

PRELIMINARY FIRST DRAFT!

# Economic Growth and External Financing in Central and Eastern Europe

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*Abstract:* This paper discusses the growth performance and the importance of capital flows in the EU countries from Central and Eastern Europe (CEE) during the period 1995-2014. Economic growth has on average been relatively high, implying convergence towards Western European income levels, but also highly fluctuating. The growth performance coincides in large part with developments in capital flows as captured by the current account balance; high rates of growth have typically coincided with large or increasing capital inflows, while low or negative rates of growth have typically occurred after capital outflows. The relatively high growth rates in several CEE countries have come at the cost of accumulation of foreign liabilities and exacerbated vulnerability to changes in international capital flows. The relative performance of the CEE countries in terms of GDP growth and variability herein changes markedly when the effects of capital flows are accounted for.

*JEL classification:* P17, P21, P36.

*Keywords:* Economic growth, economic instability, capital flows, current account balance, convergence, transition economies

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<sup>\*</sup> The views expressed are solely those of the author and do not necessarily reflect the views of Eesti Pank or the Eurosystem.

## 1. Introduction

In total 11 countries from Central and Eastern Europe (CEE) joined the EU in 2004, 2007 or 2013. The CEE countries had planned economies until 1989-1991, but reforms which liberalised and opened the economies meant that the countries all had functioning market economies by the mid-1990s. A key objective of the reforms was to ensure high rates of economic growth and hence convergence to income levels in the EU15, the Western European EU countries. Economic growth is of key importance for raising living standards and improving economic welfare in society.<sup>1</sup>

This paper discusses the growth performance of the CEE countries during the years 1995-2014 with a particular emphasis on the effects of the availability of external financing. The analysis is motivated by the overall mixed growth performance of the countries as emphasised in many studies (Becker et al. 2010, Mitra et al. 2010, Atoyán 2010, Staehr 2015). Whereas most has seen relatively rapid growth, others have seen less rapid growth and relatively slow convergence. Moreover, some of the fastest growing economies have also seen large fluctuations in GDP growth with adverse consequences on unemployment and migration. Finally, the growth performance has overall been unimpressive in the period after the global financial crisis.

It is pertinent to tie the growth performance of the CEE countries together with their access to external resources. Until 2008 all the CEE countries experienced substantial capital inflows as witnessed by large current account deficits. The capital inflows arguably contributed to an expansion of the productive capacity, but also increased demand from domestic consumption and non-productive investment. With the outbreak of the global financial crisis many CEE countries experienced a *sudden stop* as previous large current account deficits were reduced and even turned into surpluses within a year or two.

This paper seeks to ascertain to which extent developments in the current account balance can be tied together with the growth performance of the CEE countries. The main concern is whether economic growth in the countries has been dependent on access to external financing. This concern is evidently not exclusive to the CEE countries. *The Economist* (2015, p. 60) discusses the growth performance of the Turkish economy after the global financial crisis and highlights the importance of the current account balance : “Dani Rodrik, an economist at Harvard University, points to what he calls the deteriorating quality of Turkish growth. Over recent years, any given level of growth has been associated with a rising current-account deficit, not a falling one”.

The neo-classical model of capital flows predicts that capital will flow from high-income countries to lower-income countries where the marginal product of capital is higher. Lucas (1990) posits that this prediction is often not confirmed in empirical studies asks why capital in many cases flows from low-income countries to high-income countries. Kaminsky et al. (2005) find that

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<sup>1</sup> Hayo & Seifert (2003) show that income levels is of great importance for subjective well-being measures in a sample of post-communist countries.

capital inflows are pro-cyclical, which is not immediately consistent with the neo-classical model. Kim (2000) uses VAR models for four middle-income countries and uses structural decomposition analysis to trace the causes of capital flows. The conclusion is in all cases that external factors, such as world interest rates and foreign business cycles, play a dominant role, while domestic factors are rather unimportant. Calvo et al. (1996) provide a broad discussion based on a sample of emerging market economies and reach similar conclusions. The overall conclusion may be that capital flows in practice are difficult to predict and often pro-cyclical or resulting from external factors.

A body of literature going back to the 1970s focuses on constraints on economic growth afforded by the balance of payment (Thirlwall 1979, Thirlwall & Hussain 1982). The starting point is the finding that net export is typically closely related to the income level in the short term. Higher income implies lower net export (mainly driven by higher imports) and potentially a current account deficit. A current account deficit is only possible insofar that it can be financed either by capital inflows or drawing down the international currency reserves. The upshot is that the balance of payments may constrain output growth in the short term. This view on the importance of external financing for economic growth is also behind the lending policies of the IMF and the World Bank as formalised in the *Two-Gap Model* (Chenery & Strout 1966).

Empirical studies tend to find that there is substantial co-variation between capital flows and economic growth. Calvo (1998) discusses the effects of capital flows and documents that a *sudden stop* where capital inflows are reduced or reversed abruptly can have severe detrimental effects on the real economy. Cardarelli et al. (2010) discuss the macroeconomic consequences of capital inflows in emerging-market economies and find that inflows have often been associated with rapid GDP growth followed by declining growth rates. Prasad et al. (2007) do not find evidence of capital inflows contributing to economic growth, but their sample includes a number of East Asian countries which rely on an export-oriented economic model.

Turning to the countries in Central and Eastern Europe, a number of studies have also emphasised the importance of the current account for the growth performance of the countries. Bajo-Rubio & Diaz-Roldan (2009) uses the idea of the balance of payment constraint of Thirlwall (1979) and use information on the trade elasticities to provide estimates of the average growth rate that would prevail under a regime without access to international capital. They find that indeed economic growth had been constrained in their sample until 2007. Brixiova et al. (2010) find evidence of a boom-bust cycle in Estonia in large part driven by capital flows. Ghosh et al. (2011) find that capital inflows into the post-communist countries were beneficial to economic growth but also made the countries more vulnerable to external shock. They discuss various policies that may lessen this trade-off.

