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An assessment of the current account sustainability in Romania

Ionuț Dumitru¹

ABSTRACT:

This paper assesses the sustainability of the CA deficits in the New Member States (NMS) of European Union by estimating its structural component based on fundamentals. Using a large sample of panel data, we estimated long term relationships for the CA deficit and its fundamentals using two methods from the literature. The main conclusion of the paper is that in some countries there is an excessive CA deficit which should be adjusted. In the case of Romania, the results are showing that the structural CA could be between 6.3% and 10.9% of GDP, depending on the model used and the econometric procedure. Another important result of the paper is that the main drivers of the CA deficits in NMS are the economic convergence factors.

Keywords: structural CA deficit, convergence, relative income, Ricardian equivalence.

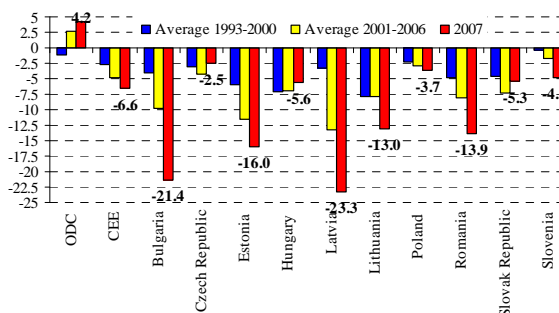
JEL classification: F15, F32, F37, F41

1. Introduction

After the fall of the Communism, the transition countries from the Central and Eastern Europe and Baltic States experienced large current account deficits, even higher than in other transition countries from other continents. The explanation could be related to the massive investments triggered by the European Union entry perspective and the EU membership afterwards. Given the relatively low level of saving rate, the CA deficits started to arise and to reach quite high levels. The relatively high rates of economic growth in these countries were accompanied by increasing external deficits in some cases.

Nevertheless, the New Member States (NMS) had a different behavior in the current account deficit development. In some countries (Hungary, Poland, Czech Republic, Slovakia, and Slovenia) there was an improvement or at least a stabilization of the balance of payment disequilibrium in the last years after a period of large CA deficits. For other countries (Bulgaria, Romania, and Baltic States) there was a different evolution, the CA deficit increasing and reaching high levels (figure 1).

Figure 1 – The CA deficit (% of GDP) in NMS and other developing countries (ODC)

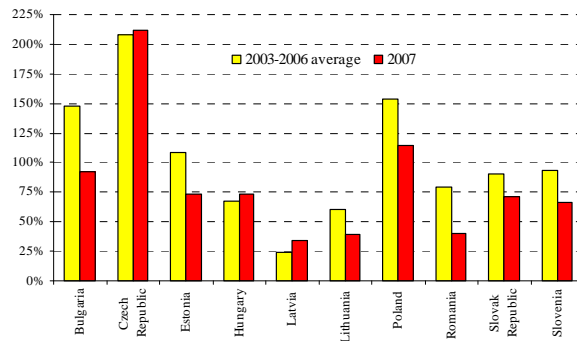


Source: IMF. Note: CEE countries include: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Croatia, Estonia, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Turkey.

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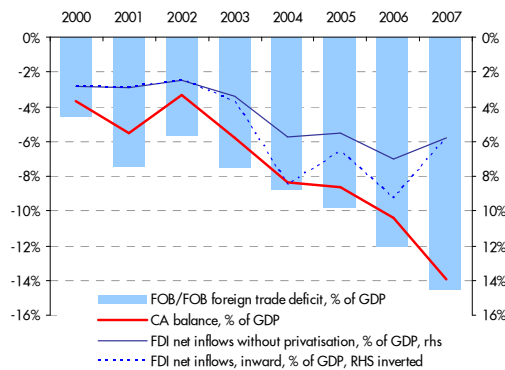
Although in some countries the coverage of the CA deficit with FDI remain comfortable (figure 2), in some cases (Romania for example, figure 3) the coverage decreased, being more difficult to sustain the current large CA deficit for a long period of time, especially in the current context of risk repricing in the international markets (see also Rudolfs and Schellekens, 2007, Pritta and all., 2007).

