account balance exhibits substantial persistence for both groups. These findings are evidently of importance for forecasting and monitoring, and may also help delineate the scope and efficiency of policy measures intended to address possible imbalances.

Literature

Abbas, S. M. A., Bouhga-Hagbe, J., Fatas, A. J., Mauro, P., Velloso, R. J. (2011): "Fiscal policy and the current account", *IMF Economic Review*, Vol. 59, No. 4, pp. 603–629.

Abiad, A. G., Leigh, D., Mody, A. (2009): "Financial integration, capital mobility, and income convergence", *Economic Policy*, Vol. 24, No. 58, pp. 241–305.

An, J., Park, B. (2016): "External adjustment and trading partners' exchange rate regimes", *Japan and the World Economy*, Vol. 37–38, pp. 47–54.

Aristovnik, A. (2008): "Short-term determinants of current account deficits", *Eastern European Economics*, Vol. 46, No. 1, pp. 24–42.

Atoyan, R., Jaeger, A., Smith, D. (2012): "The pre-crisis capital flow surge to emerging Europe: did countercyclical fiscal policy make a difference?", IMF Working Paper, No. WP/12/222, International Monetary Fund.

Bakker, B. B., Gulde, A.-M. (2010): "The credit boom in the EU New Member States: bad luck or bad policies?", IMF Working Paper, No. WP/10/130, International Monetary Fund.

Basu, K. (1991): "The international debt problem, credit rationing and loan pushing: theory and experience", *Princeton Studies in International Finance*, No. 79.

Bleaney, M., Saxena, S., Yin, L. (2018): "Exchange rate regimes, devaluations and growth collapses", *Journal of Macroeconomics*, Vol. 57, pp. 15–25.

Brixiova, Z., Vartia, L., Wörgötter, A. (2010): "Capital flows and the boom-bust cycle: the case of Estonia", *Economic Systems*, Vol. 34, No. 1, pp. 55–72.

Bun, M., Kiviet, J. (2001): "The accuracy of inference in small samples of dynamic panel data models", Tinbergen Institute Discussion Paper, No. 01-006/4.

Calvo, G. A. (1998): "Capital flows and capital-market crises: The simple economics of sudden stops", *Journal of Applied Economics*, Vol. 1, No. 1, pp. 35–54.

Calvo, G. A., Leiderman, L., Reinhart, C. M. (1996): "Inflows of capital to developing countries in the 1990s", *Journal of Economic Perspectives*, Vol. 10, No. 2, pp. 123–139.

Cardarelli, R., Elekdag, S., Kose, A. M. (2010): "Capital inflows: macroeconomic implications and policy responses", *Economic Systems*, Vol. 34, No. 4, pp. 333–356.

Chen, R., Milesi-Ferretti, G. M., Tressel, T. (2013): "External imbalances in the euro area", *Economic Policy*, Vol. 28, No. 73, pp. 101–142.

Chinn, M., Prasad, E. S. (2003): "Medium-term determinants of current accounts in industrial and developing countries: an empirical exploration", *Journal of Institutional Economics,* Vol. 59, pp. 47–76.

Chinn, M., Wei, S.-J. (2013): "Faith-based initiative meets the evidence: does a flexible exchange rate regime really facilitate current account adjustment?", *Review of Economics and Statistics*, Vol. 95, No. 1, pp. 168–184.

Chuhan, P., Claessens, S., Mamingi, N. (1998): "Equity and bond flows to Latin America and Asia: the role of global and country factors", *Journal of Development Economics*, Vol. 55, pp. 439–463.

Comunale, M. (2018): "Current account and REER misalignments in central eastern EU Countries: an update using the Macroeconomic Balance approach", *Economic Systems*, Vol. 42, No. 3, pp. 414–436.

Cuestas, J. C. (2013): "The current account sustainability of European transition countries", *Journal of Common Market Studies*, Vol. 51, No. 2, pp. 232–245.

De Santis, R., Cesaroni, T. (2016): "Current account 'core-periphery dualism' in the EMU", *The World Economy*, Vol. 39, No. 10, pp. 1514–1538.

Edwards, S. (2002): "Does the current account matter?", in Edwards, S., Frankel, J. A. (eds.): *Preventing Currency Crises in Emerging Markets*, University of Chicago Press, pp. 21–76.

European Commission (2012): "Scoreboard for the surveillance of macroeconomic imbalances", *European Economy – Occasional Papers*, Vol. 92.

Fernandez-Arias, E. (1996): "The new wave of private capital inflows: push or pull?", *Journal of Development Economics*, Vol. 48, No. 2, pp. 389–418.

Fratzscher, M. (2012): "Capital flows, push versus pull factors and the global financial crisis", *Journal of International Economics*, Vol. 88, pp. 341–356.