In conclusion, there is a substantial literature which ties together economic growth and international capital flows or resource transfers and in emerging-

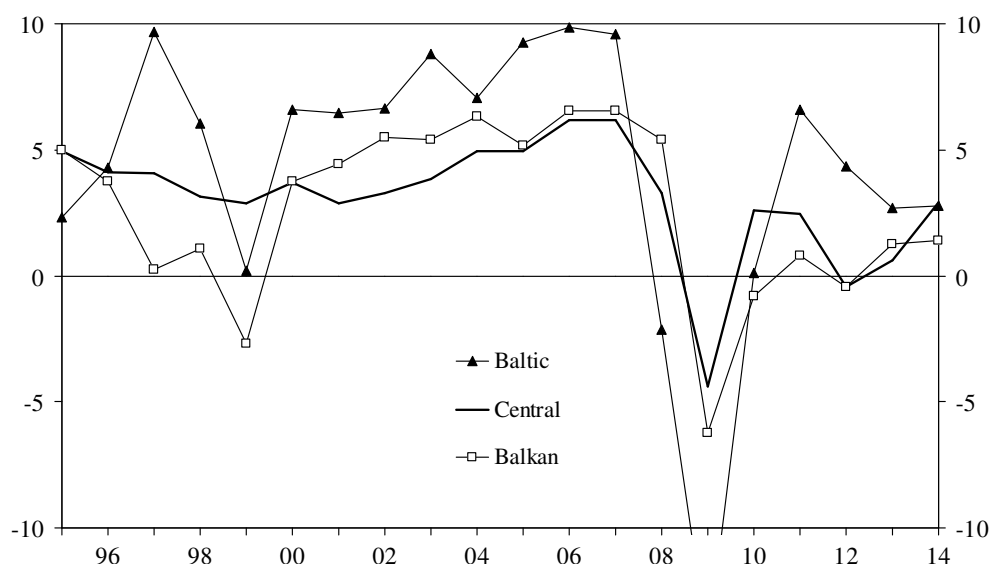
market economies, including the CEE countries. This paper contributes to the literature in at least three ways. First, it focuses exclusively on the EU countries from Central and Eastern Europe which affords a sizeable but still relatively homogeneous sample. Second, it uses panel data estimations to establish *how* and to *which extent* capital flows affect economic growth in the region. Third, it uses counterfactual simulations to provide quantitative measures of the importance of the capital flows observed in the sample period from 1995 to 2014.

The rest of the paper is organised as follows. Section 2 takes a first look at the growth performance of the CEE countries and the process of economic convergence. Section 3 presents the data used in the paper. Section 4 presents the main results from the econometric analyses. Section 5 reports the results from some additional analyses. Section 6 provides trend growth estimates adjusted for catch-up effects and capital flows. Finally, Section 7 concludes the paper.

## 2. A first look at data

This section takes a first look at the dynamics of GDP growth and the current account balance in the CEE countries since the mid-1990s. Figure 1 shows the rate of GDP growth for three geographical groups of CEE countries; the Baltic group consisting of Estonia, Latvia and Lithuania, the Central European group consisting of the Czech Republic, Hungary, Poland, Slovenia and Slovakia and the Balkan group consisting of Bulgaria, Croatia and Romania.

Figure 1: GDP growth for three groups of CEE countries, percent per year, 1995-2014

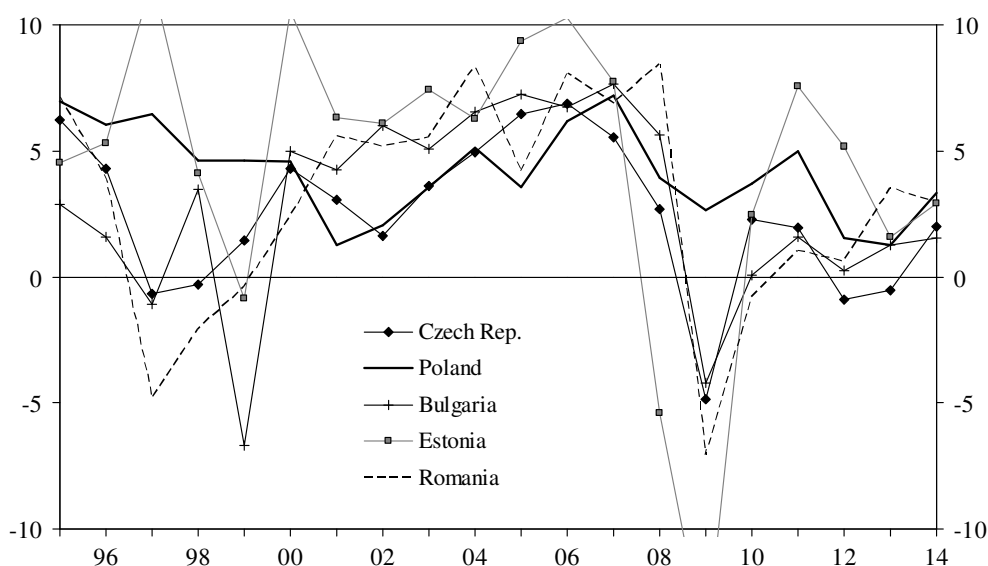


Note: Unweighted averages of growth rates within the groups.  
Source: Ameco (2016, code: OVG D).

