Dubravko Radošević / Vladimir Cvijanović (eds.)

Financialisation and Financial Crisis in South-Eastern European Countries

PL ACADEMIC RESEARCH

Bibliographic Information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available in the internet http://dnb.d-nb.de.

Library of Congress Cataloging-in-Publication Data
Financialisation and financial crisis in South-Eastern European countries
Dubravko Radošević, Vladimir Cvijanović.
pages cm. – (Sozio-ökonomische Perspektiven in Südosteuropa / Socio-Economic Perspectives in South-Eastern Europe ; Bd. 4)
ISBN 978-3-631-66116-1
1. Finance–Europe, Eastern. 2. Financial crises–Europe, Eastern. I. Radošević, Dubravko, 1953- editor. II. Cvijanović, Vladimir, editor.
HG186.E82F58 2015
332.09496–dc23
2015022155

ISSN 1864-483X
ISBN 978-3-631-66116-1 (Print)
E-ISBN 978-3-653-05862-8 (E-Book)
DOI 10.3726/978-3-653-05862-8

PL Academic Research is an Imprint of Peter Lang GmbH.

Peter Lang – Frankfurt am Main · Bern · Bruxelles · New York · Oxford · Warszawa · Wien

This publication has been peer reviewed.

www.peterlang.com

Contents

Aleksandar Stojkov and Thierry Warin

Determinants of External Current Accounts in South Eastern Europe

1. Introduction

Why were the current account deficits of the South Eastern European (SEE) economies so high and persistent over the last two decades? What were the main drivers of external imbalances? Is the experience of SEE countries different from that of the other European economies? Are SEE countries catching up with the advanced European economies? Although we are in the midst of the sovereign debt crisis, financial integration in Europe can actually be observed. The current account deficits can be perceived as a mirror image of the net international capital inflows. And capital - in its different definitions - flows from richer to poorer countries or, in other terms, from low- to high-growth countries. We also observe a strong correlation between economic growth and current account deficits in the new member states of the European Union (EU) and the EU candidate and potential candidate countries from South Eastern Europe (see Figure 1).

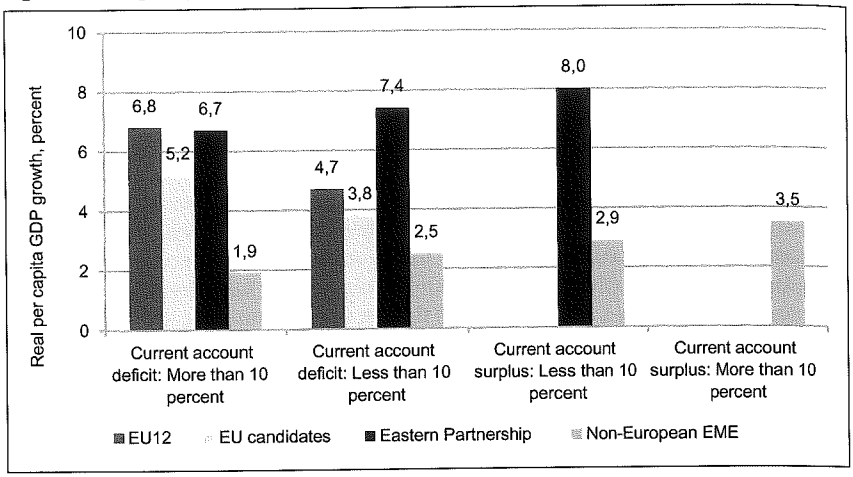
In Europe, capital flows from richer to poorer countries and, in itself, this fact is actually different from what is happening outside of Europe (Gill and Raiser 2012). One explanation comes from the reassuring effect, which is based on Mundell's intuition and the endogenous optimum currency area (OCA) theory (Warin, Wunnava, and Janicki 2009). Evidence of this effect may be found in the 2008 crisis. Indeed, unlike the previous Asian and Latin American crises, capital was not dramatically pulled out of these countries.

A large body of the academic literature has been devoted to the sizeable and persistent external imbalances of the United States (e.g., Mussa 2007; Kim and Roubini 2008; Chakraborty and Dekle 2009; Ivanova 2010; Sooreea and Wheeler 2010) and the Euro area (e.g., Blanchard and Giavazzi 2002; Lane and Milesi-Ferretti 2007; Zorzi and Rubaszek 2012; Chen, **Milesi-Ferretti and** Tressel 2013).

Nevertheless, limited academic attention has been devoted to the new EU member states or the so-called EU-10 group, comprising eight transition economies from Central and Eastern Europe, plus Malta and Cyprus. The research interest has mirrored the geopolitical and economic importance of the countries that joined the Union in May 2004. Vastly shadowed by the new entrants, a group of late-reforming SEE transition countries have been recording even larger and more volatile current account deficits than the EU-10 countries during the past two decades. Most probably, due to their minuscule geopolitical importance, they have not received adequate academic treatment. In that sense, this study aims to bridge an important gap in the empirical literature by investigating the main determinants of the widening and persistent external current account deficits of five SEE transition

countries (Albania, Bulgaria, Croatia, Macedonia, and Romania). We contrast and compare the results with the EU-15 and the EU-10 economies.

Figure 1: Foreign capital and economic growth



Notes: Average growth rates calculated using three four-year periods in 1997–2008. EU candidate and potential candidate countries are: Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia, and Turkey. As of July 1st, 2013, Croatia became an EU member state. Eastern partnership countries are: Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine. EME stands for emerging market economies (Gill and Raiser 2012).

The next section presents some descriptive statistics about current accounts in the SEE-5 economies, whereas the third section provides a critical review of the theoretical and empirical literatures. The fourth section introduces an econometric intertemporal model of current account behaviors applied to the selected group of countries. The empirical strategy and the results are discussed in the fifth section, whereas the concluding remarks and recommendations are presented in the final section.

2. What Makes South Eastern Europe Different?

A number of stylized facts can be identified from the descriptive statistical analysis of the current account behaviour of these economies.

In terms of **magnitude**, the average current account deficit of SEE-5 economies was 5.94 percent of GDP during the 1994-2012 period, which was higher than the EU-10 economies (4.98 percent of GDP) and much higher than the peripheral Economic and Monetary Union (EMU) member states (3.85 percent of GDP). However, as long as the economy is growing and foreigners perceive the country as

attractive, the size of the current account imbalance is not too alarming. However, a current account adjustment can have painful macroeconomic implications (e.g., Engler, Fidora and Thimann 2009). For instance, the high current account deficits led to a balance-of-payment crisis in Latvia in the second half of 2008. This view therefore calls for a thorough understanding of the determinants of the external imbalances and the sources of their financing.

The current account **volatility** is also an issue of serious concern. SEE-5 countries have the highest standard deviation (4.83) of the external accounts among the observed groups, which is a consequence of volatile international capital flows, the history of stop-and-go macroeconomic policies, and the presence of strong external shocks.

Disaggregating the external imbalances from a **saving-investment perspective** also offers valuable insights. The current account deficits of the SEE-5 transition countries were reflecting saving-investment imbalances in both the government and non-government sectors (Table 1). This is neither a case with the EU-15 nor with the "core" or "peripheral" EMU countries. Since the beginning of the global economic crisis, the national saving rates (as a percent of GDP) of SEE-5 economies have increased beyond those of the EU-15 and the EU-10 economies (Figure 2). The pre-transition national saving rates were also high in all transition economies.[4] Yet it would be premature to conclude that savings convergence took place, because the saving rates across EU-15 countries are much more depressed in the midst of the global crisis.

Table 1: Saving-investment perspective on the current account balances (1994-2012)

	Current account balance (CA)		**Government saving-investment balance (S-I)g**		**Non-government saving-investment balance (S-I)ng**	
Country group	Average	Std dev.	Average	Std dev.	Average	Std dev.
EU-15 ("old" EU member states)	0.86	5.26	-2.50	4.11	3.35	5.03
of which:						
„Core" EMU member states	2.76	3.22	-2.10	2.87	4.85	3.49
„Peripheral" EMU member states	-3.85	4.52	-4.54	4.76	0.69	6.18

4 The pre-transition saving rates were high, because of high involuntary savings ("forced saving") in a central-planning setting and limited consumer choice (Conway 1995). During the 1980s, the average saving rates were around 30 percent of the gross national product in these economies (Schrooten and Stephan 2005).

	Current account balance (CA)		Government saving-investment balance (S-I)g		Non-government saving-investment balance (S-I)ng	
EU-10 (new EU member states)	-4.98	4.68	-3.41	3.07	-1.55	5.86
SEE-5	-5.94	4.83	-3.28	3.34	-2.65	6.49

Notes: "Core" EMU member states are: Austria, Belgium, Finland, France, Germany and the Netherlands. "Peripheral" EMU member states are: Greece, Ireland, Italy, Portugal and Spain. The provisional division between "core" and "periphery" is based on a study by Sybille (2013). Source: Authors' calculations based on data from IMF World Economic Outlook database, October 2013.

National investment rates in the SEE-5 economies were below the levels observed in the advanced EU-15 economies during the 1990s (Figure 3). Political instability, financing constraints and regulatory uncertainty were strong impediments to economy-wide capital accumulation (e.g., Brada, Kutan and Yigit 2006; Dobrinsky 2007). Therefore, the real convergence of the SEE-5 countries towards the EU was at a much lower speed. In light of the EU membership, the SEE-5 countries in the last decade made noticeable institutional progress and created a much more favourable investment climate, acknowledged by international organizations via improved international rankings (World Bank Doing Business surveys, Transparency International Corruption Perceptions Index, etc.). They also attracted foreign capital inflows - albeit at a lower magnitude than the EU-10 economies - with technology transfer and positive spillover effects on local suppliers. Although one is tempted to attribute the significant current account deficits to the investment needs of these countries, the issue merits thorough investigation in the fifth section.

Figure 2: Gross national saving rates (in percent of GDP, 1994-2012)

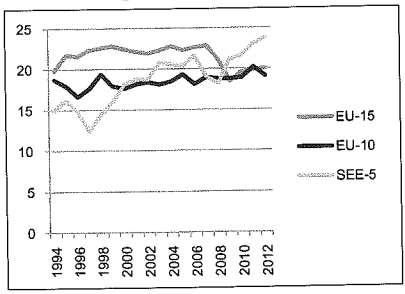
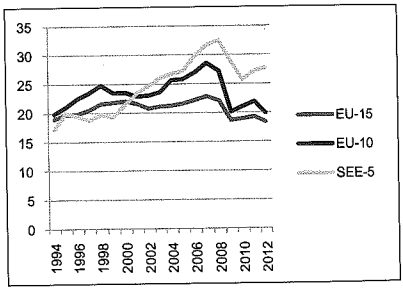


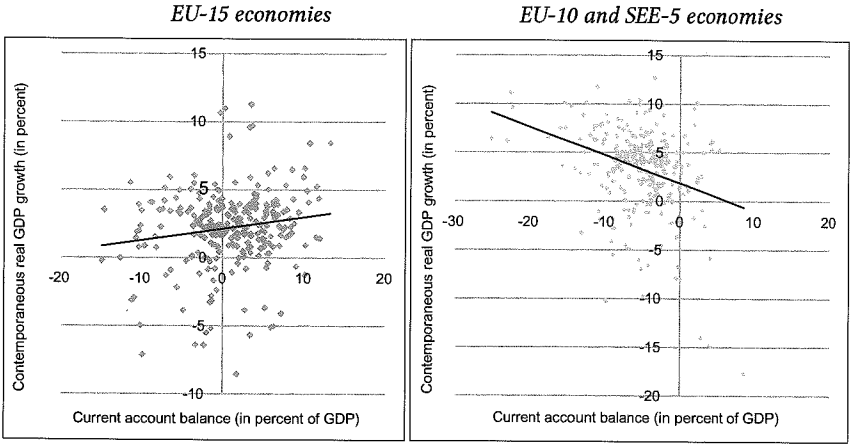
Figure 3: Gross domestic investment rates (in percent of GDP, 1994-2012)



Source: Authors' calculations based on data from the IMF World Economic Outlook database, October 2013.