Friedman, M. (1953): "The case for flexible exchange rates", in Milton Friedman (ed.): *Essays in Positive Economics*, University of Chicago Press, pp. 157–203.

Gabrisch, H., Staehr, K. (2015): "The Euro Plus Pact: competitiveness and cross-border capital flows in the EU countries", *Journal of Common Market Studies*, Vol. 53, No. 3, pp. 558–576.

Gervais, O., Schembri, L., Suchanek, L. (2016): "Current account dynamics, real exchange rate adjustment, and the exchange rate regime in emerging-market economies", *Journal of Development Economics*, Vol. 119, No. C, pp. 86–99.

Ghosh, A. R., Qureshi, M. S., Tsangarides, C. G. (2013): "Is the exchange rate regime really irrelevant for external adjustment?", *Economics Letters*, Vol. 118, No. 1, pp. 104–109.

Giavazzi, F., Spaventa, L. (2011): "Why the current account may matter in a monetary union", in Beblavý, M., Cobham, D., Ódor, L. (eds.): *The Euro Area and the Financial Crisis*, Cambridge University Press, pp. 199–221.

Gruber, J. W., Kamin, S. B. (2007): "Explaining the global pattern of current account imbalances" *Journal of International Money and Finance*, Vol. 26, pp. 500–522.

Han, C., Kim, H. (2014): "The role of constant instruments in dynamic panel estimation." *Economics Letters*, Vol. 124, No. 3, pp. 500–503.

Herrmann, S. (2009): "Do we really know that flexible exchange rates facilitate current account adjustment? Some new empirical evidence for CEE countries." *Applied Economics Quarterly*, Vol. 55, No. 4, pp. 295–311.

Ilzetzki, E., Reinhart, C. M., Rogoff, K. S. (2017): "Exchange arrangements entering the 21st century: which anchor will hold?" NBER Working Paper, No. 23134.

IMF (2009): "Balance of Payments and International Investment Position Manual", 6th ed. (BPM6), International Monetary Fund.

Jaumotte, F., Sodsriwiboon, P. (2010): "Current account imbalances in the Southern Euro Area." IMF Working Paper, No. WP/10/139, International Monetary Fund.

Jevcak, A., Setzer, R., Suardi, M. (2010): "Determinants of capital flows to the New EU Member States before and during the financial crisis." *European Economy: Economic Papers*, No. 425, European Commission.

Judson, R., Owen, A. (1999): "Estimating dynamic panel data models: a guide for macroeconomists", *Economics Letters*, Vol. 65, No. 1, pp. 9–15.

Kim, K., Pyun, J. H. (2018): "Exchange rate regimes and the international transmission of business cycles: capital account openness matters." *Journal of International Money and Finance*, Vol. 87, pp. 44–61.

Kindleberger, C. P. (1978): *Manias, Panics and Crashes: A History of Financial Crises*, Basic Books, New York.

Kindleberger, C. P. (1976): "Lessons of floating exchange rates." *Carnegie-Rochester Conference Series on Public Policy*, Vol. 3, pp. 51–77.

Lane, P. R., Milesi-Ferretti, G. M. (2006): "Capital flows to Central and Eastern Europe." *Emerging Markets Review*, Vol. 8, No. 2, pp. 106–123.

Markiewicz, A. (2006): "The choice of exchange rate regime in transition economies: an empirical analysis", *Journal of Comparative Economics*, Vol. 34, No. 3, pp. 484–498.

Martin, F. E. (2016): "Exchange rate regimes and current account adjustment: an empirical investigation." *Journal of International Money and Finance*, Vol. 65, pp. 69–93.

Nickell, S. (1981): "Biases in dynamic models with fixed effects." *Econometrica*, Vol. 49, No. 2, pp. 1417–1426.

Obstfeld, M. (2012a): "Does the current account still matter?" *American Economic Review*, Vol. 102, No. 3, pp. 1–23.

Obstfeld, M. (2012b): "Financial flows, financial crises, and global imbalances", *Journal of International Money and Finance*, Vol. 31, No. 3, pp. 469–480.

Pancaro, C., Saborowski, C. (2016): "Current account reversals in industrial countries: does the exchange rate regime matter?" *International Journal of Finance & Economics*, Vol. 21, No. 2, pp. 107–130.

Phillips, S., Catão, L., Ricci, L., Bems, R., Das, M., Di Giovanni, J., Unsal, D. F., Castillo, M., Lee, J., Rodriguez, J., Vargas, M. (2013): "The external balance assessment (EBA) methodology", IMF Working Paper, no. WP/13/272.

