

Current Account Balances in Central and Eastern Europe: Heterogeneity, Persistence and Driving Factors*

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Abstract: This paper analyses the current account development in the 10 EU countries from Central and Eastern Europe (CEE) during the period 1995-2011. The analysis is based on panel data estimations using annual data. The dynamics and explanatory factors vary markedly across a group of Central European countries and a group consisting of Bulgaria, the Baltic countries and Romania. The current account balance of the first group exhibits little persistence and seems in large part driven by convergence effects. The current account balance of the second group exhibits substantial persistence and is driven by factors such as economic sentiments and the state of European financial markets. For both groups the global financial crisis led to a substantial reversal of capital flows in 2009. The results point to substantial heterogeneity between the CEE countries in the European core and the CEE countries in the European periphery.

JEL codes: F32, F33, P33

Keywords: Current account balance, capital flows, Central and Eastern Europe, contagion, expectations, economic policies

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1. Introduction

This paper seeks to identify factors that have driven current account developments in the 10 EU countries from Central and Eastern Europe (CEE). The CEE countries have generally experienced large current account deficits during the period 1995-2011. The countries have imported capital as they have seen increased economic and financial integration and the income gap to Western Europe has been narrowed. Capital has generally flowed downhill to emerging Europe as opposed to emerging economies in other regions (Abiad et al. 2009). The current account balance has exhibited large variability for many CEE countries, in particular Bulgaria, the Baltic countries and Romania. Large deficits have in some cases been succeeded by large surpluses within just one or two years. These cases have coincided with severe financial strain and economic crisis typically associated with a *sudden stops* (Calvo 1998).

The analysis is based on panel data estimations for the period 1995-2011 undertaken separately for two groups of CEE countries, i.e. a group of five countries in the geographical core of Central Europe and a group of five countries in the geographical periphery. The current account balance in percent of GDP is explained by its lagged value as well as factors associated with the economic convergence process, external factors largely determined by developments outside the country and country-specific internal factors, including various policy measures. The analysis seeks to ascertain the explanatory power of the different factors with the aim to shed light on the current account developments across the CEE countries.

The current account and its implications for economic performance have been stressed in a number of academic studies. Cardarelli et al. (2010) consider a large sample of countries and find 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 elevated capital flows. Both periods were ended in financial crises, the Asian crises in 1997-1998 and the global financial crisis that started in 2008. They underline that in general all countries had better current account position in the beginning of the global crisis of 2008 but on the other hand, more countries were touched by it due to the more integrated financial markets. Furthermore, the reversals were more important in Asia during the first wave and during the second wave the Eastern Europe was more influenced.

Although earlier disregarded, there is increasing understanding that current account developments also matter in monetary unions such as the euro area. Giavazzi & Spaventa (2010) show in a theoretical model that capital inflows might be inappropriately allocated between traded and non-traded sectors and therefore lead to the built-up of macroeconomic imbalances. Excessive inflows to the non-traded sector may, for instance, lead to high inflation and deterioration of competitiveness which later encumbers the debt servicing.

Barnes et al. (2010) find that the Southern European members of the euro area had excessive current account deficits from the early 1990s until the global financial crisis; the capital inflows appear in large part to have resulted in excessive expansion of the housing sector. Jau-motte & Sodsriwiboon (2010) find that the current account deficits in the Southern European euro countries in 2008 exceeded levels that could be explained by fundamentals and argue that the imbalance may be a threat to financial and economic stability. Gabrisch & Staehr (forthcoming) show for the EU countries and the euro area countries that cross-border capital flows affect the real exchange rate and hence price competitiveness, while the reverse causality cannot be established.

After the global financial crisis a number of initiatives have been introduced at national as well as international levels to monitor current account developments and accumulation of foreign liabilities. Since 2012 Current account developments in individual EU countries have been monitored by the European Commission as part of enhanced surveillance procedures (European Commission 2012). The International Monetary Fund established in the 2012 the *External Balance Assessments* scheme, which includes a review of current account imbalances based on empirical modelling of the current account (IMF 2012).

The current account developments in the EU countries from Central and Eastern Europe and other European transition countries have been considered in a number of studies. Many of the studies seek to assess the sustainability of the current account balance or developments of the current account balance relative to an “equilibrium” level.

Lane & Milesi-Ferretti (2006) provide an overview of current account trends and the accumulation of the external liabilities in the CEE countries until 2004. The paper highlights the very large current account deficits but calculates that the substantial improvement is needed to the imbalances, in particular in Bulgaria, the Baltic countries and Romania. Bakke & Gulde (2010) discuss the extreme current account deficits emerging in the CEE countries before the global financial crisis. The conclusion of their descriptive analysis is that whereas the capital inflows in large part was predicated on external events, the most advanced CEE countries had managed to keep inflows relatively stable, in part due to different policies implemented in these countries.

Rahman (2008) seeks to establish an equilibrium or norm level of the current account balance based on regression analyses using a large sample of countries and subsequently compares the current account balance in the CEE countries with the estimated norm. It is argued that for several of the CEE countries the current account balance exceeded the norm before the global financial crisis and this is attributed to “EU-phoria”.

Rahman, Jesmin (2008): “Current account developments in New Member States of the European Union: equilibrium, excess and EU-phoria”,

Fidrmuc (2003) studied the current account dynamics in the OECD and in the emerging region and found that even though most of the developed countries have had periods of extreme deficits, the transition economies were unique in different directions. The CEE countries tend to have larger current account deficits than historically seen in other cases of rapid economic convergence. The transition countries also show higher levels of current account persistence than the “traditional” OECD countries. Fidrmuc (2003) highlights the differences across the CEE countries and finds that countries which pursue prudent fiscal policy show higher flexibility of the current account showing.