Economic growth in the three regions has on average been relatively rapid but also highly fluctuating. This pattern is most pronounced for the Baltic and Balkan groups which are comprised of countries that were particularly affected by first the Russian crisis and later the global financial crisis. The strong growth performance of the Baltic countries in the period from 2000 to 2007 is noticeable and so is the output collapse in the countries in 2009 after the outbreak of the global financial crisis. The recovery after the crisis has been relatively timid in all country groups with growth rates of around 2-3 percent in 2013 and 2014.

There is evidently substantial heterogeneity within the three geographical groups. Figure 2 shows GDP growth for selected countries from the groups. The arguably most notable observation is the relative stability of GDP growth in Poland. Poland is the largest of the CEE countries and is less open for trade and capital flows than most other CEE countries.

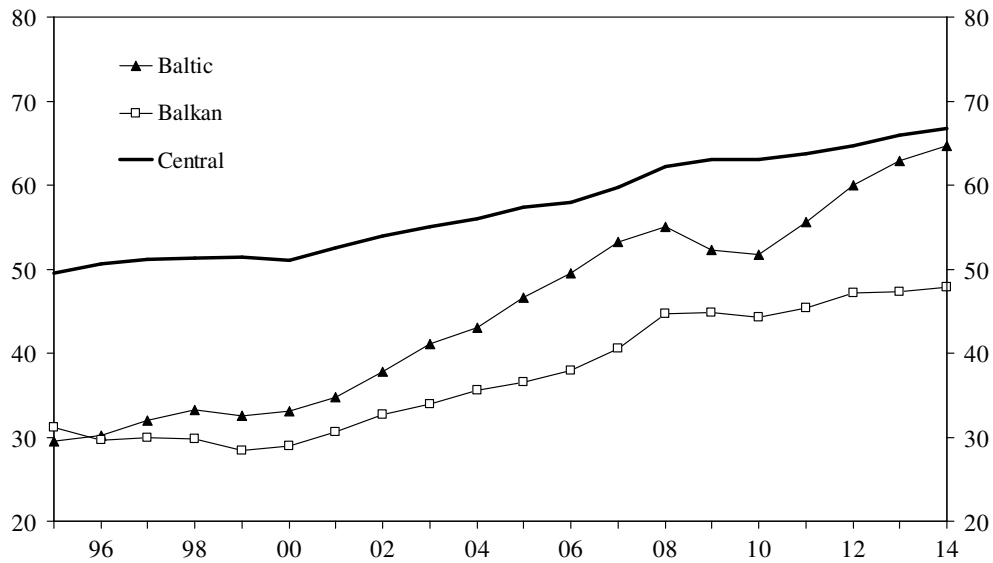
Figure 2: GDP growth for selected CEE countries, percent per year, 1995-2014



Source: Ameco (2016, code: OVG D).

Figure 3 shows the GDP per capita in purchasing power parity terms as percent of the EU15 average for the three CEE groups. All three groups exhibit clear convergence, but the convergence has been faster in the Baltic group than in the other two groups. The picture after the global financial crisis is also influenced by the weak growth performance of the EU15 countries during this period.

Figure 3: GDP per capita adjusted for purchasing power for three groups of CEE countries, percent of EU15 average, 1995-2014

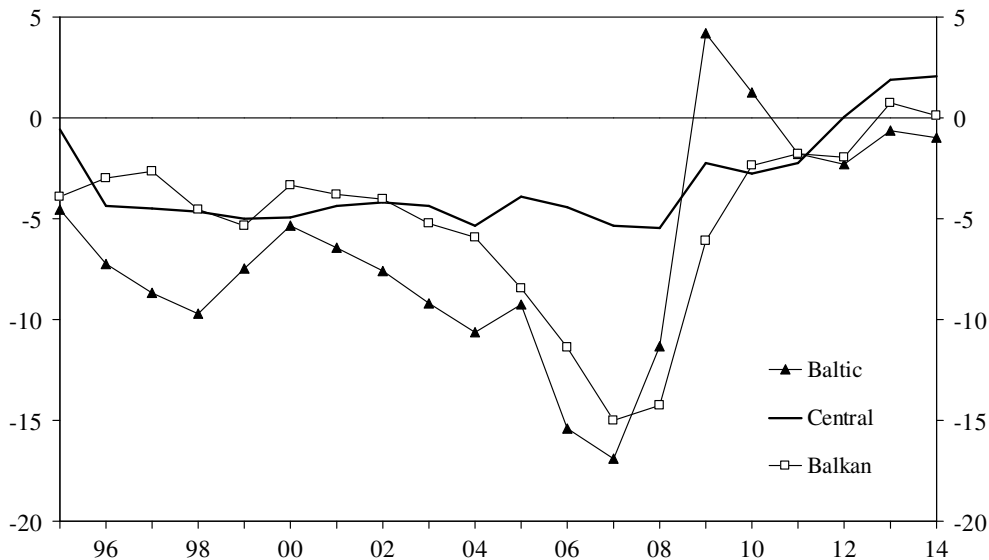


Source: Ameco (2016, code: HVGNPR).

The current account balance measures the net transfer of resources from a country; a current account surplus indicates a net outflow of resources, while a current account deficit indicates a net inflow of resources. Given the definition of the current account balance in official statistics, it is customary to use the terms current account balance and capital flows interchangeably. A current account surplus amounts to a net capital outflow, while a deficit amounts to a net capital inflow.

Figure 4 shows the current account balance in percent of GDP for the three groups of CEE countries. The large and increasing deficits in the Baltic and Balkan groups during the boom period before the global financial crisis are notable. The very large and rapid reversals of the current balance in 2008 and particularly in 2009 are also notable. These *sudden stops* affected the Baltic group the hardest but also the Balkan group and to a lesser extent the group of Central European countries. The sudden stops precipitated deep economic downturns as has been the case in other situations of sudden stops (Calvo 1998).