Figure 2 – Current account coverage with FDI in NMS



Source: IMF

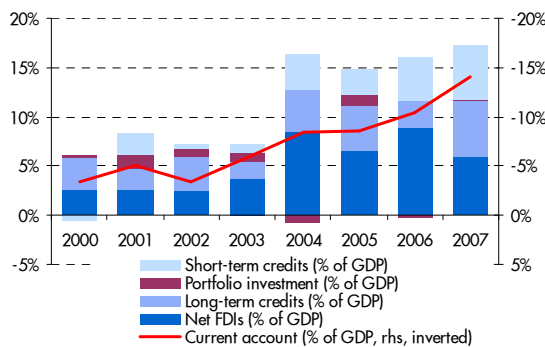
Figure 3 – Current account deficit and FDI in Romania (% of GDP)



Source: NIS, NBR

In the Romanian case, the concern related to the CA sustainability is related also to the deterioration in the structure of financing, the short term component increasing (figure 4). The external borrowings (with an increasing short-term component) are financing now a larger part from the CA deficit, the main part of them being originated by commercial banks (figure 5).

Figure 4– CA financing sources in Romania (% of GDP)

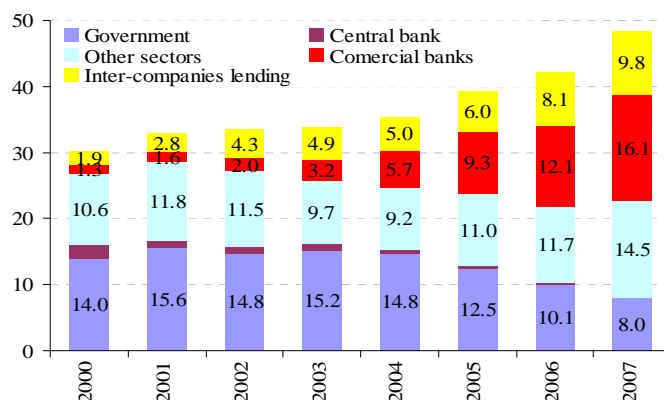


Source: NBR

Although the external debt has a still relatively low level as percent of GDP, it increased very rapidly in the last years, especially the short term component, triggering a sharp increase in external debt service (table 1). While the level of external debt is still low compared with other countries from

CEE region, the coverage of external debt and external debt service with international reserves and exports deteriorated rapidly, being even worse compared other countries from CEE. The external vulnerability indicators deteriorated continuously in the last couple of years (table 1). Consequently, the concern regarding the CA sustainability increased in the last period and the risk for a hard landing scenario is rising.

Figure 5 - External debt by institutional sectors (% of GDP)



Source: NBR

Table 1 – External vulnerability indicators in Romania versus CEE countries

INDICATORS	Country	2002	2003	2004	2005	2006	2007	2008-Q1
External debt (% of GDP)	Romania	33.4%	33.9%	35.4%	39.1%	42.1%	47.5%	49.1%
	CEE	49.2%	49.8%	49.3%	45.1%	51.2%	51.4%	na
External debt (% of exports)	Romania	94.7%	97.5%	98.4%	117.8%	131.0%	155.7%	159.1%
	CEE	130.0%	127.4%	119.6%	111.8%	118.8%	119.3%	na
External debt service (% of GDP)	Romania	8.8%	7.2%	8.2%	17.1%	20.3%	21.5%	19.9%
	CEE	9.6%	9.7%	9.1%	8.6%	9.1%	8.8%	na
External debt service (% of exports)	Romania	24.8%	20.8%	22.8%	51.5%	63.0%	70.3%	64.4%
	CEE	25.3%	24.9%	22.1%	21.4%	21.0%	20.5%	na
Short term external debt service (% of GDP)	Romania	1.1%	1.0%	1.6%	10.4%	13.6%	14.8%	13.7%
External debt service (% of international reserves)	Romania	60.6%	50.8%	41.7%	74.4%	86.3%	95.8%	91.1%
Short term external debt service (% of international reserves)	Romania	7.5%	7.2%	7.9%	45.3%	58.0%	66.0%	62.9%
Short term external debt (% of total external debt)	Romania	7.6%	11.1%	14.9%	20.8%	30.6%	35.7%	34.6%
	CEE	17.4%	20.6%	21.8%	23.8%	24.3%	24.5%	na
Import cover by international reserves	Romania	4.2	4.1	5.2	6.3	6.4	6.0	5.8
	CEE	5.0	4.9	4.4	4.2	4.2	4.1	na

Source: NBR, IMF.