Cuestas (forthcoming) examines the time series properties of the current account balance of the 10 CEE countries. He finds that when the period after the outbreak of the global financial crisis is included, the current account balances are generally stationary process and he interprets this as the countries exhibiting sustainable current account dynamics.

Herrmann & Jochem (2005) uses regression analysis to explain current account developments in eight of the CEE countries and find that convergence effects are important, while the government budget balance is unimportant. Aristovnik (2008) uses data from a large set of transition countries for the period 1992-2003 and undertakes regression analyses to identify the

short-term determinants of the current account. He finds that convergence effects are important but policy-related factors such as the budget balance and the terms of trade also have explanatory power. Urosevic et al. (2012) use model averaging in order to estimate country-specific models of the current account balance for five European transition countries. The main finding is that there is substantial heterogeneity across the five sample countries. Finally, Jevcak et al. (2010) find that current account developments in the CEE countries in large part have been affected by external factors including euro area interest rates and risk sentiments, but domestic developments and policies have also played a role.

The rest of this paper seeks to shed light on factors that may explain the current account developments in the CEE countries using simple panel data estimations. The explanatory variables used in the panel data estimations are motivated by the empirical studies discussed above. The aim is to include variables that reflect external developments and financing availability and variables that reflect internal factors, including economic policy measures. The limited number of observations, the large number of potentially relevant explanatory variables and the presence of one or more structural shifts imply that the analysis cannot seek to reach *one* empirical model describing data adequately in all respects. Instead the analysis is explorative and seeks to uncover regularities and features of data with the aim of shedding light on net international capital movements in the CEE countries from different angles.

This paper contributes to the literature in a number of directions. First, it focuses on the EU countries from Central and Eastern Europe, countries that due to membership of the European Union and common history share many economic and institutional similarities. Second, the estimations allow the marginal effects to differ across two different groups of CEE countries. Third, the paper includes a range of external factors that are common to all the 10 CEE countries. This allows an investigation of how external factors affected current account developments in the CEE countries and may thus uncover contagion or spill-over effects affecting the CEE countries.

The rest of the paper is organised as follows. Section 1 provides a brief introduction to the issues of capital flows and financial stability in the CEE region. Section 2 provides a survey of the empirical literature. Section 3 presents the data used in the analyses. Section 4 presents the results of OLS estimations. Section 5 includes the main empirical analysis using fixed effect estimation. Section 6 distils the empirical findings.

2. Current account developments in the CEE countries

This paper seeks to shed light on factors that may affect the current account balance. In any given time period, per definition, the current account balance, the capital account balance and the financial account balance sum to zero. The capital account depicts some unilateral transfers and usually entails minor amounts. The financial account balance consists of net foreign direct investment, net portfolio investment, net financial derivative investment and other investments (including loans) plus the net draw down of foreign currency reserves.¹ Thus, the current account balance essentially mirrors the financial account balance and is therefore a measure of both private and public net financial flows. A positive current account balance is

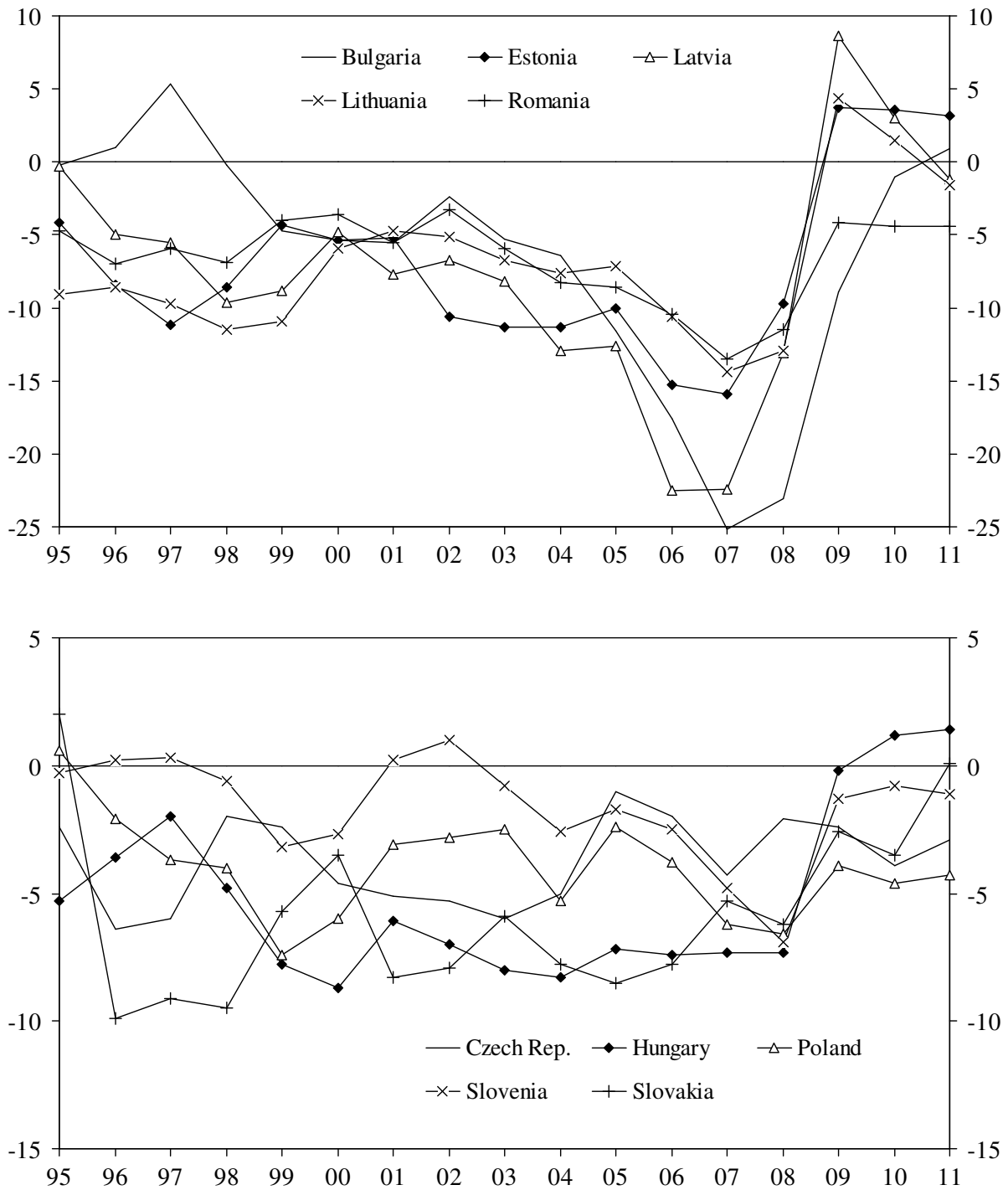
¹ The definitions follow the standard in IMF (1993). Confusingly, the financial account (together with the capital account) is sometimes labelled the capital account in earlier studies not following the IMF standard. The earlier labelling still appears in the terms *net capital outflow* when the current account balance is positive and *net capital inflow* when the current account balance is negative.