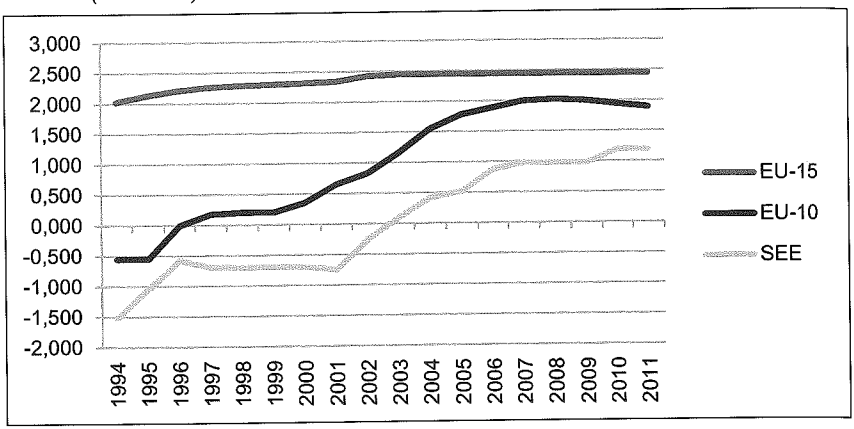
Another important feature of the external accounts of the transition countries is their **countercyclical character**. More precisely, their contemporaneous real GDP growth rate is inversely related to the current account behaviour. Hence, an acceleration of economic activity in the transition countries is associated with deterioration of the external current accounts, and *vice versa*, lower current account deficits are recorded during recessionary times (Figure 4, right panel). The negative association between the two variables cannot reveal whether accelerated growth rates contribute to widening imports and subsequent external imbalances or whether the large inflows of foreign capital stimulate economic growth. Some studies even find a bidirectional causality between external imbalances and economic growth (e.g., Abiad, Leigh and Mody 2009). A current account deficit caused by high economic growth is less problematic to the extent that external funds are used for investment, but again, the effect can only be isolated with a multivariate statistical analysis. In contrast, the external current accounts of the EU-15 economies tend to be pro-cyclical (Figure 4, left panel).

Figure 4: Contemporaneous real GDP growth rate and current account balances (in percent of GDP), 1994-2012



A final remark with regard to the SEE-5 economies is their decision to liberalize the capital account transactions during the 2000s. Indeed, there is evidence that the European transition countries noticeably increased their capital account openness, which enabled more international capital inflows to finance their external imbalances (see Figure 5).

Figure 5: De jure indices of capital account openness of selected European economies (1994-2011)



Note: Non-weighted averages for country groups. Source: Constructed indexes by Chinn and Ito (2008). Updated data set to 2011.

The latter stylized fact appears to be a crucial argument for justifying an intertemporal analysis of the current account determination in the transition economies. Before that, we proceed with a critical review of the relevant theoretical and empirical literature.

3. Review of the Literature

3.1. A Political Economy Perspective

From a political economy perspective, there are two approaches to capital account liberalization and international financial integration (Henry 2006):

(1) The neoclassical growth model (Solow 1956) and, in particular, the notion of "allocative efficiency". Indeed, it is assumed here that resources run from capital-abundant countries (with low risk-adjusted rates of return on capital) to capital-scarce countries where the return on capital is high. As a consequence, the recipient countries see a decrease in their cost of capital, leading to a temporary increase in investment and growth, and then an improvement in their standard of living (Fischer 1998, 2003; Obstfeld 1998; Rogoff 1999; Summers 2000).

(2) However, some analyses find no correlation between the openness of countries' capital accounts and economic growth (Rodrik 1998). Eichengreen (2001) summarizes the literature and concludes that there is no strong evidence that liberalization has any impact on growth. A conclusion also found in Edison, Klein, Ricci and Sløk (2004) review of the literature.

Another important aspect is the herd behaviour: when economies are booming, investors tend to invest even more money, and when there is a lack of confidence, then, investors withdraw the funds. This lack of confidence can be fixed by the reputation effect created by the potential adhesion to the EU. In short, this comes back to the endogenous optimum currency area theory (Warin, Wunnava and Janicki 2009).

3.2. The Intertemporal Perspective

The intertemporal approach to the current account determination will serve as our main framework. It relies on the assumption that private savings and investments result from forward-looking dynamic decisions (Sachs 1981; Obstfeld and Rogoff 1994; Razin 1995). In this context, the liberalization of the capital account is a necessary condition for the validity of the intertemporal approach.

In the traditional non-optimizing models, we find the sticky-price implicit assumption. In the intertemporal approach, this assumption is relaxed, and domestic prices are assumed to be flexible. Indeed, greater exposure to globalization generates a high competition on domestic goods markets.

4. Theoretical Model

Influenced by the literature on open-economy macroeconomics, we use a simple intertemporal model of current account determination as originally designed by Obstfeld and Rogoff (1995) and augmented by Bussière, Fratzscher and Müller (2004).

The model assumes a representative agent, though differentiating between liquidity-constrained (non-Ricardian) and -unconstrained (Ricardian) consumers. It has also a stochastic component to capture the uncertainty with respect to future income.

We model a small open economy with a constant real interest rate (determined by the rest of the world), an exogenously determined output, investment, government consumption, and lump-sum taxes (all expressed in per capita terms).

According to the representative-agent framework, an individual residing in the small open economy maximizes his lifetime utility (U_l^i), which depends on the consumption levels in periods c_1^i and c_2^i:

$$U_l^i = u\left(c_1^i\right) + \beta \cdot u\left(c_2^i\right) \quad 0 < \beta < 1 \tag{1}$$

where β is the subjective discount factor: the greater β, the more long-term the perspective. When β equals 1, the agent gives the same value to present and future consumptions. When β is close to 0: the individual then values the short term.

However, a significant share of the population cannot transfer consumption across time, thus posing a challenge to the intertemporal model. This is why two types of consumers are introduced: non-Ricardian and Ricardian.

The **non-Ricardian consumers** spend all of their disposable income in each period:

$$DY_1^i = c_1^i \; ; DY_2^i = c_2^i \tag{2}$$

which equals the output (Y_t) minus investment (I_t) minus taxes (T_t). Therefore, the non-Ricardian consumers' consumption function is given by:

$$C_t^{NR} = Y_t - I_t = DY_t^{NR} \tag{3}$$

The **Ricardian consumers** can make intertemporal transfers and thus respect the propositions of the standard intertemporal model. The aggregate consumption ($\bar{C}_t$) is a weighted average of the consumption by non-Ricardian (C_t^{NR}) and Ricardian consumers (C_t^R):

$$\bar{C}_t = \lambda \cdot C_t^{NR} + (1-\lambda) \cdot C_t^R \tag{4}$$

where λ and (1- λ) are the weights for each type of consumers.

The reasons why introducing both types of consumers is important are twofold: (1) it prevents us from relying on the assumption of homogeneity in consumption behaviour and thus provides an analytical justification for the use of a dynamic specification for the model of current account determination, (2) since the transition economies face more liquidity-constrained consumers in comparison to the advanced European economies, such differentiation provides some valuable real policy implications.

Abel (1990) explains that the present consumption decision depends on the individual's consumption in the last period (internal habits) and the consumption of an outside reference group in the last period (external habits). We include this assumption in the model that the intra-temporal utility does not only depend on the actual consumption, but also on the degree by which it exceeds the aggregate consumption in the last period. In this model, aggregate consumption captures the consumption of the outside reference group. The consumers' habits depend more on the history of the aggregate consumption, rather than their own consumption in the previous period. Thus, the absolute level of the individual's consumption is an important factor, but also the change with respect to the previous aggregate consumption (Abel 1990; Campbell and Cochrane 1995).

Following the analytical derivation of the model, the final specification of Ricardian consumption takes the following form:

$$C_t^R = \frac{\gamma}{1+r} \cdot \bar{C}_{t-1} + \left(1 - \frac{\gamma \cdot (1-\lambda)}{1+r}\right) \cdot r \cdot B_t^P + \left(1 - \frac{\gamma}{1+r}\right) \cdot \frac{r}{1+r} \cdot E_t \sum_{s=t}^{\infty} \frac{Y_S - I_S - T_S}{(1+r)^{s-t}} \tag{5}$$

where C_t^R is the consumption of Ricardian agents. The fact that individual's consumption in each period exceeds past aggregate consumption is represented by (γ). γ is the fraction by which individual's consumption exceeds past aggregate

consumption, r denotes the return on the net foreign assets (B_t^P) of the private sector, E_t is the expectations operator of the flow of future net output, and λ and $(1-\lambda)$ represent the weights of non-Ricardian and Ricardian consumers, respectively.

The current account, or the national (dis)saving, is equal to the change in net foreign asset position:

$$CA_t = B_{t+1} - B_S = r \cdot B_t + Y_t - I_t - G_t - \bar{C}_t \tag{6}$$

In equation (6), the current account is equal to the sum of the return on net foreign assets and net output minus the aggregate consumption. Eventually, the dynamic model of current account determination takes the following form:

$$\begin{aligned} CA_t = {} & (1-\lambda)\cdot\gamma\cdot CA_{t-1} + \lambda\cdot\left(T_t + r\cdot B_t^G - G_t\right) + \frac{\lambda\cdot(1-\lambda)}{1+r}\cdot\Delta NO_t \\ & + (1-\lambda)\cdot\left(1-\frac{\gamma}{1+r}\right)\cdot\left(NO_t - E_t\widehat{NO_t}\right) \end{aligned} \tag{7}$$

where the coefficient of the lagged term of the current account represents the weight of Ricardian agents in the population $(1-\lambda)$ and the degree of habit persistence (γ), the term $(T_t + r\cdot B_t^G - G_t)$ represents the general government budget balance (taxes plus return on government's net foreign assets minus government consumption). ΔNO_t stands for the change in net output (present output minus investment minus general government consumption), and the last term represents the core of the intertemporal approach: the deviation of the net output (NO_t) from its permanent value.

5. Empirical Analysis

5.1. Data

The empirical analysis is based on annual data covering the 1994-2012 period. The sample covers only the period from 1994 onwards, due to the questionable data quality for the transition countries in the early transition period. We have collected data for three groups of countries: 15 advanced European economies (EU-15), ten new EU member states from Central and Eastern Europe, including Malta and Cyprus (EU-10), and five South Eastern European transition countries (SEE-5). Hence, the sample consists of 568 observations (570 minus 2 missing observations). The main data source is the World Economic Outlook database of the International Monetary Fund (see Appendix 1 for a detailed presentation).

As presented in Table 2, external imbalances have also been complemented by larger general government budget deficits in the European transition economies.