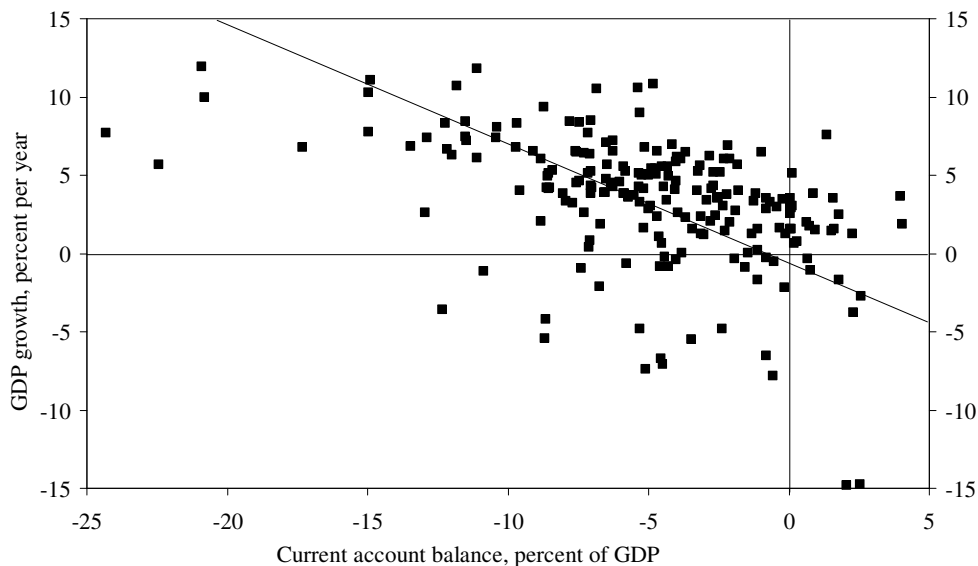
Figure 4: Current account balance for three groups of CEE countries, percent of GDP, 1995-2014



Note: Unweighted averages of growth rates within the groups.  
Source: IMF (2015).

The co-variation of the current balance and economic can be ascertained by using annual data for the 11 CEE countries individually. Figure 5 shows a crossplot of the two variables and it is immediately clear that there is a negative relationship between the two variables; current account surpluses have appeared in periods of relatively low GDP growth and large current account deficits in periods of relatively high GDP growth. The following sections will explore this relationship between the current account and GDP growth in more detail for the 11 CEE countries.

Figure 5. The current account balance and GDP growth for the CEE countries, annual data, 1995-2014



Source: WEO (2015), Ameco (2016, code: OVGD).

### 3. Data and time series properties

The dataset used in the econometric analysis comprises annual data from 1995 to 2014 for the 11 CEE countries. The variable CA is the current account balance as a share of GDP and Y is real GDP. The control variables include the following variables: ULC is the real unit labour costs, YPPP is GDP per capita in purchasing power parity terms, CP is real private consumption and DD is real domestic demand from consumption and investment by the private and public sectors.<sup>2</sup> Finally, the variable FD is an index of real foreign demand computed as the real import in the trading partners of a country weighted by the export shares to partners the previous year. The prefix  $\Delta$  is the first difference operator, while the prefix L indicates the natural logarithm. Using this notation,  $\Delta Y$  denotes real GDP growth.

Table 1 shows the summary results from panel unit root tests for the variables in the dataset. The current account balance CA is found to be borderline stationary, while the log differenced variables are all stationary. The logarithm of the GDP per capita is clearly non-stationary, cf. also Figure 3.

Table 1: Panel unit root tests, 1995-2014

	(1.1)	(1.2)	(1.3)	(1.4)
	Levin-Lin-Chu	Im, Pesaran & Shin	ADF-Fisher	PP-Fisher
<b>CA</b>	-0.925 [0.177]	-1.798 [0.036]	36.127 [0.030]	31.927 [0.079]
<b><math>\Delta Y</math></b>	-6.168 [0.000]	-3.881 [0.000]	51.823 [0.000]	55.844 [0.000]
<b><math>\Delta LFD</math></b>	-8.089 [0.000]	-5.661 [0.000]	71.682 [0.000]	109.131 [0.000]
<b><math>\Delta LULC</math></b>	-7.704 [0.000]	-6.519 [0.000]	83.310 [0.000]	101.278 [0.000]
<b>LYPPP</b>	-0.409 [0.341]	2.700 [0.997]	6.127 [1.000]	6.504 [0.999]
<b><math>\Delta LCP</math></b>	-5.171 [0.000]	-3.348 [0.000]	45.818 [0.002]	49.615 [0.001]
<b><math>\Delta LDD</math></b>	-6.808 [0.000]	-4.622 [0.000]	60.778 [0.000]	43.497 [0.004]

*Notes:* In all the tests the null hypothesis is that the variable exhibits a unit root in all countries, while the alternative is that the variable is stationary in at least one country. The Levin-Lin-Chu test assumes a common autoregressive parameter across all countries, while the Im-Pesaran-Shu test and the Fisher tests allow for country-specific autoregressive coefficients. The lag length is set at one year. The value in square brackets under the test statistic is the  $p$ -value.

### 4. Main estimations

<sup>2</sup> The variable CA is from WEO (2015), while all other variables are from Ameco (2016) with the Ameco codes in brackets: Y (OVGD), FD (VMGSW), ULC (QLCD), YPPP (HVGNPR), CP (OCPH) and DD (OUNF).