typically associated with a negative financial account balance, i.e. a *net capital outflow*; a negative current account balance is typically associated with a positive financial account balance, i.e. a *net capital inflow*.

The current account balance equals net export plus net income from abroad. A current account deficit implies that more resources, *ceteris paribus*, are available for domestic consumption or investment, while a current account surplus implies that less resources are available for domestic absorption. The implication is that macroeconomic performance and developments of the current account balance are closely associated. Evidently, the current account balance also affects the external wealth of a country; the net international investment position at the end of a period is the net international investment position at the beginning of the period adjusted for changes in volume and price during the period, minus the financial account balance. A current account surplus will typically entail a financial account deficit (“net capital inflow”) and, *ceteris paribus*, an increase in the net international investment position.

Figure 1 shows the annual current account balance for each of the 10 CEE countries within the time sample from 1995 to 2011. The upper panel depicts the CEE countries in the geographical periphery, i.e. Bulgaria, the Baltics and Romania. This group is labelled *Group B* and it mostly contains the advanced CEE economies. The lower panel shows the countries in the geographical centre or core, i.e. the Czech Republic, Hungary, Poland, Slovenia and Slovakia. This group is labelled *Group A* and it contains some of the most advanced CEE. A number of observations are readily apparent.

Figure 1: Current account balance in percent of GDP, 1995-2011



Source: Eurostat

First, although the country groupings are based on geographical criteria, the dynamics of the current account balance exhibit many similarities with the groups, while there are noticeable differences across the two groups. The latter point is also illustrated by the different scaling of the plots in the upper and lower panels.

Second, the current account balance is negative for most of the CEE countries across the 17 years. The country with the highest per-capita income, Slovenia, is the main exception with

an average deficit of 1.7 percent of GDP. The Czech Republic features an average deficit of 3.8 percent of GDP and Poland an average deficit of 4 percent of GDP. At the other extreme, all three Baltic countries had average deficits above 7 percent of GDP over the 17 years period.

Third, many of the CEE countries experienced substantial declines in their current account balance from around 2003 and until 2006-2007. The growth in current account deficits in the period 2003-2007 applied in particular to the poorest CEE countries, i.e. the Bulgaria, the Baltic countries and Romania, where the current account deficits reached exceptional levels in 2006-2007. Several noticeable developments unfolded in the period. Innovation and deepening of financial markets concurred with accumulation of large imbalances in many debtor countries across the world. The CEE countries generally experienced high rates of economic growth in the period. The CEE countries joined the European Union in May 2004, except Bulgaria and Romania which joined in January 2007.²

Fourth, the current account balance reversed sharply in 2008 and 2009. For a number of CEE countries the current account reversals amounted to “sudden stops” where range current account deficits were reversed within short time (Calvo 1998). This was particularly noticeable for the Baltic countries which all attained substantial current account surpluses in 2009, but it occurred in all the CEE countries except the Czech Republic and Poland, i.e. the two countries that did not experience large increases in their current account deficits prior to the crisis.

The picture of different dynamics across different countries also appears in the time series properties of the current account data. Table 1 shows the results of Augmented Dickey Fuller (ADF) for the full sample 1995-2011 and the pre-crisis sample 1995-2007. The null hypothesis is the presence of a unit root. The results should be treated with caution due to the very low number of observation points for each country. The ADF test possesses low power which makes it difficult to reject the null hypothesis in small samples.