This paper is assessing the sustainability of the CA deficit in NMS countries, particularly on Romania, using both a qualitative and a quantitative approach to identify a structural component based on fundamentals. The paper has the following structure. In section 2 we used a structural analysis of the trade balance in Romania based on the COMBINED NOMENCLATURE (CN). In section 3 we analyzed some external competitiveness issues. In section 4 we have a quantitative assessment of the structural current account deficit based on panel data using 2 different approaches, i.e. the macroeconomic balance approach and the intertemporal approach. The last section is dedicated to conclusion.

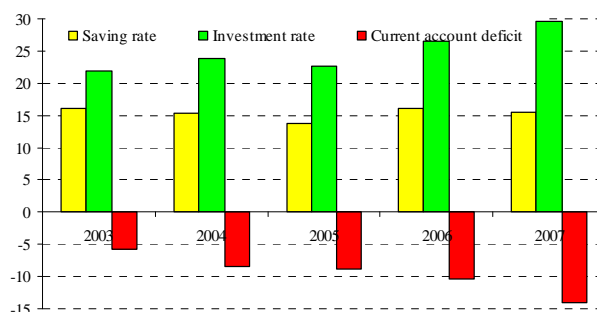
2. A qualitative assessment of the current account deficit in Romania

Compared with other countries from CEE region or Baltic States, Romania has a relatively high current account deficit, being higher than in countries like Czech Republic, Poland or Slovenia, but lower than in Baltics and Bulgaria.

The capital account liberalization triggered like in the case of other developing countries strong capital inflows which are fueling the current account deficit. Moreover, the catching up process requests capital goods imports, not only financial capital, generating a commercial trade deficit. Consequently, there is normal situation for a transition country, excepting countries with rich natural resources (especially oil and other basic commodities), to experience current account deficits.

The external disequilibrium of Romania, as well as for other countries among the NMS, is generated mainly by the convergence process. As this paper reveals, Romania has a downward rigidity of the CA deficit at the 10% of GDP level, a decrease below this level being possible only with a slowdown in investment activity, which can affect the real convergence process. Moreover, the current account deficit in Romania is mainly structural and has a strong persistence (section 4). It reflects an increasing need for investments to sustain the catching up process and a low level of savings which is biased to consumption and to a lower degree to saving (figure 6). Moreover, the CA deficit is generated mainly by the private sector, the public sector having a limited contribution (table 2). In order to adjust the current account deficit, the economic policies should be oriented mainly to stimulate savings otherwise the deficit could be high for a long period of time.

Figure 6 – Investment and saving rate and the CA deficit (% of GDP)



Source: NBR, NIS

Table 2 – Saving-investment balance in Romania

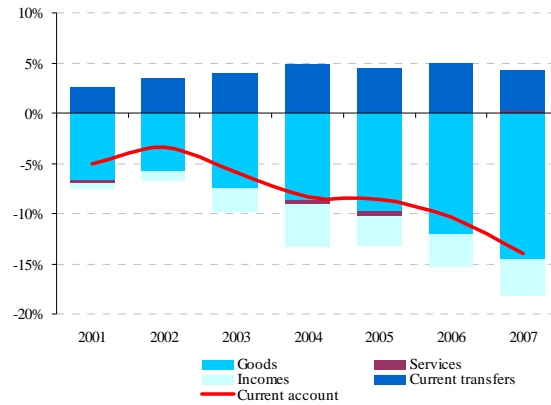
	2003	2004	2005	2006	2007
Public saving rate	1.2	1.7	1.8	2.6	1.2
Public investment rate	3.4	2.8	2.6	3.2	3.6
<i>Public sector deficit</i>	-2.2	-1.1	-0.8	-0.6	-2.4
Private saving rate	14.9	13.7	11.9	13.5	14.4
Private investment rate	18.5	21.0	20.0	23.3	26.0
<i>Private sector deficit</i>	-3.6	-7.3	-8.1	-9.8	-11.6
<i>Current account deficit</i>	-5.8	-8.4	-8.9	-10.4	-14.0

Source: NBR, NIS

2.1 Trade balance

The main driver of the CA balance in Romania is the trade balance (figure 7).