The empirical analysis starts from very simple models explaining the rate of GDP growth  $\Delta LY$  by the current account balance CA and changes in the current account balance  $\Delta CA$ . Prasad *et al.* (2007) uses a similar methodology although the data frequency is five years in their study. The panel data estimations use data from 1996 to 2014 and typically control for country fixed effects while dummies for global financial crisis or time fixed effects control for country-invariant time effects. Table 2 shows the results.

Table 2. Fixed effect estimations of GDP growth in the CEE countries

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)
<b>CA</b>	-0.339*** (0.043)	..	-0.294*** (0.047)	-0.198*** (0.056)	-0.210*** (0.071)
<b><math>\Delta CA</math></b>	..	-0.453*** (0.064)	-0.266*** (0.066)	-0.276*** (0.064)	-0.173* (0.090)
<b>DUM2008</b>	-0.035*** (0.087)	-0.008 (0.009)	-0.025*** (0.009)	..	..
<b>DUM2009</b>	-0.109*** (0.009)	-0.084*** (0.010)	-0.090*** (0.010)	..	..
<b>DUM2010</b>	-0.018** (0.018)	-0.029*** (0.009)	-0.020*** (0.008)	..	..
<b><math>R^2</math></b>	0.617	0.575	0.647	0.724	0.350
<b>Country FE</b>	Yes	Yes	Yes	Yes	Yes
<b>Time FE</b>	No	No	No	Yes	No
<b>Time</b>	96-14	96-14	96-14	96-14	96-07
<b>Obs.</b>	209	209	209	209	132

*Notes:* The dependent variable is  $\Delta LY$ . Standard errors are shown in brackets. Superscripts \*\*\*, \*\*, \* denote that the estimated coefficient is statistically significant at the 1, 5 and 10 percent level respectively.

Column (2.1) confirms the relationship between economic growth and the current account balance established graphically in Figure 5. The estimated coefficient when country fixed effects and dummies for the crisis years 2008 to 2010 are included is -0.34 and the coefficient is statistically significant at the 1 percent level. Column (2.2) includes the changes in the current account balance and the coefficient is also here negative and estimated precisely. Column (2.3) shows that there is “space” for both the current account balance and its change in the estimation. Finally, Columns (2.4) and (2.5) show that the established relationships are also present when time fixed effects are introduced or only the pre-crisis sample is used.

The next step is to include control variables beyond those used in Table 2. The trade performance may affect the current account balance and relative changes in foreign demand  $\Delta LFD$  and in real unit labour costs  $\Delta LULC$  are therefore included. To account for possible otherwise unexplained persistence in the rate of GDP growth the lagged GDP growth  $\Delta LY(-1)$  is added to most specifications. Finally, to account for possible convergence effects, the logarithm of the GDP per capita  $LYPPP$  is also included in some estimations, but the results when this variable is included should be interpreted with caution

given that the variable is non-stationary in the panel. Table 3 shows the results.

Table 3. Fixed effect estimations of GDP growth in the CEE countries

	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)
<b><math>\Delta LY(-1)</math></b>	..	0.301*** (0.069)	0.302*** (0.069)	0.274*** (0.069)	0.299*** (0.095)
<b>CA</b>	-0.253*** (0.049)	-0.104* (0.058)	-0.102* (0.059)	-0.084 (0.061)	-0.076 (0.083)
<b><math>\Delta CA</math></b>	-0.254*** (0.071)	-0.294*** (0.069)	-0.294*** (0.069)	-0.281*** (0.072)	-0.226** (0.103)
<b><math>\Delta LFD</math></b>	0.188*** (0.062)	0.215*** (0.060)	0.210*** (0.062)	0.405*** (0.143)	0.130* (0.074)
<b><math>\Delta LULC(-1)</math></b>	-0.037 (0.044)	-0.021 (0.044)	-0.022 (0.042)	0.001 (0.041)	-0.001 (0.048)
<b>LYPPP(-1)</b>	..	..	-0.003 (0.011)	..	..
<b>DUM2008</b>	-0.015 (0.001)	-0.016* (0.009)	-0.015* (0.009)	..	..
<b>DUM2009</b>	-0.051*** (0.015)	-0.043*** (0.015)	-0.044*** (0.015)	..	..
<b>DUM2010</b>	-0.029*** (0.009)	0.000 (0.011)	0.001 (0.011)	..	..
<b><math>R^2</math></b>	0.669	0.700	0.700	0.765	0.404
<b>Country FE</b>	Yes	Yes	Yes	Yes	Yes
<b>Time FE</b>	No	No	No	Yes	No
<b>Time</b>	96-14	96-14	96-14	96-14	96-07
<b>Obs.</b>	203	203	203	203	126

Notes: The dependent variable is  $\Delta LY$ . Standard errors are shown in brackets. Superscripts \*\*\*, \*\*, \* denote that the estimated coefficient is statistically significant at the 1, 5 and 10 percent level respectively.

Column (3.1) shows the results when relative changes in foreign demand and lagged unit labour costs are added to the specification in Column (2.3). The coefficient of the relative change in foreign demand is positive as expected and precisely estimated. The coefficient of the change in lagged unit labour costs is negative as expected but it is neither economically nor statistically significant. The coefficients of CA and  $\Delta CA$  are little changed from the specification with fewer control variables.

Column (3.2) presents the results when the lagged dependent variable is included. The coefficient of the variable is 0.30 and also statistically significant. The coefficient of CA declines quite a lot when the coefficient of  $\Delta CA$  increases marginally, both in numerical terms. Inclusion of an autoregressive coefficient seems to lead to the contemporaneous level of the current account balance being of relatively little importance, while the changes in the balance seem quite important. It is clear however that the interpretation of the model with an autoregressive term is more complicated than of the model without. Columns (3.3)-(3.5) represent robustness analyses.