Table 1: Augmented Dickey-Fuller tests of unit root tests in current account balance, different samples

	1995-2007			1995-2011		
	Obs.	<i>t</i> -value	<i>p</i> -value	Obs.	<i>t</i> -value	<i>p</i> -value
Bulgaria	12	1.402	0.997	15	-2.555	0.123
Czech Republic	11	-4.144	0.011	15	-3.566	0.021
Estonia	12	-1.224	0.626	15	-2.052	0.264
Latvia	12	-0.511	0.857	15	-2.453	0.145
Lithuania	11	-1.624	0.439	15	-2.571	0.120
Hungary	11	-2.420	0.158	16	-0.655	0.831
Poland	12	-2.582	0.080	16	-3.538	0.021
Romania	12	0.050	0.946	16	-1.827	0.355
Slovenia	11	-2.126	0.239	15	-2.894	0.070
Slovakia	11	-3.053	0.061	16	-3.652	0.017

Notes: The null hypothesis is in all cases that the current account balance has a unit root. Lags are determined by AIC with maximum lag length being one year.

² Five of the CEE countries were appointed as candidate countries to join the EU in 1997, while the remaining five countries were appointed in 1999. The negotiation processes started at different times and progressed with different speed for the 10 countries.

The results in Table 1 broadly confirm the picture of two groups of CEE countries. The null hypothesis of a unit root in the current account balance can generally be rejected for the Core countries, with Hungary as the main exception. The null hypothesis is, however, not rejected in one single case for the five Periphery countries. The upshot is that shocks to the current account balance generally will die out in the Core countries, but have lasting effects in the Periphery countries. The findings of the unit root tests are consistent with the visual dynamics in Figure 1; the Core countries have relative stable current account balances, while the Periphery countries have current account balances that exhibit substantial inertia.

Table 2 shows the results of panel unit root tests for panels of all 10 CEE countries, the core countries in Group A and the periphery countries in Group B. The use of panel data increases the power of unit root tests; different panel unit roots treat the cross sectional dimension in different ways.

Table 2: Tests of unit roots of panel data series, different samples

		Levin, Lin & Chu ^a	Im, Pesaran and Shin ^b	ADF-Fisher ^b	PP-Fisher ^b
CEE	1995-2007	-0.605 [0.272]	-0.453 [0.325]	29.252 [0.083]	33.541 [0.029]
Group A (core)	1995-2007	-3.847 [0.000]	-2.949 [0.002]	26.242 [0.003]	31.872 [0.000]
Group B (periphery)	1995-2007	2.376 [0.991]	2.451 [0.993]	3.010 [0.981]	1.668 [0.998]
CEE	1995-2011	-3.294 [0.001]	-3.430 [0.000]	49.399 [0.001]	36.853 [0.012]
Group A (core)	1995-2011	-3.203 [0.001]	-3.099 [0.001]	29.383 [0.001]	27.063 [0.003]
Group B (periphery)	1995-2011	-1.555 [0.060]	-1.766 [0.039]	17.016 [0.074]	9.790 [0.459]

^a The test assumes a common unit root process across the countries.

^b The test allows for different unit roots processes across the countries.

Notes: The null hypothesis is in all cases that the current account balance has a unit root. The tests allow for country-specific intercepts in the test regressions. The values in square brackets are *p*-values.

The result of the panel unit root tests are in line with the results of the country-specific tests. The hypothesis of a unit root can be rejected for the core countries irrespective of whether or not the sample includes the crisis years from 2008 to 2011. A unit root cannot be rejected for the periphery countries for the sample 1995-2007, while the picture is somewhat unclear if the tests are performed on the whole sample from 1995 to 2011. The conclusion is that current account balance exhibited different dynamics in the two CEE country groups.

3. Explanatory variables

The data used in the empirical analysis are annual data from 1995 until 2011 for the 10 CEE countries that joined the European Union in 2004 or 2007 (Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia). The data sources are predominantly the Eurostat or Ameco databases, but data on risk measures, relationship with the EU and financial risk measures are obtained from other sources. Most of the vari-

ables can conveniently be divided into one of two main groups, namely variables that are specific to each country and variables that are common to all the countries in the sample.

The *country-specific variables* include the following variables. The current account balance in percent of GDP is labelled CA (Eurostat: *bop_q_gdp*). This is the variable depicted in Figure 1. The net international investment position in percent of GDP is labelled NIIP (Eurostat: *tip-sii10*). The per capita income, adjusted for different price levels across countries, in percent of the EU15 average is denoted RGDP (Eurostat: *tec00114*). 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 deflator (Eurostat: *ert_eff_ic_a*). The cyclically adjusted fiscal balance (the “structural balance”) in percent of GDP is denoted FBAL-CYC (Ameco: *ublgap*).

The dummy variable FIXED takes three values depending on the *de facto* exchange rate regime; it takes the value 0 if the exchange is floating, 0.5 if for soft pegs and 1 for hard pegs including currency boards. The information in Markiewicz (2006, Table A.3) is updated using several issues of the *Annual Report on Exchange Rate Arrangements and Exchange Rate Restrictions* published by the IMF. A dummy variable EUMEMB depicts the year in which a country entered the European Union (2004 or 2007).

Finally, the variable ESI0 denotes the value of the Economic Sentiment Index published by the European Commission (EC 2012). The index weighs together assessments from participants in different sectors stating their views on the current situation and the outlook for the next 12 months. The variable ESI0 denotes the value of the January survey and essentially captures the expectation for the year.

The *common variables* include the following two variables. The variable DAX is the stock market index of the Deutsche Boerse (Eurostat: *mny_stk_spy_a*). The variable VDAX is a measure of the expected uncertainty or volatility of the DAX index as implied by options on the DAX index (Bloomberg: *vdax index*). A larger VDAX is associated with more an expectation of increased uncertainty or instability in the main Continental European stock market (Deutsche Boerse 2007).