Table 2: Descriptive statistics for the core variables

	EU-15			EU-10			SEE-5		
Variable	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Current account balance (in % of GDP)	0.9	-14.9	13.2	-5.0	-22.6	8.7	-5.9	-25.2	4.0
Fiscal balance (in % of GDP)	-2.5	-30.5	6.9	-3.4	-12.8	4.5	-3.3	-13.1	3.3
Change in net output (in percentage points)	0.1	-7.1	9.1	0.5	-14.5	21.6	-0.2	-12.6	16.1
GDP per capita (in constant 2005 US $)	35463.5	14269.0	88398.0	11121.6	3275.7	24159.3	4388.4	1247.0	11569.1
Government consumption (in % of GDP)	21.4	15.4	34.5	20.4	15.5	33.1	17.9	8.1	25.5
Gross domestic investment (in % of GDP)	20.7	12.9	30.9	23.4	9.4	39.9	24.6	7.1	39.6

Note: The list of countries by groups is presented in Appendix 1. Data refer to the period 1994-2012.

One of the assumptions of the dynamic-optimizing analysis is that the degree of capital account openness of the European transition economies is sufficient for them to engage in intertemporal trade. In this context, the study uses the de jure index by

Chinn and Ito (2008) (updated until 2011). It is resulting from a principal component analysis of the following four variables: (1) the presence of multiple exchange rates, (2) the restrictions on current account transactions, (3) the restrictions on capital account transactions, and (4) the requirement of the surrender of export proceeds.

5.2. Empirical Specification

In empirical terms, we use specification (7) to introduce two models: basic model (equation 8), which encompasses the overall change in net output, and the augmented model (equation 9), which breaks down the change in net output into three elements: (1) the real GDP growth, (2) the change in the country's investment ratio, and (3) the change in the country's government consumption ratio.

Basic model:
$$CA_{i,t} = \alpha_1 + \alpha_2 CA_{i,t-1} + \beta_1 fb_{i,t} + \beta_2 \Delta no_{i,t} + \\ + \beta_3 relinc_{i,t} + \beta_4 relinv_{i,t} + \beta_5 relgc_{i,t} + u_{i,t} \quad (8)$$

Augmented model:
$$CA_{i,t} = \alpha_1 + \alpha_2 CA_{i,t-1} + \beta_1 fb_{i,t} + \beta_2 gr_{i,t} + \beta_2 \Delta inv_{i,t} + \\ + \beta_4 \Delta gc_{i,t} + \beta_5 relinc_{i,t} + \beta_6 relinv_{i,t} + \beta_7 relgc_{i,t} + u_{i,t} \quad (9)$$

where i=1, 2, ..., 30 (countries) (see Appendix 2), and t = 19 years (1994, 1995, ... 2012). The dependent variable is the current account (normalized by GDP). The independent variables are: α_1 is the intercept, α_2 stands for the coefficient on the lagged dependent variable ($CA_{i,t-1}$), the fiscal balance relative to GDP ($FB_{i,t}$), the change in net output ($\Delta NO_{i,t}$), also broken down into: $gr_{i,t}$ which denotes the real GDP growth rate, $\Delta inv_{i,t}$ which is the change in the country's investment ratio, and $\Delta gc_{i,t}$ is the change in the general government consumption ratio. The financial integration variables are as follows: relative income ($relinc_{i,t}$), relative investment ($relinv_{i,t}$), and relative government consumption ($relgc_{i,t}$).[5] The last term in equation (7) is reorganized in the following way:

$$NO_t - E_t NO_t = Y_t - I_t - G_t - \left(\overline{Y_t} - \overline{I_t} - \overline{G_t}\right) = (Y_t - \overline{Y_t}) - (I_t - \overline{I_t}) - (G_t - \overline{G_t}) \quad (10)$$

so that the expression $(Y_t - \overline{Y_t})$ stands for relative income, $(I_t - \overline{I_t})$ for relative investment, and $\left(G_t - \overline{G_t}\right)$ for relative government consumption. These ratios are very relevant and capture the deviation of the actual data from the permanent level of the corresponding variables. The $u_{i,t}$ stands for the disturbance term that is assumed to be i.i.d. across time and countries.

5 For further details, please see Appendix 3.

The fiscal balance coefficient is expected to be zero or a positive number. Subsequently, considering that the transition countries are populated by a larger share of liquidity-constrained consumers, the magnitude of the coefficient should be higher (Table 3). Due to the assumed consumption-smoothing effect, changes in net output are also expected to exhibit a positive correlation with the current account balance. It is expected that an increase in net output will not be entirely consumed. Part of it will be saved and reflected as an improvement of the current account position. Hence, the changes in the net output are also likely to be positively associated with the external balance.

Table 3: Expected signs and magnitude of the coefficients

Variable	Expected signs and magnitude of the coefficients	
	EU-15 countries	EU-10 and SEE-5 countries
Lagged current account balance	+	+
Fiscal balance (in percent of GDP)	0/+	++
Changes in net output	+	+
Relative income	+	+
Relative investment	-	-
Relative government consumption	-	-

Note: + indicates positive association with the current account balance, whereas ++ implies positive association and a coefficient of higher magnitude compared to the EU-15 countries.

The relative income is an important factor of the current account behaviour in both traditional and dynamic optimizing models. For instance, the stages of development hypothesis suggests that poorer countries will run current account deficits and richer countries will run current account surpluses. With respect to relative income, the intertemporal models suggest that global shocks leave the current account position unaltered. The difference between the changes in per capita income and the average (global) changes is a relevant factor. In empirical terms, the relative income is built as a natural logarithmic deviation of country's per capita income from the permanent level of this variable. As mentioned above, it has been challenging to get an empirical mapping of this theoretical concept. Since the forward-looking characteristic of the permanent level of the variable is unobservable, empirical studies have often used other variables, such as the time-varying cross-country average for the sample (e.g., Glick and Rogoff 1995). If the country-specific income is above (below) the global average income, then the country is expected to run a current account surplus (deficit). Therefore, we would expect a positive sign on the coefficient of the relative income variable.

The relative government consumption and relative investment are constructed as a logarithmic difference between permanent levels of these variables and actual country-year observations. Again, the permanent levels are defined as time-varying cross-country sample averages. Any expenditure beyond the levels observed in the other countries is expected to worsen the current account position. As a conclusion, the expected signs on both variables are negative.

In relation with the previous literature, we comment on two important assumptions:

(1) The permanent level assumption: individual countries are assessed through the lens of their deviation to the permanent level. This permanent level is represented by the weighted average of either the entire sample of 30 countries or the EU-15 as a reference group. As in Bussière, Fratzscher and Müller (2004), relative income, relative investment and relative government consumption are interesting since they use the sample average as a proxy for the permanent level of income, investment and government consumption. For each period then, the relative weight of each country in the overall average of the sample is measured. Nevertheless, if all the countries are deviating from the average, then the standard deviation has actually more information than the average. For instance, when we consider the relative government consumption, we would assume it has a negative relationship with the current account. However, a stable country in terms of government consumption will see the relative government consumption measure increase if the rest of the sample decreases its government consumption. This means that the dispersion between the country's government consumption and the sample average is increasing. The fact that the sample average decreases means there is an expectation that the current account balance improves (Bussière, Fratzscher and Müller 2004). However, the fact that for some countries the ratio is greater than one - because of the decrease of the denominator – implies that the current account should deteriorate. But, a lower denominator implies also that government consumption went down, then improving the current account balance. Because of this limit, we have chosen to also consider the percentage change in income, investment and government consumption ratios.

(2) An important conceptual advance with respect to the previous literature is the introduction of GDP-weighted averages for the reference groups. Considering the nature of our population (30 countries) and its different subsamples (EU-15, EU-10 and SEE-5), weighted averages are necessary to avoid biases created by the presence of large countries.

5.3. The Advantages of the Selected Estimation Techniques

The choice of the estimation technique is driven by the features of our sample. Time-series cross-section (TSCS) analyses often breach the Ordinary Least Squared (OLS) assumptions about the error process, because the errors are homoskedastic

and independent of each other. In fact, with a TSCS estimation, the regression estimates are likely (1) biased, (2) inefficient, and/or (3) inconsistent.[6] Errors from pooling data are fivefold:

(1) Serial correlation: the errors tend to be auto-correlated from a period to the next. To fix this issue, we use an *AR(1)* process to capture this interdependence.
(2) Contemporaneous correlation: the errors tend to be correlated across some sections. To fix this issue, we have based our analysis on groups of countries and we have included relative variables.
(3) The errors tend to be heteroskedastic: they may have different variances across. Indeed, sections with higher values tend to have higher variances. To fix this issue, we have normalized everything in percentages.
(4) The errors may contain both temporal and cross-sectional components reflecting cross-sectional effects and temporal effects (fixed effects). Even if we start with homoskedastic and not auto-correlated data, we risk producing a regression with observed heteroskedasticity and auto-correlation errors, resulting in a misspecified model. This should be fixed by the normalization of our variables.
(5) The errors might be non-random across spatial and/or temporal units because parameters are heterogeneous across subsets of units. Since processes linking dependent and independent variables tend to vary across subsets of nations or/and periods, errors tend to reflect some causal heterogeneity across space, time or both (Janoski and Hicks 1994).

To tackle these five complications coming from TSCS, the methodologies we have used are threefold: (1) the Parks-Kmenta method (Parks 1967; Kmenta 1986), (2) the Beck-Katz (1996) method, and (3) a system GMM estimation. These three approaches were developed to correct serial correlation (problem 1), contemporaneous correlation (problem 2) and heteroskedasticity (problem 3). To go a little further, the system GMM inspired by Arellano and Bover (1995) and Blundell and Bond (1998) models also allow for a correct estimation of the hypothesized current account dynamics. In panel datasets with short time dimension and persistent time series, the Blundell and Bond (1998) version of the system GMM is found to bring "dramatic efficiency gains over the basic first-difference GMM" (Baltagi 2005: 148).

In sum, we employ three econometric techniques: (1) the system GMM estimation; (2) the method of panel-corrected standard errors (PCSE), developed by Beck and Katz (1995; 1996); and (3) the feasible generalized least squares (FGLS)

6 An unbiased estimator is one that has a sampling distribution with a mean equal to the parameter to be estimated. An efficient estimator is one that has the smallest dispersion. A consistent estimator is one for which its sampling distribution tends to become concentrated on the true value of the parameter as sample size increases to infinite.

based algorithm designed by Parks (1967) and popularized by Kmenta (1986). A word of caution is that the latter approach is not entirely consistent with the panel's features, because the time dimension T is smaller than the cross-sectional dimension N.

5.4. Estimation Results

The estimates from the three econometric techniques are remarkably consistent across the different empirical specifications. Table 4 presents the estimation results using data for the entire sample of 30 European countries. The results from the basic model (with overall net output changes) are presented in columns [1]-[3] and from the augmented model (with net output being broken down) in columns [4]-[6]. The empirical results suggest that during the selected period, on average, the current accounts of the European economies were strongly driven by past developments. They produce evidence of marked persistence of the current account balance, given that the lagged current account coefficient estimate is in the range between 0.61 and 0.87. The coefficient captures the partial adjustment of the current account and can be rationalized by habit formation in the behaviour of the consumers and investors.

The coefficient on the fiscal balance suggests a complete Ricardian equivalence. A widening of the budget deficit is expected to be offset by corresponding increases in private saving, as a response to expectations about higher future taxes. This is entirely consistent with the representative-agent framework. Yet, the coefficient refers to the entire sample and may mask important differences between the advanced and transition countries.