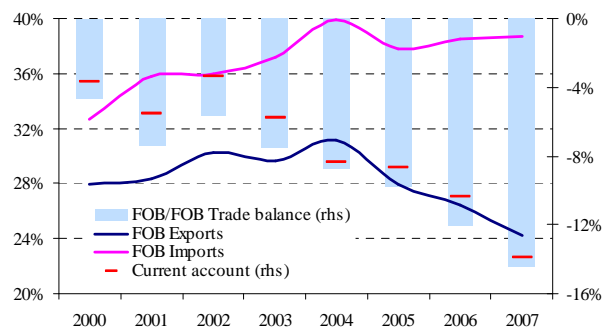
Figure 7 – The components of the CA deficit (% of GDP)



Source: NBR, NIS

The trade balance deficit increased rapidly in the last years, from 7.5% of GDP in 2003 to 14.5% of GDP in 2007, the pace of increase accelerating in 2004-2005. At the same time, the data show that the share of imports in GDP (figure 8) was quite stable in the last years, while exports share in GDP decreased from 30% in 2003 to only 24.2% in 2007. At first sight, one could say that the deterioration of the external trade balance was driven mainly by the poor performance of exports. This could be partially true, as there was a continuous decline in the traditional export-oriented sectors in Romania, but we need a more detailed analysis on the trade balance as there were some important structural changes.

Figure 8 – Share of exports and imports in GDP

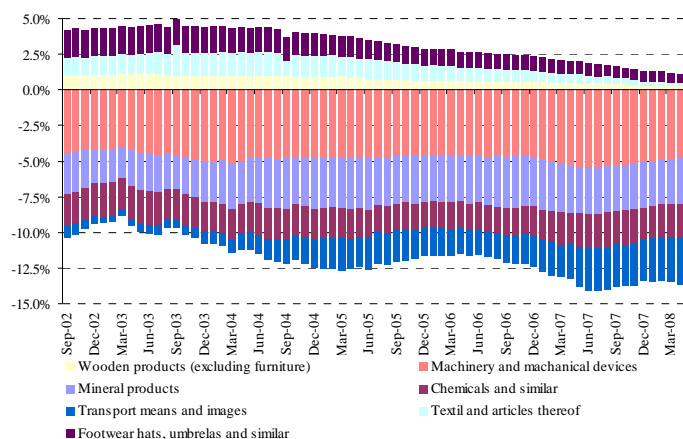


Source: NIS, author's calculation

We can observe something very interesting from the structure of trade balance deficit². Three out of the 19 sections of the combined nomenclature explained the largest part of the foreign trade deficit: *V – Mineral products, VI – Chemical products, and XVI – Machinery and mechanical appliances; electrical equipment; sound and image recorders and reproducers*. The foreign trade deficit recorded by the three sections remained almost unchanged between 2002 and 2007, accounting for around 10% of GDP (figure 9). We think that this might be considered intuitively as a structural component of the total foreign trade deficit.

Figure 9 – Trade balance on the main components of the Combined Nomenclature

² The current analysis is based on combined nomenclature statistical classification, which includes 19 sections. All shares in GDP are computed using 12 months rolling data.



Source: NIS, author's calculation

The high share of *XVI – Machinery and mechanical appliances; electrical equipment; sound and image recorders and reproducers* (around 5% of GDP) in the trade balance deficit is a result of increasing investments activity in the economy, especially as an effect of the high FDI's inflow in the economy in the last years. This will create a sustainable base for real convergence of the economy and will enhance export capacity in the future.