Taking a *position between* the variables that are country-specific and the variables that are common to all the countries is the variable CAX which is a generalised measure of capital outflow from the CEE region. For each country the variable CAX is calculated as the unweighted average of the current account balance CA for the nine remaining sample countries. The variable is a proxy of average capital flows to the region, excluding the country in question.

Finally, the dummy variable A takes the value one for the core CEE countries, i.e. the Czech Republic, Hungary, Poland, Slovenia and Slovakia, and otherwise the value zero. The dummy variable B takes the value one for the periphery countries, i.e. Bulgaria, Estonia, Latvia, Lithuania and Romania, and otherwise the value zero. The two dummy variables A and B are typically used to interact with other explanatory variables in order to isolate the group-specific effects.

The time series properties of the panel data series have been analysed using tests assuming a common unit root process and tests allowing for individual unit root processes. The null hypothesis of a unit root can be rejected at least at the 10 percent level for most variables in the

dataset. The notable exceptions include RGDP, the relative income level of the country, and NIIP, the net international investment asset position in percent of GDP. The finding of unit roots in RGDP and NIIP is reasonable given that both variables are stock variables without obvious convergence points. Finally, the null of a unit root cannot be rejected for the step dummy FIXED.

4. Panel data estimations and cross-sectional variation

We start the empirical analysis by a preliminary investigation of the relationship between the current account balance CA and three explanatory variables that were found to contain panel unit roots and little or trend-wise variation across the time dimension. These variables included the income level (RGDP), the net investment position (NIIP) and the dummy variable for the exchange rate regime (FIXED). The limited variation along the time dimension implies that estimation with cross-sectional fixed effects is unlikely to provide adequate identification. The analysis therefore starts with OLS estimations without fixed effects in which the identification will be derived from variations across the cross-sectional dimension as well as the time dimension. The estimation results should be interpreted with care given the non-stationarity of RGDP, NIIP and FIXED.

Table 3 shows the estimation results. The estimations are undertaken with each of the explanatory variables interacted with the dummy variables A and B for, respectively, the group of core CEE countries and the group of periphery CEE countries. Given the dynamics of the current account balance it is unsurprising that the results depend on the way the global financial crisis and its aftermath are taken into account. Table 3 shows the results for the full sample 1995-2011 and with a dummy for 2009 (interacted for each of the two country groups). Table A1.1 in Appendix A shows the results when the sample is truncated and ends in 2007, i.e. the year before the bankruptcy of Lehman Brothers and the outbreak of the global financial crisis.

Table 3: OLS panel estimations of current account balance CA, , 1996-2011

	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)
A	-1.785 ^{***} (0.068)	-5.296 ^{***} (1.613)	-2.329 ^{**} (0.963)	-1.598 ^{***} (0.609)	-6.979 ^{***} (1.609)
B	-1.902 ^{***} (0.047)	-2.483 (1.793)	-2.638 ^{***} (0.960)	-1.762 ^{**} (0.723)	-2.533 (1.971)
CA(-1) × A	0.635 ^{***} (0.117)	0.550 ^{***} (0.122)	0.620 ^{***} (0.127)	0.627 ^{***} (0.121)	0.509 ^{***} (0.108)
CA(-1) × B	0.838 ^{***} (0.099)	0.842 ^{***} (0.092)	0.836 ^{***} (0.093)	0.837 ^{***} (0.099)	0.842 ^{***} (0.096)
RGDP(-1) × A	..	0.055 ^{***} (0.019)	..	..	0.078 ^{***} (0.019)
RGDP(-1) × B	..	0.017 (0.042)	..	..	0.003 (0.058)
NIIP(-1) × A	..	..	-0.010 (0.011)	..	-0.013 (0.009)
NIIP(-1) × B	..	..	-0.015 (0.018)	..	-0.016 (0.023)
FIXED × A	..	..	..	-0.715 (0.550)	-1.404 ^{***} (0.529)
FIXED × B	..	..	..	-0.179 (0.079)	-0.308 (0.854)
DUM2009 × A	3.399 ^{***} (0.180)	2.795 ^{***} (0.351)	3.262 ^{***} (0.328)	3.452 ^{***} (0.198)	2.469 ^{***} (0.455)
DUM2009 × B	14.407 ^{***} (1.171)	14.217 ^{***} (1.514)	14.018 ^{***} (1.503)	14.400 ^{***} (1.172)	13.955 ^{***} (1.629)
R²	0.705	0.713	0.705	0.706	0.721
Countries	10	10	10	10	10
Time	1996-2011	1996-2011	1996-2011	1996-2011	1996-2011
Observations	160	160	149	160	149

Notes: OLS estimations without fixed effects. Robust standard errors are shown in brackets. Superscripts ^{***}, ^{**}, ^{*} denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10 percent level of significance, respectively.

Column (3.1) shows the results when only the lagged dependent variable and the 2009 crisis dummy are included. The coefficient of the lagged dependent is larger for the periphery countries than for the core countries (although the difference is not statistically significant), which is consistent with the findings of the unit root tests in Section 2. It also follows that the sudden stop in 2009, in the wake of global financial crisis, was much larger for the periphery countries than for the core countries. The results for the sample 1996-2011 and the sample 1996-2007 (shown in Appendix A) are similar in qualitative terms suggesting that the 2009 dummy is able to soak up the effects of the global financial crisis on the current account in the CEE countries.

Column (3.2) shows the result when the relative income level lagged one year is included. The sign is positive for both country groups, but only economically and statistically significant for the core countries. The results also apply for the shorter pre-crisis sample. Column (3.3) reveals that the lagged net international investment position has little or no explanatory power. The coefficient of FIXED is negative in all cases but the size and statistical significance depend on the time sample; prior to the global financial crisis a less flexible exchange rate was associated with larger capital inflows for both Group A and Group B countries.