The coefficients for the change in net output also display the expected sign and are statistically significant at the 1% level. For instance, the system GMM specification presented in column 1 of Table 4 suggests that 67% of the increase in net output will be consumed, whereas 33% will be saved and translated into improvement of the current account. An important contribution of this study is that we break down changes in net output into: (1) real GDP growth rate; (2) changes in the country's investment ratio, and (3) changes in the general government consumption ratio. This provides a more accurate analysis of the net output question. The results of the augmented model are presented in columns [4]-[6] of Table 4. The coefficient on the real GDP growth is negative, implying a countercyclical character of the external current account position. The system GMM results, for instance, suggest that an increase by 1% of the real GDP growth rate is associated with a deterioration of the current account position by 0.20 percentage points. An acceleration of the country's investment activity (compared to the previous year) has also a deteriorating effect: 1% higher investment ratio this year will imply a worsening of the current account balance (as a percent of GDP) by 0.06 percentage points. The change of the country's government consumption ratio is similar: 1% higher government consumption ratio this year will imply a worsening of the current account balance (as a percent of GDP) by 0.07 percentage points.

Table 4: Basic model: Estimation results for the entire sample
Dependent variable: Current account balance (in percent of GDP), annual observations for 30 European countries, 1994-2012

Explanatory variables	Model specifications (Entire sample)					
	Basic model			Augmented model		
	System GMM [1]	Beck-Katz estimation [2]	Parks-Kmenta estimation [3]	System GMM [4]	Beck-Katz estimation [5]	Parks-Kmenta estimation [6]
Lagged current account balance	**0.660*** **	**0.858*** **	**0.873*** **	**0.608*** **	**0.815*** **	**0.816*** **
	[0.05]	[0.04]	[0.02]	[0.05]	[0.05]	[0.02]
Fiscal balance (in percent of GDP)	0.035	0.002	0.009	0.086	0.055	0.024
	[0.04]	[0.03]	[0.02]	[0.06]	[0.04]	[0.03]
Net output variables						
Change in net output	**0.330*** **	**0.406*** **	**0.431*** **			
	[0.05]	[0.04]	[0.02]			
Real GDP growth				**-0.203***	**-0.233*** **	**-0.157*** **
				[0.12]	[0.06]	[0.04]
Change in investment ratio				**-0.058** **	**-0.081*** **	**-0.110*** **
				[0.03]	[0.02]	[0.01]
Change in government consumption				**-0.066** **	**-0.081** **	**-0.107*** **
				[0.04]	[0.04]	[0.03]
Financial integration variables						
Relative income	**1.059*** **	**0.436***	**0.527*** **	**1.080*** **	**0.384**	**0.537*** **
	[0.24]	[0.26]	[0.13]	[0.29]	[0.29]	[0.14]
Relative investment	**-3.789*** **	**-1.740** **	**-1.786*** **	**-4.672*** **	**-2.124** **	**-2.482*** **
	[0.84]	[0.81]	[0.50]	[0.98]	[0.96]	[0.56]
Relative government consumption	-0.371	-0.061	-0.184	-1.232	-0.576	-0.416
	[1.31]	[0.71]	[0.48]	[1.43]	[0.78]	[0.54]
Intercept	-0.056	-0.102	-0.009	0.677	**0.722*** **	**0.609*** **
	[0.28]	[0.15]	[0.10]	-0.466	-0.226	-0.143
Observations	538	538	538	538	538	538
R-squared		0.839			0.815	
Number of countries	30	30	30	30	30	30
Number of instruments	7			9		
p-value of AR (1) test	0.000			0.000		
p-value of AR (2) test	0.124			333		

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

The relative terms are constructed using the time-varying sample average as a reference series. The positive coefficient on relative income suggests that a per capita income below the sample average is likely to be associated with a deteriorated current account position. A per capita income of 10 percent below the average [which was US$24,380.2 (constant 2005 prices) in 2012 for all the countries under investigation], would imply a higher current account deficit by approximately 0.11 percentage points of GDP [0.11=ln(21,924.2)-ln(24,380.2)]x1.059].

The changes in the country's relative investment are negatively correlated with the current account positions. An increase of the investment ratio by 1 percentage point above the sample average (for instance, from 18.1% to 19.1% of GDP) is expected to deteriorate the current account-to-GDP ratio by 0.20 percentage points, *ceteris paribus* [0.20=[ln(19.1)-ln(18.1)]x(-3.789)]. The effect for the transition economies will be even much stronger, since they have significantly higher investment ratios compared to the EU-15 economies. In turn, the increase of the government consumption appears to be a statistically insignificant determinant in the model.

In the next stage, the same model is re-estimated with data from two disjoint subsamples: the first referring to the EU-15 economies, and the second referring to 15 transition economies (EU-10 and SEE-5 countries, together). Table 5 presents the results for the EU-15 economies only, whereas Table 6 shows the results for the 15 transition countries.

What are the noteworthy differences when the model is re-estimated for the EU-15 economies only? First of all, the coefficient of the lagged dependent variable is somewhat larger, suggesting higher persistence (inertia) of the current account balance. These economies are indeed populated by a larger population of liquidity-unconstrained agents, who can afford consumption and investment smoothing over time. This is also reflected into sluggishness of the current account balance. Second, real GDP growth rate seems to be uncorrelated with the current account behaviour, since none of the coefficients in the basic or augmented model are statistically significant. Third, the coefficient on the relative income variable is twice higher than the estimates from the entire sample regressions. A per capita income of 10 percent above the average would imply a higher current account surplus by approximately 0.23 percentage points of GDP, other things being equal [0.23=ln(26,818.3)-ln(24,380.2)]x2.420]. Fourth, relative investment is a statistically significant determinant in only few regressions [columns 8, 9 and 12] with a lower coefficient and reduced statistical significance.

Table 5: Basic model: Subsample estimation results for the EU-15 countries
Dependent variable: Current account balance (in percent of GDP), annual observations for EU-15 countries, 1994-2012

Explanatory variables	Model specifications (EU-15 economies only)					
	Basic model			Augmented model		
	System GMM [7]	Beck-Katz estimation [8]	Parks-Kmenta estimation [9]	System GMM [10]	Beck-Katz estimation [11]	Parks-Kmenta estimation [12]
Lagged current account balance	**0.796*** **	**0.957*** **	**0.946*** **	**0.787*** **	**0.942*** **	**0.934*** **
	[0.06]	[0.03]	[0.02]	[0.05]	[0.04]	[0.02]
Fiscal balance (in percent of GDP)	-0.017	-0.039	-0.024	-0.045	-0.043	-0.027
	[0.04]	[0.03]	[0.02]	[0.04]	[0.03]	[0.02]
Net output variables						
Change in net output	**0.241*** **	**0.302*** **	**0.334*** **			
	[0.07]	[0.05]	[0.04]			
Real GDP growth				0.115	-0.025	-0.015
				[0.10]	[0.07]	[0.05]
Change in investment ratio				**-0.097*** **	**-0.102*** **	**-0.115*** **
				[0.02]	[0.02]	[0.02]
Change in government consumption ratio				-0.097	**-0.175*** **	**-0.197*** **
				[0.06]	[0.05]	[0.04]
Financial integration variables						
Relative income	**2.326*** **	0.639	**0.833** **	**2.420*** **	**0.900***	**1.030*** **
	[0.84]	[0.51]	[0.36]	[0.81]	[0.53]	[0.3]
Relative investment	**-2.843*** **	**-1.564** **	**-1.661*** **	-2.901	-1.199	**-1.389***
	[1.80]	[0.81]	[0.72]	[2.04]	[0.8]	[0.76]
Relative government consumption	0.998	0.580	0.335	1.569	0.868	0.740
	[0.99]	[0.68]	[0.49]	[1.03]	[0.72]	[0.51]
Intercept	**-0.776** **	-0.320	**-0.331***	**-1.095** **	-0.358	**-0.409** **
	[0.30]	[0.26]	[0.19]	[0.48]	[0.26]	[0.20]
Observations	269	269	269	269	269	269
R-squared		0.935			0.935	
Number of countries	15	15	15	15	15	15
Number of instruments	7			9		
p-value of AR (1) test	0.001			0.001		
p-value of AR (2) test	0.998			0.774		

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

It is more relevant to our work to explore the determinants of current account behaviour of the SEE-5 transition economies. Yet employing separate regressions to data for only five economies (N=5; T=19) inevitably invites the small-sample bias problem. Therefore, we combine the data for 15 transition economies and treat them as a homogenous group. The empirical results are presented in Table 6. It is noteworthy that the coefficient on the lagged dependent variable is of much lower magnitude than in the previous regressions, albeit statistically significant at the 1% level. Current account persistence is less pronounced because these countries have a higher portion of liquidity-constrained economic agents. Most regressions also point to statistically insignificant coefficients on the fiscal balance, which is inconsistent with the intertemporal model predictions. Two regressions even report negative coefficients, which lends support to the twin-divergence hypothesis (e.g., Kim and Roubini 2008). In other words, improved fiscal positions (or lower budget deficits) can be accompanied by deteriorated current account balances. The results bring limited evidence that fiscal balances are pro-cyclical, whereas the external current accounts of SEE-5 economies are countercyclical.

Much more interesting are the coefficients on relative investment, which strongly influence the entire sample results. For instance, the coefficient of -4.566 in the regression presented in column [13] of Table 6 suggests that an increase of the investment ratio by 1 percentage point above the sample average is expected to deteriorate the current account-to-GDP ratio by 0.25 percentage points, *ceteris paribus* [0.25=[ln(19.1)-ln(18.1)]x(-4.566)]. Yet, the transition countries have much higher investment ratios than the time-varying sample average, suggesting that the overall effect is even stronger.

These estimations refer to all transition economies, but we are more interested in the SEE-5 countries. For this reason, in the next stage we amend the model by including a SEE intercept dummy (SEE=1 and 0 otherwise) and SEE slope dummy variables (interactive or multiplicative terms). Due to potential problems with multicollinearity, we introduce the variables separately and later jointly. The results are presented in Tables 7 and 8.

The estimation results suggest that the interactive term for the net output changes has a statistically significant coefficient. The coefficient for the SEE-5 economies has the lowest magnitude compared to the EU-15 and EU-10 countries (see Table 9), suggesting that 72.6% of an increase in net output is consumed and only 27.4% is saved and reflected as an improvement of the current account position.

The main corollary is that, during the observed period (1994-2012), the advanced EU economies (EU-15) have been using the intertemporal trade mainly for consumption smoothing, the EU-10 countries for a mix of consumption and investment smoothing, whereas the SEE-5 countries primarily for investment smoothing. We investigate the robustness of our estimations in the next section.