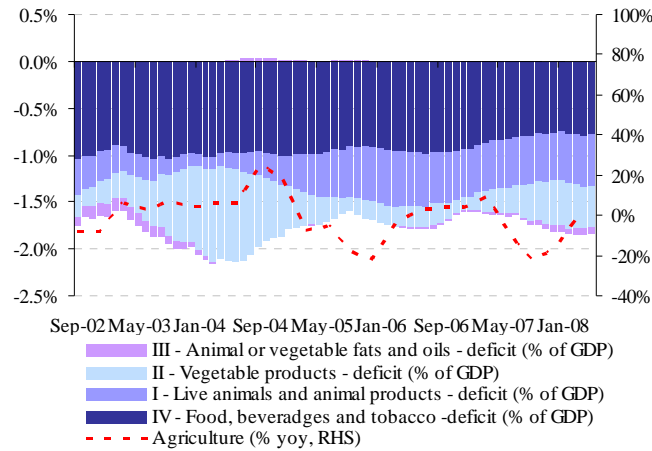
Romanian economy relies too much on energy consumption. Energy intensity of the economy is one of the highest in EU27, as gross inland consumption of energy divided by GDP is more than 5 times higher in Romania than the EU27 average and more than 6 times higher than the Euro area average. From the total energy consumption, 45% is imported, and from *Mineral products* (around 3.3% of GDP trade balance deficit, figure 9), 60% of the oil consumption and 30% of the gas consumption is from imports.

Chemical products are generating a trade balance deficit of around 2.3% of GDP, out of which pharmaceutical products accounted for around 50% of the section's deficit (1.1% of GDP).

The foreign trade deficit in the three sections seems to have a very strong persistence, which means that it would continue to put strong pressure on the foreign trade deficit in the next period. As a result, we see important limits for a rapid decrease in the foreign trade deficit. Also, developments of the real exchange seem to have little impact on the dynamics of deficit for these three sections.

There were also another four sections of the combined nomenclature where the foreign trade deficit (as a % of GDP) remained roughly unchanged between 2002 and 2007: *I – Live animals and animal products; II – Vegetable products; III – Animal or vegetable fats and oils; and IV – prepared foodstuffs, beverages and tobacco* (figure 10). These four sections accounted for a cumulated foreign trade deficit of around 1.7% of GDP between 2002 and 2007. However, the foreign trade deficit for the vegetable products displayed large volatility. In this case, the deficit moved in line with the imports (especially cereals and edible vegetables) that increased following a bad agricultural year. We think that the contribution of these sectors to the foreign trade deficit should decrease marginally in the next years. The Romanian agriculture would benefit from important funds from the European Union that are likely to improve its productivity and to help to enhance the value of the agricultural land, as Romania has a huge agricultural potential.

Figure 10 – Trade balance for agricultural products (% of GDP)

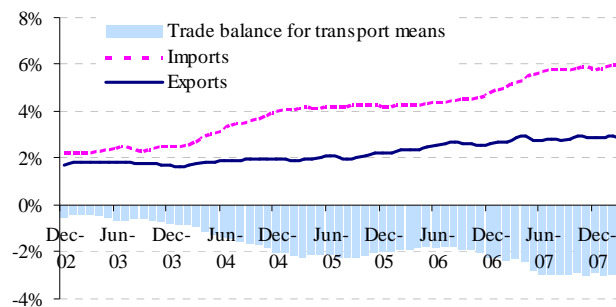


Source: NIS, author's calculation

We turn now our attention to the sections that brought the fastest deterioration in the foreign trade deficit.

Transport means had the highest contribution to the increase in trade balance deficit. The highest contribution is coming by far from the *Vehicles, tractors and other ground vehicles* component. While the share of exports in GDP started to increase sharply in 2004-2005, the imports increased much faster, creating an increasing trade deficit, which reached 3% of GDP in 2007 (figure 11). The growth of imports accelerated at the beginning of 2007 after the removal of custom duties with EU and the reduction of custom duties with extra EU countries. Nevertheless, some big international car producers announced recently that they will set up production capacities in Romania. As a result, most likely the trade deficit for transport means would decrease substantially in the coming years and eventually the deficit could switch to a surplus in the foreseeable future.