Column (3.5) shows the results when the lagged dependent variable and four explanatory variables are included at the same time. In qualitative terms all results remain unchanged. The current account balance exhibits substantial persistence, the crisis affected the periphery countries more than the core countries, convergence effects are most pronounced for the core countries and a fixed exchange rate seems to have fostered capital inflows, in particular before the outbreak of the global financial crisis.

5. Panel data estimations and time variation

The estimations in Section 4 identified the marginal effects using variation both countries and across time. This was deemed appropriate given that e.g. convergence effects related to the income *level* would be very difficult to identify without the cross-sectional variation. The drawback of OLS estimation is obviously that unobserved fixed effects may lead to an omitted variables bias. The rest of the estimation results are therefore undertaken using country fixed effects to control for unobserved time-invariant effects, i.e. the marginal effects are identified entirely through variation along the time dimension.

Table 4 presents the first set of results of the fixed effect estimations. The explanatory variables in these estimations are factors that are largely external or outside the control of the individual CEE country. The estimations seek to shed some light on the importance of different largely external factors on capital flows to the two groups of CEE countries. The results for the full sample in Table 4 are supplemented by the results for the pre-crisis period which are shown in Appendix B, Table B1.

Column (4.1) shows the results if only the lagged dependent variable and a crisis dummy are included in the fixed effect estimation. The results are in qualitative terms as before; the current account balance exhibits much more persistence in the periphery countries in Group B than for the core countries in Group A. This is particularly the case for the pre-crisis sample, where the coefficient of the lagged current account balance is statistically insignificant.

Table 4: Fixed effect panel estimations of current account balance CA, 1996-2011

	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)
CA(-1) × A	0.486 ^{***} (0.176)	0.479 ^{***} (0.177)	0.492 ^{***} (0.174)	0.498 ^{***} (0.166)	0.431 ^{***} (0.170)
CA(-1) × B	0.838 ^{***} (0.073)	0.814 ^{***} (0.067)	0.842 ^{***} (0.066)	0.840 ^{***} (0.069)	0.678 ^{***} (0.089)
EUMEMB × A	..	-1.228 ^{***} (0.382)	..	..	..
EUMEMB × B	..	-3.436 ^{**} (1.524)	..	..	..
VDAX × A	..	..	0.017 (0.022)	..	..
VDAX × B	..	..	0.125 ^{***} (0.042)	..	..
DAX × A	..	..	..	0.008 (0.009)	..
DAX × B	..	..	..	0.003 (0.011)	..
CAX × A	..	..	..	..	0.158 ^{**} (0.064)
CAX × B	..	..	..	..	0.549 ^{***} (0.174)
DUM2009 × A	3.150 ^{***} (0.898)	3.057 ^{***} (0.906)	3.222 ^{***} (0.906)	3.199 ^{***} (0.906)	2.154 ^{**} (0.996)
DUM2009 × B	14.404 ^{***} (2.407)	14.005 ^{***} (2.418)	14.876 ^{***} (2.402)	14.432 ^{***} (2.410)	10.493 ^{***} (2.956)
R²	0.714	0.729	0.739	0.715	0.741
Countries	10	10	10	10	10
Time	1996-2011	1996-2011	1996-2011	1996-2011	1996-2011
Observations	160	160	160	160	160

Notes: Estimations with country fixed effects; the fixed effects are not reported. Robust standard errors are shown in brackets. Superscripts ^{***}, ^{**}, ^{*} denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10 percent level of significance, respectively.

Column (4.2) shows the results when the impulse dummy indicating the year of European Union membership is included. The coefficient is negative and statistically significant for both country groups, and in numerical terms larger for Group B than for Group A. Taken literally the result suggests that EU membership was accompanied by a substantial upturn of capital inflows in the CEE countries, but the identification is evidently weak given the contents of the impulse dummy.

Column (4.3) shows the results for VDAX, the proxy of financial stress in Continent European financial markets. External financial pressure appears to have a large effect on Group B, but little or no effect on Group A. The VDAX increased from 16.4 in 2007 to 37.8 in 2008, which would translate into an increase of CA of around 2.7 percentage points. Reassuringly the results are qualitatively similar whether or not the period after the crisis is included (Appendix B, Column (B1.3)). Other measures of external financial pressure generally produced inconclusive results. The German stock market index DAX does not have any explanatory

power (Column (4.4)). The same conclusion was reached after some experimentation with different interest rates and interest rate spreads (not shown).

Finally, Column (4.5) shows the result when the average capital outflow of the nine other CEE countries, CAX, is included as a proxy of the general perception of the region as “expressed” by financial markets. The CAX measure of the perception of the region appears to play a more important role for Group B, the group of countries in the periphery, than for Group A, the group of core countries. This is particularly the case for the period before the outbreak of the global financial crisis (Appendix B, Column (B1.5)).

Table 5 presents the results when various explanatory variables related to the performance and policies of the individual countries are included. The first such internal factor is the economic sentiment measured in January of each year, ESI0. It follows from Column (5.1) that the sentiment indicator has substantial explanatory power for Group B, but little or no for Group A. This picture is even more pronounced if the sample is truncated to include only the period before the global financial crisis (Appendix B, Column (B2.1)).