Table 6: Basic model: Subsample estimation results for EU-10 and SEE-5 transition countries Dependent variable: Current account balance (in percent of GDP), annual observations for 15 transition countries, 1994-2012

Explanatory variables	Model specifications (EU-10 and SEE-5 countries only)					
	Basic model			Augmented model		
	System GMM [13]	Beck-Katz estimation [14]	Parks-Kmenta estimation [15]	System GMM [16]	Beck-Katz estimation [17]	Parks-Kmenta estimation [18]
Lagged current account balance	**0.484*** **	**0.707*** **	**0.689*** **	**0.428*** **	**0.667*** **	**0.679*** **
	[0.07]	[0.06]	[0.04]	[0.06]	[0.06]	[0.04]
Fiscal balance (in percent of GDP)	-0.093	**-0.099***	**-0.104** **	-0.025	-0.047	-0.043
	[0.07]	[0.06]	[0.05]	[0.10]	[0.06]	[0.05]
Net output variables						
Change in net output	**0.28*** **	**0.373*** **	**0.381*** **			
	[0.06]	[0.05]	[0.03]			
Real GDP growth				**-0.288***	**-0.332*** **	**-0.296*** **
				[0.15]	[0.07]	[0.05]
Change in investment ratio				-0.036	**-0.064*** **	**-0.084*** **
				[0.02]	[0.02]	[0.01]
Change in government consumption ratio				-0.059	-0.067	**-0.062** **
				[0.05]	[0.04]	[0.03]
Financial integration variables						
Relative income	0.400	0.150	0.294	0.580	0.207	0.237
	[0.52]	[0.39]	[0.30]	[0.62]	[0.38]	[0.33]
Relative investment	**-4.566*** **	**-2.240** **	**-2.143*** **	**-5.252*** **	**-2.226***	**-2.459*** **
	[1.02]	[0.99]	[0.70]	[1.19]	[1.14]	[0.76]
Relative government consumption	-1.084	-0.402	-0.482	-2.241	-0.929	-1.156
	[1.19]	[1.89]	[0.92]	[1.42]	[1.33]	[0.94]
Intercept	**-2.174***	**-1.571*** **	**-1.540*** **	-0.976	-0.301	-0.175
	[1.07]	[0.46]	[0.42]	[1.40]	[0.48]	[0.47]
Observations	269	269	269	269	269	269
R-squared		0.619			0.62	
Number of countries	15	15	15	15	15	15
Number of instruments	7			9		
p-value of AR (1) test	0.0014			0.002		
p-value of AR (2) test	0.167			0.571		

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

Table 7: Augmented model: Beck-Katz estimation results

Explanatory variables	Augmented model: Beck-Katz estimations with interactive terms for the SEE countries								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Intertemporal model variables									
Lagged current account balance	**0.841** ***	**0.849** ***	**0.833** ***	**0.846** ***	**0.837** ***	**0.840** ***	**0.829** ***	**0.828** ***	**0.826** ***
	[0.04]	[0.04]	[0.05]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Fiscal balance (in percent of GDP)	0.005	-0.002	-0.007	-0.002	-0.001	0.017	0.015	0.019	0.018
	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]
Change in net output	**0.403** ***	**0.457** ***	**0.404** ***	**0.404** ***	**0.400** ***	**0.459** ***	**0.457** ***	**0.453** ***	**0.454** ***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Relative income	**0.731** **	**0.724** **	**0.875** **	**0.662** **	**0.766** **	**0.745** **	**0.881** **	**0.831** **	**0.848** **
	[0.32]	[0.31]	[0.359	[0.314	[0.33]	[0.307	[0.346	[0.336	[0.338
Relative investment	**-1.657** **	**-1.571** *	**-1.488** *	**-2.242** **	**-1.866** **	**-1.617** *	**-1.492** *	**-2.011** **	**-1.897** **
	[0.82]	[0.84]	[0.84]	[0.88]	[0.85]	[0.831	[0.85]	[0.88]	[0.85]
Relative govt consumption	0.366	0.252	0.661	0.431	1.069	0.372	0.687	0.802	1.160
	[0.69]	[0.65]	[0.74]	[0.68]	[0.70]	[0.65]	[0.71]	[0.70]	[0.67]
SEE interactive terms									
SEE x Fiscal balance (in percent of GDP)	-0.075					-0.132	-0.123	-0.132	-0.106
	[0.12]					[0.12]	[0.12]	[0.12]	[0.13]
SEE x Change in net output		**-0.168** **				**-0.185** **	**-0.182** **	**-0.173** **	**-0.185** **
		[0.07]				[0.07]	[0.07]	[0.07]	[0.07]
SEE x Relative income			-0.969				-0.857	-0.834	-0.559
			[0.74]				[0.73]	[0.73]	[0.88]
SEE x Relative investment				1.784				1.481	0.558
				[1.39]				[1.36]	[1.73]
SEE x Relative govt consumption					-2.454				-1.775
					[1.75]				[-2.36]
SEE intercept dummy	0.656	**0.877** **	-0.564	0.544	0.586	0.478	-0.776	-1.051	-0.599
	[0.53]	[0.44]	[1.02]	[0.46]	[0.44]	[0.54]	[1.10]	[1.14]	[1.35]
Intercept	-0.165	-0.203	-0.211	-0.135	-0.156	-0.154	-0.173	-0.121	-0.129
	[0.16]	[0.16]	[0.16]	[0.16]	[0.16]	[0.16]	[0.16]	[0.16]	[0.16]
Number of observations	538	538	538	538	538	538	538	538	538
R-squared	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Number of countries	30	30	30	30	30	30	30	30	30

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

Table 8: Augmented model: Parks-Kmenta estimation results

Explanatory variables	Augmented model: Parks-Kmenta estimations with interactive terms for the SEE countries								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Intertemporal model variables									
Lagged current account balance	**0.864** ***	**0.869** ***	**0.865** ***	**0.859** ***	**0.860** ***	**0.865** ***	**0.859** ***	**0.857** ***	**0.857** ***
	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]
Fiscal balance (in percent of GDP)	0.007	0.006	0.003	-0.002	-0.002	0.013	0.008	0.008	0.007
	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.032]
Change in net output	**0.429** ***	**0.457** ***	**0.429** ***	**0.426** ***	**0.425** ***	**0.457** ***	**0.454** ***	**0.451** ***	**0.451** ***
	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.03]	[0.03]	[0.03]
Relative income	**0.670** ***	**0.652** ***	**0.649** ***	**0.730** ***	**0.682** ***	**0.655** ***	**0.711** ***	**0.691** ***	**0.691** ***
	[0.136	[0.135	[0.137	[0.143	[0.139	[0.136	[0.144	[0.144	[0.147
Relative investment	**-1.785** ***	**-1.756** ***	**-2.105** ***	**-1.761** ***	**-1.918** ***	**-1.762** ***	**-1.734** ***	**-2.032** ***	**-2.000** ***
	[0.51]	[0.50]	[0.54]	[0.52]	[0.52]	[0.51]	[0.52]	[0.55]	[0.56]
Relative govt consumption	0.022	-0.062	0.073	0.196	0.412	0.002	0.196	0.249	0.367
	[0.47]	[0.47]	[0.47]	[0.48]	[0.49]	[0.47]	[0.48]	[0.48]	[0.50]
SEE interactive terms									
SEE x Fiscal balance (in percent of GDP)	-0.087					-0.16	-0.154	-0.166	-0.155
	[0.11]					[0.12]	[0.12]	[0.11]	[0.12]
SEE x Change in net output		**-0.185** **				**-0.203** ***	**-0.197** ***	**-0.186** ***	**-0.191** ***
		[0.07]				[0.07]	[0.07]	[0.07]	[0.07]
SEE x Relative income			1.887					1.731	1.265
			[1.37]					[1.37]	[1.96]
SEE x Relative investment				-0.551			-0.517	-0.503	-0.393
				[0.60]			[0.58]	[0.57]	[0.70]
SEE x Relative govt consumption					-2.228				-0.727
					[1.48]				[2.22]
SEE intercept dummy	0.354	**0.630** *	0.306	-0.135	0.370	0.049	-0.678	-1.037	-0.845
	[0.52]	[0.37]	[0.44]	[0.96]	[0.40]	[0.55]	[1.00]	[1.02]	[1.24]
Intercept	**0.431** ***	**0.412** ***	**0.471** ***	**0.437** ***	**0.428** ***	**0.430** ***	**0.439** ***	**0.480** ***	**0.462** ***
	[0.14]	[0.14]	[0.15]	[0.15]	[0.15]	[0.14]	[0.15]	[0.15]	[0.15]
Number of observations	538	538	538	538	538	538	538	538	538
Number of countries	30	30	30	30	30	30	30	30	30

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

Table 9: Reproduced coefficients on net output changes across different empirical specifications

Sample and subsamples	*Beck-Katz estimations*	*Parks-Kmenta estimations*
Entire sample (30 countries)	**0.406*****	**0.431*****
	[0.04]	[0.02]
EU-15	**0.302*****	**0.334*****
	[0.05]	[0.04]
EU-10 and SEE-5	**0.373*****	**0.381*****
	[0.05]	[0.03]
SEE-5	**0.274*****	**0.254*****
	[0.07]	[0.07]

5.5. Robustness Analysis

The model has already performed well when additional covariates were introduced. Nevertheless, we report three additional robustness checks: (1) re-estimation of the model for different combinations of subperiods; (2) re-estimation with relative terms constructed as time-varying average for the EU-15 countries as a reference series (instead of the sample average), and (3) investigation of the consistency of the estimates with the propositions of the intertemporal theory.

Different Combinations of Subperiods

We split the time dimension for the entire sample into various combinations of two subperiods: (a) 1994-2002 and 2003-2012; (b) 1994-2003 and 2004-2012; (c) 1994-2004 and 2005-2012; (d) 1994-2005 and 2006-2012 and (e) 1994-2006 and 2007-2012. Our goal is to investigate whether the estimates refer only to a certain subperiod. The results presented in Table 10 are based on Beck-Katz estimations and in Table 11 on Parks-Kmenta estimations. The estimates are fairly consistent across different empirical specifications, as most regression coefficients retain their sign, magnitude and statistical significance. It is important to note that the relative investment impact is strongest in the first subperiod (1994-2002). The extension of this period by an additional year weakens the magnitude of the coefficient, implying a gradual dissipation of the investment smoothing effect. The role of relative investment on the external current accounts in the last decade (2003-2012) appears to be statistically negligible.

Also, in the initial half-period (1994-2002), the increase in net output has mostly (79.8%) been consumed (column 1 of Table 10 in the Appendix), whereas the extension of this period by an additional year has weakened the consumption smoothing effect, ultimately leading to consumption of 45.3% of the increase in net output in the post-crisis 2007-2012 period (column 5 of Table 10).