## 5. A closer look

The results in Section 4 suggest that economic growth in the CEE countries has been closely connected with the level and changes in the current account balance. At this stage there is relatively little to suggest the direction of causality and for that matter possible economic mechanisms behind the results. This section provides additional estimations that may contribute to the interpretation of the results.

### *5.1 Lags in the current account balance*

One possible reason for the negative correlation between the current account and economic growth is that the capital flows which finance or make up the current account balance in large part are used for investments that may drive economic growth. Given the specifications in Table 3 these growth effects of investment must materialise very fast, i.e. within the first year, which is arguably not very probable.

Table 4 shows the results when various lags of the current account balance are included in the estimations. Column (4.1) repeats Column (3.1) but uses CA and CA(-1) instead of CA and  $\Delta$ CA. The results are of course unchanged but the dynamics of the effects of the current account balance on GDP growth may be interpreted differently. The effect of contemporaneous current account balance on GDP growth is negative and substantial, while the effect of the one period lagged current account balance is positive and substantial although smaller in numerical terms than the contemporaneous effect. The upshot is that, say, a current account deficit is only associated with higher growth within the same year, whereas the effect is negative the following year. This casts doubt on the hypothesis of supply side effects due to investment financed by current account deficits or capital flows.

Table 4. Fixed effect estimations of GDP growth in the CEE countries

	(4.1)	(4.2)	(4.3)	(4.4)
<b><math>\Delta LY(-1)</math></b>	..	..	0.301*** (0.069)	0.310*** (0.074)
<b>CA</b>	-0.507*** (0.069)	-0.492*** (0.072)	-0.398*** (0.070)	-0.394*** (0.073)
<b>CA(-1)</b>	0.254*** (0.071)	0.201** (0.095)	0.294*** (0.069)	0.282*** (0.093)
<b>CA(-2)</b>	..	0.069 (0.083)	..	0.044 (0.080)
<b>CA(-3)</b>	..	-0.009 (0.058)	..	-0.051 (0.056)
<b><math>\Delta LFD</math></b>	0.188*** (0.062)	0.205*** (0.063)	0.215*** (0.060)	0.230*** (0.061)
<b><math>\Delta LULC(-1)</math></b>	-0.015 (0.001)	-0.052 (0.046)	-0.021 (0.044)	-0.029 (0.044)
<b>DUM2008</b>	-0.015 (0.001)	-0.014 (0.009)	-0.016* (0.009)	-0.015* (0.009)
<b>DUM2009</b>	-0.051*** (0.015)	-0.046*** (0.016)	-0.043*** (0.015)	-0.040*** (0.015)
<b>DUM2010</b>	-0.029*** (0.009)	-0.026** (0.010)	0.000 (0.011)	-0.001 (0.012)
<b><math>R^2</math></b>	0.669	0.679	0.700	0.709
<b>Country FE</b>	Yes	Yes	Yes	Yes
<b>Time FE</b>	No	No	No	No
<b>Time</b>	96-14	97-14	96-14	97-14
<b>Obs.</b>	203	195	203	195

*Notes:* The dependent variable is  $\Delta LY$ . Standard errors are shown in brackets. Superscripts \*\*\*, \*\*, \* denote that the estimated coefficient is statistically significant at the 1, 5 and 10 percent level respectively.

Column (4.2) presents the results when the two and three years lagged current account balance is added to (4.1). The coefficients of these additional terms are neither economically nor statistically significant, which is further evidence against the hypothesis of supply side effects of the current account balance.

These results are confirmed when the model with the lagged dependent variable is considered. Column (4.3) shows the results with CA and CA(-1) as explanatory variables, while Column (4.3) shows the results when also CA(-2) and CA(-3) are included. It is clear that there is only a negative relationship between GDP growth and the *contemporaneous* current account balance. This lack of longer-term effects between the current account and economic growth suggests that the contemporaneous effect is largely a demand effect.

## 5.2 Consumption and domestic demand

Another approach entails that demand proxies such as private consumption and domestic demand are used instead of GDP when the effect of the current account balance is estimated. This makes it possible to ascertain the relationship between the current account balance and demand more precisely than if GDP is used. The results for models without and with an autoregressive parameter are shown in Table 5.

Table 5. Fixed effect estimations of growth in private consumption and domestic demand in the CEE countries

	(5.1)	(5.2)	(5.3)	(5.4)
<b>Dependent var. →</b>	<b>ΔLCP</b>	<b>ΔLCP</b>	<b>ΔLDD</b>	<b>ΔLDD</b>
<b>ΔLCP(-1)</b>	..	0.256*** (0.064)	..	..
<b>ΔLDD(-1)</b>	..	..	..	0.340*** (0.055)
<b>CA</b>	-0.445*** (0.057)	-0.259*** (0.072)	-0.377*** (0.056)	-0.096 (0.069)
<b>ΔCA</b>	-0.609*** (0.083)	-0.699*** (0.083)	-0.771*** (0.082)	-0.863*** (0.076)
<b>ΔLFD</b>	-0.056 (0.072)	-0.054 (0.070)	0.078 (0.071)	0.104 (0.066)
<b>ΔLULC(-1)</b>	0.014 (0.050)	-0.007 (0.050)	-0.014 (0.050)	-0.055 (0.047)
<b>DUM2008</b>	-0.036*** (0.011)	-0.036*** (0.010)	-0.020* (0.011)	-0.020** (0.010)
<b>DUM2009</b>	-0.061*** (0.018)	-0.053*** (0.017)	-0.058*** (0.018)	-0.048*** (0.016)
<b>DUM2010</b>	-0.023** (0.010)	0.000 (0.012)	-0.052*** (0.010)	-0.011 (0.011)
<b>R<sup>2</sup></b>	0.691	0.717	0.767	0.807
<b>Country FE</b>	Yes	Yes	Yes	Yes
<b>Time FE</b>	No	No	No	No
<b>Time</b>	96-14	96-14	96-14	96-14
<b>Obs.</b>	203	201	203	201

Notes: Standard errors are shown in brackets. Superscripts \*\*\*, \*\*, \* denote that the estimated coefficient is statistically significant at the 1, 5 and 10 percent level respectively.