Table 5: Fixed effect panel estimations of current account balance, 1996-2011

	(4.1)	(4.2)	(4.3)	(4.4)
CA(-1) × A	0.469 ^{***} (0.177)	0.474 ^{***} (0.175)	0.654 ^{***} (0.105)	0.448 ^{***} (0.157)
CA(-1) × B	0.719 ^{***} (0.074)	0.836 ^{***} (0.073)	0.844 ^{***} (0.072)	0.848 ^{***} (0.071)
ESI0 × A	-0.032 (0.027)	..	..	..
ESI0 × B	-0.196 ^{***} (0.047)	..	..	..
FIXED × A	..	-1.025 (0.676)	..	..
FIXED × B	..	-1.790 (1.588)	..	..
GREER(-1) × A	..	..	-0.073 ^{**} (0.036)	..
GREER(-1) × B	..	..	0.004 (0.034)	..
FBALCYC × A	..	..	..	0.266 ^{***} (0.133)
FBALCYC × B	..	..	..	-0.254 (0.191)
DUM2009 × A	2.296 ^{**} (1.034)	3.227 ^{***} (0.906)	3.630 ^{***} (0.910)	3.293 ^{***} (0.770)
DUM2009 × B	9.958 ^{***} (2.237)	14.367 ^{***} (2.445)	14.390 ^{***} (2.414)	13.714 ^{**} (2.322)
R²	0.759	0.718	0.737	0.729
Countries	10	10	10	10
Time	1996-2011	1996-2011	1996-2011	1996-2011
Observations	160	160	150	152

Notes: Estimations with country fixed effects; the fixed effects are not reported. Robust standard errors are shown in brackets. Superscripts ^{***}, ^{**}, ^{*} denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10 percent level of significance, respectively.

Column (5.2) shows the results when the fixed exchange rate dummy is included and the model is estimated using fixed effect estimation. The estimated coefficients are negative in both cases but not statistically significant in the full sample. Column (B1.2) in Appendix B reveals, however, that both coefficients are statistically significant when the sample does not include the global financial crisis.

Column (5.3) reveals that the coefficient of the change in the real effective exchange is negative and statistically significant for Group A, which entails that real appreciation or deteriorating competitiveness is followed by a reduction of the current account balance the following year. This result, however, seems to stem largely from the crisis period, cf. Column (B1.3) in Appendix B. When the crisis period is excluded, none of the estimated coefficients are statistically significant.

The same form of sensitivity to sample changes is present in the case of discretionary fiscal policy. A fiscal contraction appears to improve the current account balance in the case of Group A, cf. Column (5.4). The size of the coefficient is comparable to the finding in Abbas et al. (2010). However, when the sample excludes the global financial crisis, the coefficients of the discretionary fiscal policy variable are statistically and economically insignificant, cf. Column (B2.4).

The estimations presented in Tables 4 and 5 using the full sample (and the estimations using the pre-crisis sample) can be summarised in a few sentences. The persistence of the current account balance is in all specifications larger for the group of countries in the periphery (Group B) than for the group of core countries (Group A). The current account of the periphery group is influenced by factors such as EU membership, external financial pressure, overall capital flow to the CEE region and country-specific sentiments or expectations. On the other hand, it is difficult to establish factors that have affected the current account balance of the core group in a consistent way. Internal economic and political factors such as changes in competitiveness and fiscal policy may be of importance, but the estimated effects hinge on the inclusion of the crisis period.

The explanatory variables were generally included one-by-one in the estimations presented in Tables 4 and 5. This choice was predicated on several factors, *viz.* the limited number of observations, the estimation of separate coefficients for the two groups and the correlation of several of the explanatory variables, but also the fact that country fixed effects and the lagged dependent variable function as control variables. Experiments entailing the inclusion of all or substantial subsets of the explanatory variables produce results that do not contradict the findings discussed above (not shown). The coefficients are estimated less precisely, but the coefficients that attain statistical significance when the variables are included one-by-one attain the estimated sign and typically t -values above 1.5.

6. Final comments

The countries of the CEE region have attracted substantial net capital inflows since the mid-1990s. This would be in accordance with neoclassical theory which predicts that capital would flow “down stream” to countries with modest capital stocks and low per capita GDP (Abiad et al. 2009). In this context current account deficits can be seen as part of the convergence process of the region. The capital inflows have however exhibited substantial variation across countries and across time. The large variability of capital flows is bound to have pro-

found effects on financial stability and business cycle developments as demonstrated by events after the global financial crisis. The upshot is that it is important to gain further insights into the factors driving the diverse current account developments in the region.

The starting point of the empirical analysis is the observation that there are reason to divide the 10 CEE countries into two groups, a group of countries in the geographical core of Europe and a group of countries in the geographical periphery. The first group have had current account deficits around 5 percent of GDP and the year-to-year developments have been relatively subdued, even in the aftermath of the global financial crisis. The second group has seen very large year-to-year changes in the current account balance, in particular in the aftermath of the global financial crisis where a sudden stop of capital inflows meant that current account deficits of 15 percent of GDP or more were followed by current account surpluses one or two years later.

The econometric analysis helps shed lights on the factors behind this bifurcation. A main result is that the current account exhibits substantial more inertia in the group of periphery countries than in the group of core countries. This follows from univariate unit root tests but also from dynamic panel estimations in which various explanatory variables are included. Different shocks will typically have longer lasting effects on the current account balance in the periphery countries than in the core countries.

The analysis suggests that the factors affecting the current account balance differ much across the two country groups. The current account balance in the core group may partly be driven by convergence effects and domestic factors such as the development of competitiveness and fiscal policy. The current account balance in the periphery group may, on the other hand, to a larger extent driven by factors such as risk pricing on European financial markets, EU membership, capital flows to the region and sentiments regarding the domestic developments. Using broad brush strokes, the conclusion is that the current account balance has to a large extent been driven by convergence effects and policies in the core countries, while it has been driven by external factors and sentiment effects in the periphery countries.