Table 10: Basic model: Beck-Katz estimations applied to different subperiods

	[1]		[2]		[3]		[4]		[5]	
Explanatory variables	1994-2002	2003-2012	1994-2003	2004-2012	1994-2004	2005-2012	1994-2005	2006-2012	1994-2006	2007-2012
Lagged current account balance	**0.705** ***	**0.927** ***	**0.702** ***	**0.932** ***	**0.756** ***	**0.923** ***	**0.785** ***	**0.923** ***	**0.856** ***	**0.889** ***
	[0.08]	[0.05]	[0.08]	[0.05]	[0.07]	[0.06]	[0.06]	[0.06]	[0.06]	[0.06]
Fiscal balance (in percent of GDP)	0.058	-0.004	0.072	0.002	0.046	0.001	0.044	-0.009	0.011	-0.008
	[0.05]	[0.04]	[0.05]	[0.04]	[0.05]	[0.04]	[0.04]	[0.04]	[0.04]	[0.05]
Change in net output	**0.202** ***	**0.542** ***	**0.208** ***	**0.563** ***	**0.234** ***	**0.553** ***	**0.252** ***	**0.559** ***	**0.279** ***	**0.547** ***
	[0.05]	[0.05]	[0.05]	[0.05]	[0.05]	[0.06]	[0.05]	[0.06]	[0.05]	[0.06]
Relative income	**0.937** ***	0.155	**0.908** ***	0.087	**0.841** ***	-0.076	**0.726** ***	-0.082	**0.546** **	-0.026
	[0.35]	[0.32]	[0.319	[0.35]	[0.29]	[0.37]	[0.27]	[0.40]	[0.25]	[0.45]
Relative investment	**-3.327** ***	-0.783	**-3.085** ***	-1.056	**-2.704** ***	-1.414	**-2.581** ***	-1.184	**-2.389** ***	-0.791
	[1.06]	[0.93]	[0.99]	[0.98]	[0.90]	[1.08]	[0.88]	[1.10]	[0.88]	[1.23]
Relative govt consumption	-0.879	0.507	-1.110	0.821	-0.925	1.157	-0.662	1.242	-0.314	1.750
	[0.88]	[0.88]	[0.81]	[0.87]	[0.70]	[0.88]	[0.73]	[0.91]	[0.69]	[0.98]
Constant	0.052	-0.139	0.076	-0.126	0.024	-0.121	-0.004	-0.151	-0.086	-0.183
	[0.15]	[0.19]	[0.14]	[0.21]	[0.13]	[0.25]	[0.12]	[0.27]	[0.12]	[0.34]
Number of observations	238	300	268	270	298	240	328	210	358	180
R-squared	0.774	0.882	0.782	0.886	0.812	0.877	0.825	0.876	0.84	0.866
Number of countries	30	30	30	30	30	30	30	30	30	30

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

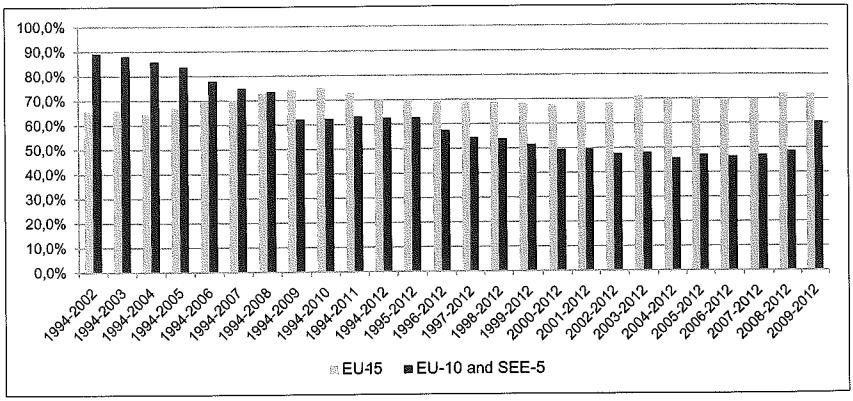
Table 11: Basic model: Parks-Kmenta estimations applied to different subperiods

	[1]		[2]		[3]		[4]		[5]	
Explanatory variables	1994-2002	2003-2012	1994-2003	2004-2012	1994-2004	2005-2012	1994-2005	2006-2012	1994-2006	2007-2012
Lagged current account balance	**0.731** ***	**0.941** ***	**0.728** ***	**0.950** ***	**0.770** ***	**0.947** ***	**0.796** ***	**0.960** ***	**0.861** ***	**0.935** ***
	[0.04]	[0.02]	[0.04]	[0.02]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]
Fiscal balance (in percent of GDP)	0.009	0.013	0.036	0.003	0.035	-0.007	0.037	-0.021	0.009	-0.009
	[0.03]	[0.02]	[0.03]	[0.02]	[0.03]	[0.02]	[0.03]	[0.02]	[0.03]	[0.03]
Change in net output	**0.269** ***	**0.512** ***	**0.269** ***	**0.533** ***	**0.304** ***	**0.532** ***	**0.328** ***	**0.540** ***	**0.359** ***	**0.537** ***
	[0.04]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]
Relative income	**1.025** ***	-0.046	**1.014** ***	-0.186	**0.965** ***	-0.350	**0.874** ***	-0.248	**0.712** ***	-0.291
	[0.15]	[0.17]	[0.14]	[0.19]	[0.14]	[0.21]	[0.14]	[0.21]	[0.14]	[0.27]
Relative investment	**-3.385** ***	-0.870	**-3.165** ***	-0.988	**-2.845** ***	-1.039	**-2.649** ***	-0.476	**-2.231** ***	-0.889
	[0.66]	[0.61]	[0.62]	[0.65]	[0.59]	[0.70]	[0.59]	[0.72]	[0.59]	[0.88]
Relative govt consumption	-0.345	0.232	-0.623	1.013	-0.397	1.284	-0.132	1.199	0.108	1.320
	[0.62]	[0.69]	[0.62]	[0.73]	[0.57]	[0.82]	[0.56]	[0.87]	[0.52]	[1.05]
Constant	-0.035	-0.075	0.066	-0.056	0.061	-0.111	0.061	-0.187	0.001	-0.132
	[0.13]	[0.12]	[0.13]	[0.13]	[0.12]	[0.14]	[0.11]	[0.14]	[0.11]	[0.17]
Number of observations	238	300	268	270	298	240	328	210	358	180
Number of countries	30	30	30	30	30	30	30	30	30	30

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

Due to the space limitation, the regressions for all subperiods are not reported here. Yet, we offer a graphical presentation of the implied consumption percentages of net output increases in different subperiods for: (i) EU-15 and (ii) EU-10 and SEE-5 economies (Figure 6). They are derived from the statistically significant coefficients at the 1% level for the changes in net output across time. Before the outbreak of the global financial crisis in 2008, the EU-10 and SEE-5 transition economies have consumed a much higher portion of the net output increases. There are at least two explanations: (1) the liquidity constraints were binding during the 1990s, because of the underdeveloped financial institutions, and (2) the prospective EU membership and permanent increases of future output have already been factored into the consumption decisions. In contrast, the subperiods between 2000 and 2012 are marked by lower percentages of consumption and a significant portion of precautionary saving, particularly during the global financial crisis (Figure 7). Interestingly, the percentage of consumption of net output increases in the EU-15 economies has been much more stable. As the subperiod extends closer to the global financial crisis, these economies have saved less of the net output increases. However, the inclusion of year 2011 leads to lower estimated coefficients, suggesting that greater labor income uncertainty is significantly associated with higher household savings. This is entirely consistent with recent econometric inquiries into the nexus between the Great recession and precautionary saving (e.g., Ashoka, Ohnsorge and Sandri 2012).

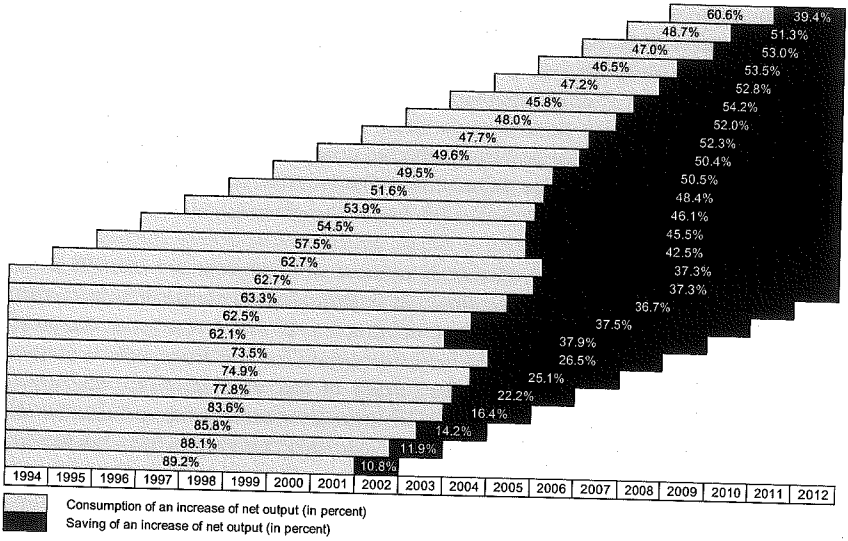
Figure 6: Percentage of consumption of net output increase in different subperiods in the two subsamples (in percentage)



Note: The bars represent the percentage of consumption of net output increase. It is derived from the statistically significant coefficients on the change in net output (mostly at the 1% level) in estimations on data for two disjoint samples for: (1) EU-15 countries, and (2) EU-10 and SEE-5 countries.

Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database.

Figure 7: Consumption vs saving of an increase of net output in different subperiods in EU-10 and SEE-5 countries (in percentage)



Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database.

Different Relative Terms

We also investigate whether the estimation results are driven by the empirical mapping of the permanent variable concept. Instead of using the time-varying GDP-weighted sample average, in the next step we reconstruct the permanent level of the variable as a time-varying average for the EU-15 countries only. Due to space limits, the estimation results are presented in Tables A2-A4 of Appendix 4. They are entirely consistent with those presented in Tables 4-6, as most of the coefficients retain their sign, magnitude and statistical significance.

Consistency of the Estimates With the Propositions of the Intertemporal Theory

Lastly, there are a few stylized facts that shed more light on the validity of the intertemporal approach for the transition economies. International capital mobility is one of the fundamental assumptions of the intertemporal model as it allows intertemporal trade and consumption smoothing. As already noted in the second section, most transition countries embarked on gradual capital account liberalization during the late 1990s and 2000s. Hence, the periods of relatively higher

capital account openness should be matched by relatively lower standard errors of predictions of the model, implying a negative correlation. The standard error of predictions represents a measure of the average amount by which actual current account data deviate from the predicted values. The simple unconditional correlation between the standard errors of the predictions of the basic model (column 1 of Table 4) and Chinn and Ito (2008) indices of capital account openness produces a coefficient of -0.334 for the entire sample. The test for the significance of the Pearson product-moment correlation coefficient suggests that it is statistically significant at any conventional level (p-value is close to 0). Hence, there is sufficient evidence that the intertemporal model fits better the periods with higher degree of capital account openness.

The underlying assumption of the dynamic-optimizing theory of sufficiently high degree of capital mobility implies that it should be a more suitable analytical framework for the advanced EU-15 economies. If this is the case, the average standard error of predictions should be higher for the European transition economies. Indeed, the average standard error of the predictions for the EU-15 economies is 0.259 (column 1 of Table 5), whereas the corresponding value for the 15 transition economies is 0.579 (column 1 of Table 6). This comparison lends additional support to the argument that the intertemporal model is more suited for the developed economies, but it would be premature to claim that it is non-applicable to the transition economies.

Concluding Remarks

The widening and persistent current account deficits of the SEE-5 economies have been strongly supported by the capital account liberalization trend in the past two decades. They have recorded much higher and more volatile external current account deficits than the EU-15 and EU-10 economies. Even so, the academic inquiries into the determinants and implications of these external imbalances are extremely scarce.

We argue that the present degree of capital account openness justifies an intertemporal analysis of the current accounts of SEE-5 economies. We amend the theoretical framework to take into consideration that they are populated by a higher share of liquidity-constrained consumers, who cannot effectively smooth consumption across time. The determinants of the current account imbalances of SEE-5 economies are contrasted and compared with those of the EU-15 and EU-10 economies. The results based on three econometric techniques (system GMM, Beck-Katz and Parks-Kmenta estimations) are fairly consistent across different empirical specifications, as most regression coefficients retain their sign, magnitude and statistical significance.