Rahman, J. (2008): "Current account developments in New Member States of the European Union: equilibrium, excess and EU-phoria." IMF Working Paper, No. WP/08/92, International Monetary Fund.

Roubini, N., Wachtel, P. (1999): "Current account sustainability in transition economies", in Blejer, M. I., Skreb, M. (eds.): *Balance of Payments, Exchange Rates, and Competitiveness in Transition Economies*, Springer, pp. 19–93.

Staehr, K. (2015): "The choice of exchange rate regime in emerging-market and transition economies", in Hölscher, J., Tomann, H. (eds.): *Palgrave Dictionary of Emerging Markets and Transition Economics*, Palgrave Macmillan, Ch. 4, pp. 60–91.

Staehr, K. (2018): "Capital flows and growth dynamics in central and eastern Europe", *Post-Communist Economies*, Vol. 30, No. 1, pp. 1–18.

Zorzi, M. C., Chudik, A., Dieppe, A. (2009): "Current account benchmarks for Central and Eastern Europe. A desperate search?", ECB Working Paper Series, No. 995, European Central Bank.

Appendix A: OLS panel data estimations

Table A.1: Current account estimations, floating exchange rate regimes

	(A1.1)	(A2.2)	(A3.3)	(A3.4)
CA(–1)	0.555***	0.460***	0.620***	0.621***
	(0.083)	(0.094)	(0.078)	(0.081)
YGAP	–0.374***	–0.581***	–0.326***	–0.246***
	(0.080)	(0.084)	(0.078)	(0.077)
YPPP(–1)	0.196***	0.255***	0.093***	..
	(0.059)	(0.067)	(0.031)	
NIIPx(–1)	0.042**	0.044*	..	..
	(0.021)	(0.024)		
EU	–2.094**	–2.251**	–1.820**	–1.937**
	(0.888)	(1.049)	(0.893)	(0.932)
FBALCYC	0.176	0.038	0.145	0.185
	(0.109)	(0.121)	(0.110)	(0.115)
GREER(–1)	0.012	0.036	0.017	0.008
	(0.022)	(0.025)	(0.022)	(0.023)
CA_EA6	0.037	0.169	–0.309	–0.387
	(0.384)	(0.449)	(0.351)	(0.366)
YGAP_EA6	0.169	–0.073	0.122	–0.047
	(0.180)	(0.185)	(0.182)	(0.181)
R^2	0.848	0.794	0.841	0.824
Regime	Float	Float	Float	Float
Time	1997–2017, excl. 2009	1997–2017	1997–2017, excl. 2009	1997–2017, excl. 2009
Countries	7	7	7	7
No. obs.	103	108	103	103

Notes: OLS panel data estimations with country fixed effects. The dependent variable is the current account balance, CA. Standard errors are shown in brackets. Superscripts $^{***,\ **,\ *}$ denote that the estimated coefficient is statistically different from 0 at the 1, 5 and 10 per cent levels of significance respectively.

Table A.2: Current account estimations, fixed exchange rate regimes

	(A2.1)	(A2.2)	(A2.3)	(A2.4)
CA(–1)	0.629***	0.539***	0.628***	0.651***
	(0.067)	(0.055)	(0.067)	(0.063)
YGAP	–0.035	–0.156*	–0.039	0.005
	(0.089)	(0.087)	(0.088)	(0.079)
YPPP(–1)	0.032	0.062	0.038	..
	(0.039)	(0.039)	(0.034)	
NIIPx(–1)	–0.005	–0.005	..	..
	(0.015)	(0.016)		
EU	–1.572	–1.934	–1.544	–1.498
	(1.261)	(1.307)	(1.232)	(1.253)
FBALCYC	0.003	0.021	–0.007	–0.023
	(0.127)	(0.130)	(0.123)	(0.123)
GREER(–1)	–0.107***	–0.094**	–0.110***	–0.115***
	(0.037)	(0.038)	(0.035)	(0.035)
CA_EA6	–1.691***	–1.628***	–1.705***	–1.775***
	(0.490)	(0.507)	(0.486)	(0.483)
YGAP_EA6	–0.845***	–0.953***	–0.844***	–0.934***
	(0.268)	(0.247)	(0.267)	(0.255)
R^2	0.840	0.819	0.840	0.837
Regime	Fixed	Fixed	Fixed	Fixed
Time	1997–2017, excl. 2009	1997–2017	1997–2017, excl. 2009	1997–2017, excl. 2009
Countries	8	8	8	8
No. obs.	112	118	112	112

Notes: OLS panel data estimations with country fixed effects. The dependent variable is the current account balance, CA. Standard errors are shown in brackets. Superscripts ***, **, * denote that the estimated coefficient is statistically different from 0 at the 1, 5 and 10 per cent levels of significance respectively.

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