The findings summarised above may help explain why the current account balance has exhibited more “explosive” dynamics in the periphery than in the core countries. The current account balance of the periphery countries is more susceptible to external events and sentiment shifts, and the effect of such shocks are fairly persistent. The current account balance of the core countries is less susceptible to external events and sentiment shifts and shocks are anyway rather short-lived effects. These results seem to tally well with the observed differences in current account developments across the CEE countries.

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Appendix A: OLS estimations on pre-crisis sample

Table A1: OLS panel estimations of current account balance CA, 1996-2007

	(A1.1)	(A1.2)	(A1.3)	(A1.4)	(A1.5)
A	-2.215 ^{***} (0.708)	-5.975 ^{***} (1.689)	-2.573 ^{**} (1.037)	-1.878 ^{***} (0.597)	-6.878 ^{***} (1.573)
B	-1.287 (0.808)	0.494 (1.830)	-0.900 (0.996)	-0.519 (0.735)	-0.402 (1.673)
CA(-1) × A	0.578 ^{***} (0.123)	0.494 ^{***} (0.125)	0.467 ^{***} (0.138)	0.552 ^{***} (0.124)	0.414 ^{***} (0.109)
CA(-1) × B	0.990 ^{***} (0.128)	0.907 ^{***} (0.157)	0.889 ^{***} (0.112)	0.977 ^{***} (0.132)	0.886 ^{***} (0.143)
RGDP(-1) × A	..	0.061 ^{***} (0.021)	..	..	0.078 ^{***} (0.021)
RGDP(-1) × B	..	-0.070 (0.065)	..	..	-0.012 (0.081)
NIIP(-1) × A	..	..	0.011 (0.010)	..	-0.001 (0.011)
NIIP(-1) × B	..	..	0.036 (0.027)	..	0.030 (0.033)
FIXED × A	..	..	..	-1.580 ^{**} (0.757)	-2.010 ^{***} (0.701)
FIXED × B	..	..	..	-1.059 ^{**} (0.487)	-0.349 (0.707)
R²	0.681	0.697	0.667	0.691	0.694
Countries	10	10	10	10	10
Time	1996-2007	1996-2007	1996-2007	1996-2007	1996-2007
Observations	120	120	109	120	109

Notes: OLS estimations without fixed effects. Robust standard errors are shown in brackets. Superscripts ^{***}, ^{**}, ^{*} denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10 percent level of significance, respectively.

Appendix B: Fixed effect estimations on pre-crisis sample

Table B1: Fixed effect panel estimations of current account balance CA, 1996-2007

	(B1.1)	(B1.2)	(B1.3)	(B1.4)	(B1.5)
CA(-1) × A	0.176 (0.161)	0.171 (0.163)	0.181 (0.158)	0.157 (0.163)	0.173 (0.163)
CA(-1) × B	1.014 ^{***} (0.120)	0.971 ^{***} (0.106)	0.944 ^{***} (0.119)	1.010 ^{***} (0.123)	0.781 ^{***} (0.124)
EUMEMB × A	..	-1.111 ^{***} (0.321)	..	..	..
EUMEMB × B	..	-2.346 ^{**} (1.177)	..	..	..
VDAX × A	..	..	0.021 (0.021)	..	..
VDAX × B	..	..	0.100 ^{**} (0.043)	..	..
DAX × A	..	..	..	-0.0058 (0.009)	..
DAX × B	..	..	..	-0.001 (0.013)	..
CAX × A	..	..	..	..	0.048 (0.098)
CAX × B	..	..	..	..	0.796 ^{***} (0.180)
R²	0.727	0.739	0.748	0.728	0.765
Countries	10	10	10	10	10
Time	1996-2007	1996-2007	1996-2007	1996-2007	1996-2007
Observations	120	120	120	120	120

Notes: Estimations with country fixed effects; the fixed effects are not reported. Robust standard errors are shown in brackets. Superscripts ^{***}, ^{**}, ^{*} denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10 percent level of significance, respectively.

Table B2: Fixed effect panel estimations of current account balance, 1996-2011

	(B2.1)	(B2.2)	(B2.3)	(B2.4)
CA(-1) × A	0.163 (0.167)	0.165 (0.154)	0.380 ^{**} (0.134)	0.179 (0.159)
CA(-1) × B	0.892 ^{***} (0.108)	1.011 ^{***} (0.117)	1.043 ^{***} (0.121)	1.021 ^{***} (0.125)
ESI0 × A	-0.029 (0.029)	..	..	..
ESI0 × B	-0.165 ^{***} (0.044)	..	..	..
FIXED × A	..	-1.573 ^{**} (0.709)	..	..
FIXED × B	..	-2.624 [*] (1.370)	..	..
GREER(-1) × A	..	..	-0.054 (0.043)	..
GREER(-1) × B	..	..	-0.033 (0.035)	..
FBALCYC × A	..	..	..	0.018 (0.172)
FBALCYC × B	..	..	..	-0.131 (0.231)
R²	0.765	0.737	0.749	0.731
Countries	10	10	10	10
Time	1996-2007	1996-2007	1996-2007	1996-2007
Observations	120	120	110	112

Notes: Estimations with country fixed effects; the fixed effects are not reported. Robust standard errors are shown in brackets. Superscripts ^{***}, ^{**}, ^{*} denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10 percent level of significance, respectively.