The estimations reveal that during the 1994-2012 period, the EU-15 economies have been using the intertemporal trade mainly for consumption smoothing, the EU-10 countries for a mix of consumption and investment smoothing, whereas the SEE-5 countries primarily for investment smoothing. Before the outbreak of the

global financial crisis, the EU-10 and SEE-5 transition economies have consumed a much higher portion of net output increases. There are at least two explanations: (1) liquidity constraints were binding during the 1990s, because of the underdeveloped financial institutions, and (2) the prospective EU membership and permanent increases of future output have already been factored into the consumption decisions. In contrast, the period between 2000 and 2012 is marked by significant increases of precautionary saving, particularly during the global financial crisis. In this context, a fruitfuil research avenue would be to link our research with the Hein's (2013) post-Keynesian contributions to financialization, highlighting the increasing potential for wealth-based and debt-financed consumption.

All empirical specifications bring ample evidence in favour of investment-induced current account deficits, where we refer to the gross domestic investment ratio. The increase of the investment demand - as SEE-5 economies speed up the European integration process - has further contributed to a deterioration of their current account positions. This is entirely consistent with another important feature of the external accounts of these economies. They have a countercyclical character: the contemporaneous real GDP growth rate is inversely related to the current account behaviour, even when controlling for potential endogeneity. The channel to high growth in these countries is, primarily, through making possible the pursuit of investment opportunities that would otherwise remain unfunded; in turn, this seems to be intimately linked to the opportunities created by European Union membership.

Despite the valuable and consistent findings, the theoretical coherence of the intertemporal model and its applicability for the transition economies remains insufficiently explored. The results can be validated with a dynamic stochastic general equilibrium (DSGE) model in order to examine how shocks and policy responses impact on and propagate through the economy.

References

Abel, A. (1990). "Asset Prices under Habit Formation and Catching up with the Joneses", *The American Economic Review* Papers and Proceedings 80: 38-42.

Abiad, A., D. Leigh, and A. Mody (2009). "Financial integration, capital mobility, and income convergence", *Economic Policy* 24 (58): 241-305.

Arellano, M., and O. Bover (1995). "Another Look at the Instrumental Variables Estimation of Error-Component Models", *Journal of Econometrics* 68 (1): 29-51.

Arellano, M., and S. Bond (1991). "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations", *The Review of Economic Studies* 58 (2): 277-297.

Ashoka, M., F. Ohnsorge, and D. Sandri (2012). *Precautionary Savings in the Great Recession*, IMF Working Paper No. 12/42, International Monetary Fund, Washington, D.C.

Baltagi, B. (2005). *Econometric Analysis of Panel Data*, Third Edition, Chichester, UK: John Wiley & Sons Ltd.

Beck, N., and J. N. Katz (1995). "What To Do (and Not To Do) with Time-Series Cross-Section Data in Comparative Politics", *American Political Science Review* 89: 634-647.

Beck, N., and J. N. Katz. (1996). "Nuisance vs. Substance: Specifying and Estimating Time-Series-Cross-Section Models", *Political Analysis* 6 (1): 1–36.

Blanchard, O., and F. Giavazzi (2002). "Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle?", *Brookings Papers on Economic Activity* 33 (2): 147-210.

Blundell, R., and S. Bond (1998). "Initial conditions and moment restrictions in dynamic panel data models", *Journal of Econometrics* 87 (1): 115-143.

Brada, J., A. Kutan and T. Yigit (2006). "The effects of transition and political instability on foreign direct investment inflows: Central Europe and the Balkans", *Economics of Transition* 14 (4): 649-680.

Bussière, M., M. Fratzscher, and G. Müller. (2004). *Current Account Dynamics in OECD and EU Acceding Countries-An Intertemporal Approach*, Working Paper Series. European Central Bank. http://ideas.repec.org/p/ecb/ecbwps/20040311.html.

Campbell, J., and J. Cochrane (1995). *By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behaviour*, NBER Working Paper No. 4995, *the* National Bureau *of* Economic Research, Cambridge, Mass.

Chakraborty, S., and R. Dekle (2009). "Can International Productivity Differences Alone Account for the US Current Account Deficits", *Review of International Economics* 17 (4): 689-715.

Chen, R., G. M. Milesi-Ferretti, and T. Tressel (2013), "External imbalances in the eurozone", *Economic Policy* 28 (73): 101-142.

Chinn, M., and H. Ito (2008). "A New Measure of Financial Openness", *Journal of Comparative Policy Analysis* 10 (3): 309-322.

Conway, P. (1995). *Saving in Transition Economies: The Summary Report*, Policy Research Working Paper No. 1509, World Bank, Washington, D.C.

Dobrinsky, R. (2007). "Capital accumulation during the transition from plan to market", *Economics of Transition* 15 (4): 845-868.

Edison, H., M. Klein, A. R. Luca, and T. Sløk (2004). "Capital Account Liberalization and Economic Performance: Survey and Synthesis", *IMF Staff Papers* 51 (2): 220-256.

Eichengreen, B. (2001). *Comments on financial crises and contagion*, Proceedings 728, Federal Reserve Bank of Chicago.

Engler, P., M. Fidora, and C. Thimann (2009). "External Imbalances and the US Current Account: How Supply-Side Changes Affect an Exchange Rate Adjustment", *Review of International Economics* 17 (5): 927-941.

Fischer, S. (1998). *Capital-Account Liberalization and the Role of the IMF: Should the IMF Pursue Capital-Account Convertibility?*. Princeton: Princeton University, Essays in International Finance No. 207, (May 1998), 1-10.

Fischer, S. (2003). "Globalization and Its Challenges", *The American Economic Review* Papers and Proceedings, (May 2003), 1-32.

Gill, I., and M. Raiser (2012). *Golden Growth: Restoring the lustre of the European economic model.* World Bank, Washington, D.C.

Glick, A., and K. Rogoff (1995). "Global versus country-specific productivity shocks and the current account", *Journal of Monetary Economics* 35 (1): 159-192.

Grilli, V., and G. M. Milesi-Ferretti (1995). "Economic Effects and Structural Determinants of Capital Controls", *IMF Staff Papers* 42 (3): 517-551.

Hein, E. (2013). "The Crisis of Finance-Dominated Capitalism in the Euro Area, Deficiencies in the Economic Policy Architecture, and Deflationary Stagnation Policies", *Journal of Post Keynesian Economics*, Winter 2013-2014, 36 (2): 325-354.

Henry, P. B. (2006). *Capital Account Liberalization: Theory, Evidence, and Speculation,* NBER Working Paper No. 12698, *the* National Bureau *of* Economic Research. http://www.nber.org/papers/w12698.

Ivanova, M. (2010). "Hegemony and Seigniorage: The Planned Spontaneity of the U.S. Current Account Deficit", *International Journal of Political Economy* 39 (1): 93-130.

Janoski, T. and A. Hicks (1994). *The Comparative Political Economy of the Welfare State.* Cambridge, UK: Cambridge Studies in Comparative Politics.

Kim, S., and N. Roubini (2008). "Twin deficit or twin divergence? Fiscal policy, current account, and real exchange rate in the U.S.", *Journal of International Economics* 74 (2): 362-383.

Kmenta, J. (1986). *Elements of Econometrics.* Second Edition. New York: Macmillan.

Lane, P., and G. M. Milesi-Ferretti (2007). "Europe and global imbalances", *Economic Policy* 22 (51): 519-573.

Mussa, M. (2007). "The dollar and the current account deficit: How much should we worry?", *Journal of Policy Modeling* 29 (5): 691-696.

Obstfeld, M. (1998). "The Global Capital Market: Benefactor or Menace?", *Journal of Economic Perspectives* 12 (4): 9-30.

Obstfeld, M. (2004). "External Adjustment", *Review of World Economics* 140 (4): 541-568.

Obstfeld, M., and K. Rogoff (1994). *The Intertemporal Approach to the Current Account*, Center for International and Development Economics Research (CIDER) Working Papers C94-044, University of California at Berkeley.

Obstfeld, M., and K. Rogoff (1995). "Exchange Rate Dynamics Redux", *Journal of Political Economy* 103 (3): 624-660.

Parks, R. (1967). "Efficient Estimation of a System of Regression Equations when Disturbances are Both Serially and Contemporaneously Correlated", *Journal of the American Statistical Association* 62 (1): 500-509.

Razin, A. (1995). "The Dynamic-Optimizing Approach to the Current Account: Theory and Evidence", in: *Understanding Interdependence: The Macroeconomics of the Open Economy*, [Peter Kenen, ed.], Princeton University Press, New Jersey, 168-198.

Rodrik, D. (1998). Where Did All The Growth Go? External Shocks, Social Conflict, and Growth Collapses, NBER Working Paper No. 6350, the National Bureau of Economic Research.

Rogoff, K. (1999). "International Institutions for Reducing Global Financial Instability", *Journal of Economic Perspectives* 13 (4): 21-42.

Sachs, J. (1981). "The Current Account and Macroeconomic Adjustment in the 1970s", *Brookings Papers on Economic Activity* 12 (1): 201-282.

Schrooten, M., and S. Stephan (2005). "Private Savings and Transition: Dynamic Panel Data Evidence from Accession Countries", *Economics of Transition* 13 (2): 287-309.

Solow, R. M. (1956). "A Contribution to the Theory of Economic Growth", *The Quarterly Journal of Economics* 70 (1): 65-94.

Sooreea, R., and M. Wheeler (2010). "A dynamic analysis of the determinates of the US current account deficit", *Applied Financial Economics* 20 (22): 1687-1695.

Summers, L. (2000). "International Financial Crises: Causes, Prevention, and Cures", *The American Economic Review* Papers and Proceedings 90 (2): 1-16.

Sybille, L. (2013). "Has the Euro changed business cycle synchronization? Evidence from the core and the periphery", *Empirica* 40 (4): 655-684.

Warin, T., P. Wunnava, and H. Janicki. (2009). "Testing Mundell's Intuition of Endogenous OCA Theory", *Review of International Economics* 17 (1): 74–86.

Zorzi, M. and M. Rubaszek (2012). "On the Empirical Evidence of the Intertemporal Current Account Model for the Euro Area Countries", *Review of Development Economics* 16 (1): 95–106.

Appendix 1

Table A1: List of variables used

Symbol	Description	Source
$ca_{i,t}$	Dependent variable: Current account balance (expressed as a percent of GDP).	World Economic Outlook database, The International Monetary Fund, Washington, D.C., October 2013.
$fb_{i,t}$	General government budget balance (expressed as a percent of GDP).	
$no_{i,t}$	Net output is defined as GDP minus investment minus general government consumption (expressed as a percent of GDP).	
$chno_{i,t}$	Change in net output.	
$relin_{c,t}$	Natural logarithmic deviation of a country's per capita income from the permanent level of the variable, the latter being defined as the cross-country average for the EU-15 economies.	
$relgc_{i,t}$	Relative government consumption - A difference between country's general government consumption (as a percent of GDP) and the time-varying cross-country average of the corresponding variable for the group of advanced EU economies.	UN national accounts online database, January 2014. (http://unstats.un.org/unsd/snaama/dnlList.asp).
$relinv_{i,t}$	Relative investment - A difference between country's gross domestic investment (as a percent of GDP) and the time-varying cross-country average of the corresponding variable for the group of EU-15 economies.	World Economic Outlook database, The International Monetary Fund, Washington, D.C., October 2013.
$kaopen_{i,t}$	A measure of financial account openness. Binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF Annual Report on Exchange Arrangements and Exchange Restrictions. Higher values of this index indicate greater financial openness. Values range from -1.7245 to 2.6556 and there are 44 degrees of openness.	Chinn and Ito index (2008) series [online database, updated until 2011].