It follows from Columns (5.1) and (5.2) that the coefficient of the change in foreign demand is very imprecisely estimated when the dependent variable is changes in private consumption. This is a reasonable result given that consumption demand is not directly influenced by developments in foreign markets. It is noticeable that the estimated coefficients of the current account variables are now very large in numerical terms and much larger than in the model with GDP as dependent variable; compare Columns (4.1) and (4.2) with (3.1) and (3.2). Changes in consumption demand are very closely connected with the current account and changes herein. Qualitatively similar results emerge when changes in domestic demand are used as dependent variable; see Columns (4.3) and (4.4).

The upshot of the discussion in this section is that the contemporaneous current account balance is closely connected to proxies of domestic demand while lags of the current account balance do not affect GDP growth in ways that would lead to the conclusion that current account movements lead to economic growth due to an expansion of the production capacity.

## 6. Revisiting the growth performance

The estimations in Section 4 brought up two fairly robust specifications in which the annual change in GDP was explained by the current account balance and changes therein. The specification in Column (3.1) has no autoregressive term, while the specification in Column (3.2) includes the lagged dependent variable.

This section presents the results of some counterfactual simulation exercises to ascertain the quantitative importance of the current account balance on economic growth in the CEE countries during the period 1996-2014. The simulations seek to answer the question how the average of the growth rate and the variability of the growth rate would have been affected if the current account balance had taken a fixed value throughout the two decades. The simulation exercises do not rest on any explicit identification of the direction of causality in the estimation model. The important point is that GDP is restricted by the availability of a fixed amount of foreign resources as estimated in the models in Columns (3.1) and (3.2).

Two different values of the current account balance are considered, i.e.  $CA = -0.04$  and  $CA = 0$ . The first value is the maximum deficit allowed over a three-year period by the scoreboard of the Macroeconomic Imbalance Procedure of the EU. The second value would signify a case of extreme financial suppression where a country must balance its current account every year. None of these counterfactuals are arguably very realistic but they may still serve as a way to highlight the effects on GDP growth of access to external resources.

Table 6 shows the results. Column (6.1) reports the average and the standard deviation of  $\Delta LY$  for each of the 11 CEE countries. Column (6.2) presents the results when the model without an autoregressive term is used in combination with a current account balance  $CA$  set equal to  $-0.04$  each period. The main difference appears for some of the countries with the lowest GDP per capita in the beginning of the sample, i.e. the Baltic states, Bulgaria and Slovakia. The mean GDP growth is around half of a percentage point lower in the scenario with the current account balance fixed at 4 percent of GDP. The compounded effect on GDP would be quite sizeable. For two countries, the Czech Republic and Slovenia, which were those with the highest GDP per capita in 1995, strict adherence to a current account deficit of 4 percent of GDP would have entailed higher mean growth.

Table 6. Mean and standard deviation of  $\Delta LY$  for 1996-2014, data and counterfactual scenarios

		(6.1)	(6.2)	(6.3)	(6.4)	(6.5)
		Data	CA = -0.04	CA = 0	Autoreg. CA = -0.04	Autoreg. CA = 0
<b>Bulgaria</b>	Mean	0.026	0.023	0.003	0.024	0.019
	<i>S.D.</i>	0.039	0.032	0.032	0.032	0.032
<b>Czech Rep.</b>	Mean	0.022	0.025	0.005	0.024	0.018
	<i>S.D.</i>	0.029	0.028	0.028	0.028	0.028
<b>Estonia</b>	Mean	0.041	0.035	0.015	0.038	0.032
	<i>S.D.</i>	0.063	0.049	0.049	0.051	0.051
<b>Croatia</b>	Mean	0.020	0.019	-0.001	0.020	0.014
	<i>S.D.</i>	0.036	0.031	0.031	0.032	0.032
<b>Latvia</b>	Mean	0.041	0.033	0.013	0.036	0.030
	<i>S.D.</i>	0.063	0.041	0.041	0.043	0.042
<b>Lithuania</b>	Mean	0.043	0.039	0.018	0.042	0.036
	<i>S.D.</i>	0.057	0.043	0.043	0.045	0.045
<b>Hungary</b>	Mean	0.021	0.022	0.002	0.022	0.017
	<i>S.D.</i>	0.028	0.023	0.023	0.023	0.023
<b>Poland</b>	Mean	0.039	0.039	0.019	0.039	0.033
	<i>S.D.</i>	0.017	0.013	0.013	0.012	0.013
<b>Romania</b>	Mean	0.026	0.022	0.002	0.024	0.018
	<i>S.D.</i>	0.043	0.038	0.038	0.038	0.038
<b>Slovenia</b>	Mean	0.025	0.035	0.015	0.031	0.025
	<i>S.D.</i>	0.034	0.029	0.029	0.029	0.030
<b>Slovakia</b>	Mean	0.038	0.035	0.015	0.030	0.030
	<i>S.D.</i>	0.034	0.031	0.031	0.031	0.031