Appendix 2: List of Country Groups

EU-15: Austria (AUT), Belgium (BEL), Denmark (DNK), Finland (FIN), France (FRA), Germany (DEU), Greece (GRC), Ireland (IRL), Italy (ITA), Luxembourg (LUX), Netherlands (NLD), Portugal (PRT), Spain (ESP), Sweden (SWE), United Kingdom (GBR).
EU-10: Czech Republic (CZE), Cyprus (CYP), Estonia (EST), Hungary (HUN), Latvia (LVA), Lithuania (LTU), Malta (MLT), Poland (POL), Slovak Republic (SVK), Slovenia (SVN).
SEE-5: Albania (ALB), Bulgaria (BGR), Croatia (HRV), Macedonia (MKD), and Romania (ROU).

Appendix 3: Variables

Calculations related to the explanatory variables
The explanatory variables take the following forms:
The net output variables:

Change in net output: $chno_{i,t} = no_{i,t}/no_{i,t-1} \cdot 100 - 100$

Real GDP growth rate: $gr_{i,t} = gdp_{i,t}/gdp_{i,t-1} \times 100 - 100$

Changes in the total investment ratio: $\Delta inv_t = \frac{i_t}{gdp_t} / \frac{i_{t-1}}{gdp_{t-1}} \cdot 100 - 100$

Changes in the government consumption ratio: $\Delta gc_t = \frac{gc_t}{gdp_t} / \frac{gc_{t-1}}{gdp_{t-1}} \cdot 100 - 100$

The financial integration variables:

Relative income: $relinc_{i,t} = \ln(gdppc_{i,t}) - \ln(gdppc_{sample\ average,\ t})$

Relative investment: $relinv_{i,t} = \ln(inv_{i,t}) - \ln(inv_{sample\ average,\ t})$

Relative government consumption: $relgc_{i,t} = \ln(gc_{i,t}) - \ln(gc_{sample\ average,\ t})$

Explanations of the various explanatory variables

We classify the explanatory variables in two groups: variables that stem from the decomposition of the changes in net output, and financial integration variables.

The net output variables:

Unlike previous empirical work, we decompose changes in net output into: (1) real GDP growth rate; (2) changes in the country's investment ratio, and (3) changes in the general government consumption ratio. This provides a more accurate inquiry into the important sideshow behind the net output story.

The financial integration variables:

- Independent variable "relative income"

Relative income is constructed as a log deviation of country's gross domestic product per capita (in purchasing power parity terms and expressed in current international dollars) from the cross-national average. The data source is the IMF World Economic Outlook database (October, 2013).

- Independent variable "relative investment"

Relative investment is constructed as a log deviation of country's investment ratio from the cross-national average in the corresponding year. The data source is the IMF World Economic Outlook database (October, 2013).

- Independent variable "relative government consumption"

As opposed to the study by Bussière, Fratzscher and Müller (2004), we use government consumption instead of public spending. The noted study uses the total public expenditure, which includes government consumption (wages and goods and services), social transfers, interest payments and government investment. We argue that this is not an entirely consistent approach, as the government investment component is already factored into the analysis as a component of total investment. For this reason, we use the log deviation of country's government consumption ratio from the cross-national average in the corresponding year.

Appendix 4: Estimations with Reconstructed Relative Terms

Table A2: Basic model: Estimation results for the entire sample (EU-15 average as a reference)
Dependent variable: Current account balance (in percent of GDP), annual observations for 30 European countries, 1994-2012

	Model specifications (Entire sample; EU-15 average as a reference)					
	Basic model			Augmented model		
	System GMM [1]	Beck-Katz estimation [2]	Parks-Kmenta estimation [3]	System GMM [4]	Beck-Katz estimation [5]	Parks-Kmenta estimation [6]
Lagged current account balance	**0.658** ***	**0.857** ***	**0.873** ***	**0.606** ***	**0.814** ***	**0.816** ***
	[0.05]	[0.04]	[0.02]	[0.05]	[0.05]	[0.02]
Fiscal balance (in percent of GDP)	0.036	0.002	0.009	0.087	0.057	0.025
	[0.04]	[0.03]	[0.02]	[0.06]	[0.04]	[0.02]
Net output variables						
Change in net output	**0.329** ***	**0.406** ***	**0.432** ***			
	[0.05]	[0.04]	[0.02]			
Real GDP growth				**-0.205** *	**-0.235** ***	**-0.160** ***
				[0.12]	[0.06]	[0.04]
Change in investment ratio				**-0.057** **	**-0.081** ***	**-0.109** ***
				[0.03]	[0.02]	[0.01]
Change in govt consumption				**-0.066**	**-0.081** **	**-0.107** ***
				[0.04]	[0.04]	[0.03]
Financial integration variables						
Relative income	**1.065** ***	**0.442** *	**0.527** ***	**1.083** ***	0.383	**0.536** ***
	[0.24]	[0.26]	[0.13]	[0.29]	[0.29]	[0.14]
Relative investment	**-3.850** ***	**-1.731** **	**-1.789** ***	**-4.788** ***	**-2.197** **	**-2.496** ***
	[0.85]	[0.81]	[0.50]	[0.99]	[0.96]	[0.56]
Relative govt consumption	-0.437	-0.075	-0.202	-1.342	-0.639	-0.466
	[1.33]	[0.70]	[0.48]	[1.45]	[0.79]	[0.54]
Intercept	**0.777** *	0.245	**0.389** ***	**1.653** **	**1.121** ***	**1.093** ***
	[0.43]	[0.22]	[0.14]	[0.62]	[0.30]	[0.19]
Number of observations	538	538	538	538	538	538
R-squared		0.839			0.815	
Number of countries	30	30	30	30	30	30
Number of instruments	7			9		
p-value of AR (1) test	0.000			0.000		
p-value of AR (2) test	0.124			0.332		

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

Table A3: Basic model: Estimation results for EU-15 economies (EU-15 average as a reference)
Dependent variable: Current account balance (in percent of GDP), annual observations for 30 European countries, 1994-2012

	Model specifications (EU-15 economies, EU-15 average as a reference)					
	Basic model			Augmented model		
Explanatory variables	System GMM [1]	Beck-Katz estimation [2]	Parks-Kmenta estimation [3]	System GMM [4]	Beck-Katz estimation [5]	Parks-Kmenta estimation [6]
Lagged current account balance	**0.797** ***	**0.958** ***	**0.946** ***	**0.787** ***	**0.943** ***	**0.934** ***
	[0.06]	[0.03]	[0.02]	[0.05]	[0.04]	[0.02]
Fiscal balance (in percent of GDP)	-0.014	-0.038	-0.021	-0.044	-0.042	-0.025
	[0.04]	[0.03]	[0.02]	[0.04]	[0.03]	[0.02]
Net output variables						
Change in net output	**0.239** ***	**0.302** ***	**0.332** ***			
	[0.07]	[0.05]	[0.04]			
Real GDP growth				0.117	-0.023	-0.012
				[0.10]	[0.06]	[0.05]
Change in investment ratio				**-0.097** **	**-0.101** ***	**-0.115** ***
				[0.02]	[0.02]	[0.02]
Change in govt consumption				-0.096	**-0.173** ***	**-0.194** ***
				[0.06]	[0.05]	[0.04]
Financial integration variables						
Relative income	**2.273** ***	0.609	**0.783** **	**2.413** ***	**0.872** *	**0.994** ***
	[0.82]	[0.52]	[0.36]	[0.81]	[0.53]	[0.36]
Relative investment	-3.007	**-1.653** **	**-1.859** ***	-2.971	-1.290	**-1.574** **
	[1.83]	[0.80]	[0.71]	[2.03]	[0.79]	[0.74]
Relative govt consumption	0.923	0.537	0.270	1.547	0.832	0.680
	[0.97]	[0.67]	[0.49]	[1.02]	[0.72]	[0.51]
Intercept	0.504	0.080	0.201	0.180	0.114	0.164
	[0.40]	[0.16]	[0.15]	[0.42]	[0.23]	[0.19]
Number of observations	269	269	269	269	269	269
R-squared		0.935			0.935	
Number of countries	15	15	15	15	15	15
Number of instruments	7			9		
p-value of AR (1) test	0.001			0.001		
p-value of AR (2) test	0.999			0.772		

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*

Table A4: Basic model: Estimation results for EU-10 and SEE-5 economies (EU-15 average as a reference)
Dependent variable: Current account balance (in percent of GDP), annual observations for 30 European countries, 1994-2012

	Model specifications (EU-10 and SEE-5 economies; EU-15 average as a reference)					
	Basic model			Augmented model		
Explanatory variables	System GMM [1]	Beck-Katz estimation [2]	Parks-Kmenta estimation [3]	System GMM [4]	Beck-Katz estimation [5]	Parks-Kmenta estimation [6]
Lagged current account balance	**0.482** ***	**0.707** ***	**0.690** ***	**0.426** ***	**0.665** ***	**0.678** ***
	[0.07]	[0.06]	[0.04]	[0.06]	[0.06]	[0.04]
Fiscal balance (in percent of GDP)	-0.091	**-0.099** *	**-0.104** **	-0.022	-0.045	-0.042
	[0.07]	[0.06]	[0.05]	[0.10]	[0.06]	[0.05]
Net output variables						
Change in net output	**0.289** ***	**0.373** ***	**0.382** ***			
	[0.06]	[0.05]	[0.03]			
Real GDP growth				**-0.289** *	**-0.334** ***	**-0.299** ***
				[0.15]	[0.07]	[0.05]
Change in investment ratio				-0.036	**-0.064** ***	**-0.084** ***
				[0.02]	[0.02]	[0.01]
Change in govt consumption				-0.058	-0.066	-0.062 **
				[0.05]	[0.04]	[0.03]
Financial integration variables						
Relative income	0.430	0.170	0.333	0.604	0.218	0.288
	[0.52]	[0.39]	[0.30]	[0.62]	[0.38]	[0.32]
Relative investment	**-4.594** ***	**-2.203** **	**-2.045** ***	**-5.334** ***	**-2.264** **	**-2.423** ***
	[1.04]	[0.10]	[0.70]	[1.20]	[1.15]	[0.76]
Relative govt consumption	-1.214	-0.441	-0.526	-2.416	-1.008	-1.236
	[1.21]	[1.39]	[0.93]	[1.44]	[1.34]	[0.96]
Intercept	-1.516	**-1.282** **	**-1.163** **	-0.104	0.052	0.245
	[1.35]	[0.60]	[0.55]	[1.72]	[0.63]	[0.61]
Number of observations	269	269	269	269	269	269
R-squared		0.618			0.619	
Number of countries	15	15	15	15	15	15
Number of instruments	7			9		
p-value of AR (1) test	0.001			0.002		
p-value of AR (2) test	0.167			0.565		

*Source: Authors' regressions using data from the International Monetary Fund and the United Nations national accounts database. Notes: Robust standard errors are reported in brackets. Asterisks indicate statistical significance at the ***1, **5, and *10 percent level. GDP data are adjusted for international differences in purchasing power of the dollar.*