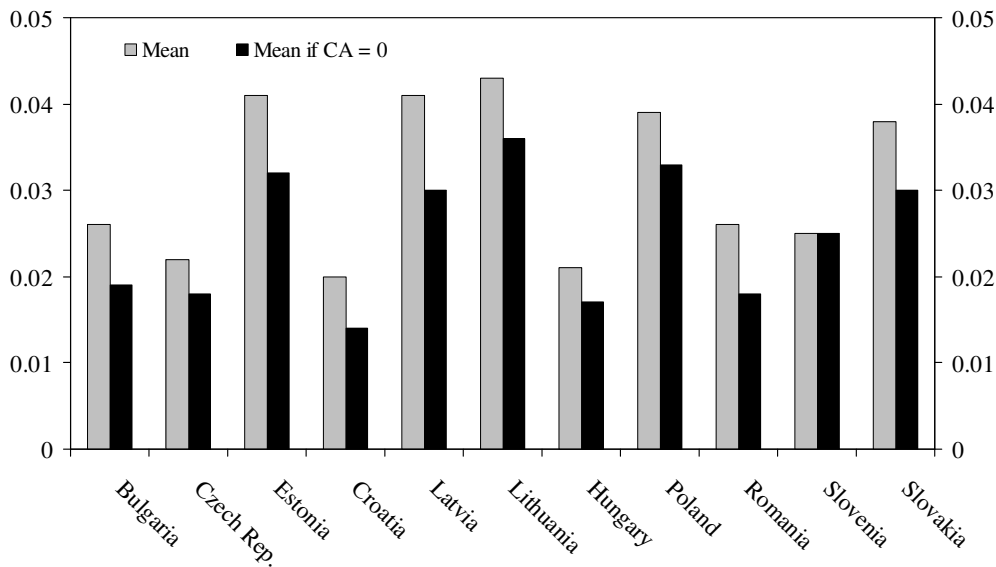
*Note:* Column (6.1) shows the summary statistics from the dataset, Columns (6.2) and (6.3) the simulation results using the model without an autoregressive term and Columns (6.4) and (6.5) the results using the model with an autoregressive term.

By construction the variability of GDP growth is reduced when the variability from the current account balance is eliminated. The effect is the largest for the Baltic states for which the standard deviation is reduced by 1-1.5 percentage points. The Czech Republic stand out with a very small reduction in the variability of GDP growth, reflecting that the country had already a very stable current account balance. Other countries typically see a reduction of the standard deviation by around 0.5 percentage points.

Column (6.3) shows the results when the current account target is set at 0 percent of GDP. The effects on the mean growth are of course much larger and for some countries, Bulgaria, Croatia, Hungary and Romania, the mean growth in the counterfactual scenario is essentially zero. For most other countries the effects are very sizeable too. These results rest on a somewhat extreme assumption but they do illustrate the dependence on external funding for the growth process in the CEE countries.

Columns (6.4) and (6.5) show the results when the model with an autoregressive term is used for the counterfactual simulations. The results are qualitatively in line with the previous results, but the effect on mean growth is now somewhat smaller as the coefficient of CA is relatively small in numerical terms in the model with an autoregressive term. Figure 6 compares the mean GDP growth with a counterfactual which assumes a current account balance equal to 0. As before the overall picture is the availability of external financing has been of particular importance for the growth performance of CEE countries with initially relatively low GDP per capita while it has been less important for better-off countries such as the Czech Republic and Slovenia.

**Figure 6.** Mean of  $\Delta LY$  for 1996-2014, data and counterfactual scenario



*Note:* Counterfactual scenario with CA = 0 and using model with autoregressive term.  
*Source:* Author's calculations (see text)

The findings presented in Table 6 and Figure 6 are based on calculations that rest on many somewhat arbitrary assumptions and should therefore be interpreted with caution. They do, however, point to the importance of external financing for the growth performance of particularly the countries that started the convergence process from a disadvantageous position. The results also highlight the “trade-off” associated with the availability of external finance: the countries where capital flows have been most important for mean GDP growth are also the countries where the impact on growth variability has been the largest.

## 7. Final comments

This paper seeks to tie together international capital flows and the short-term growth performance of the 11 CEE countries. Panel data estimations on a time sample from 1995 to 2014 suggest that the current account balance indeed help explain annual GDP growth. Using a model with country fixed effects, the lagged dependent variable and various other control variables, it



appears the changes in the current account balance play a key role while the level of the current account balance also plays a role although less significant in economic and statistical terms.

Counterfactual simulations suggest that the mean growth would have been lower but also less volatile in the CEE countries which had the most disadvantageous starting points, including the Baltic states, Bulgaria, Romania and Slovakia. For other countries with more advantageous starting points, in particular the Czech Republic and Slovenia, but also Poland, capital flows appear to have had a relatively modest effect on the mean and variability of economic growth.

The overall conclusion is that there appears to be a trade-off between average and volatility of economic growth in most CEE countries. This result, derived from the simulation of counterfactuals, is broadly in line with the narrative that emerged after the global financial crisis. The pre-crisis period was characterised by rapid economic growth but also large current account deficits and accumulation of imbalances that made the countries vulnerable to the fallouts from the global financial crisis.

The severe financial crises and economic downturns experienced in many countries in Central and Eastern Europe after the global financial crisis have indeed led scholars and policy-advisors to rethink economic and structural policies for the region (Fabrizio *et al.* 2009, Atoyán 2010, Ghosh *et al.* 2011). The aim is to devise policies that reduce the vulnerability to disruptions in external financing while sustaining high trend growth. Typical policy recommendations include rounds of deeper and more “qualitative” reforms within education, justice, etc., but there are also calls for measures to increase domestic saving and avoid excessive reliance of external financing.

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