Figure 11 – Trade balance for Transport means (% of GDP)

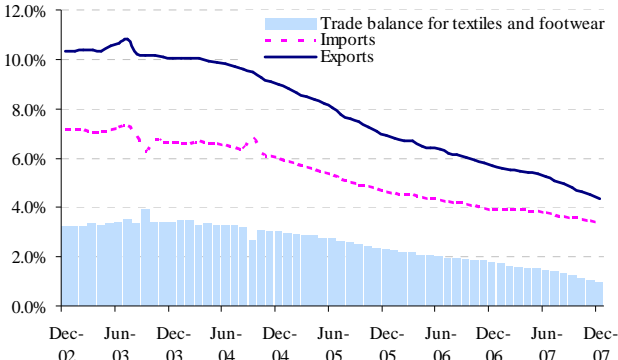


Source: NIS, author's calculation

Another factor that explains the large increase in the foreign trade deficit is the decline in the sectors of textiles and clothing articles (*XI – Textiles; XII – Footwear accessories*). There are traditional industrial branches and they accounted for a large share in total domestic industrial output and in Romania's exports until 2004. The labor activity, with a very low value added and low margins, used to play a very important role in the case of these sectors (in fact Romania exported only the domestic cheap labor force). The decline of these sectors accelerated rapidly at the end of 2004 when the international trade with textiles was liberalized for the Chinese exports. The foreign trade balance showed a surplus of around 3% of GDP at the end of 2004 in the case of these two sections, but the

surplus is now only at 0.9% of GDP (figure 12). We don't exclude a further deterioration in this component of the foreign trade balance, especially given the recent increases in labor costs, which could lead to new relocation activity of producers in cheaper labor force countries.

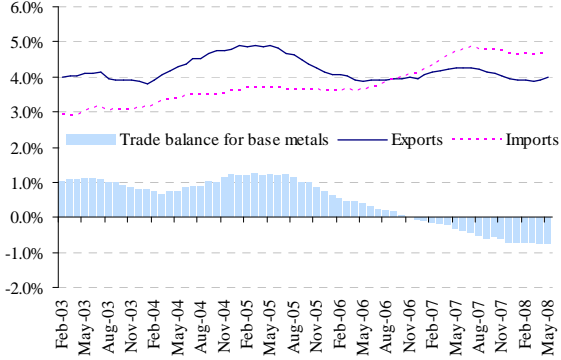
Figure 12 – Trade balance for Textiles and Footwear (% of GDP)



Source: NIS, author's calculation

A decline in the foreign trade surplus was also recorded in the case of the section XV - *Base metals and articles of base metal*. Foreign trade section within this section resulted in a surplus of around 1% of GDP until the end of 2005, but currently the section record a foreign trade deficit of around 0.5% of GDP (figure 13). The explanation could be related to the construction boom in Romania since 2005-2006 and to the low efficiency (due to the huge energy intensity) of this sector. In fact, the exports' share in the GDP is now at the same level as in 2002, while share of imports is now close to 5% of GDP (up from 3% at the end of 2002).

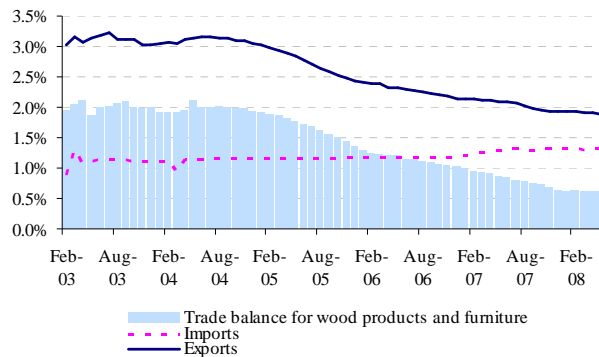
Figure 13 – Trade balance for Base metals (% of GDP)



Source: NIS, author's calculation

There are another two sections with important trade balance deterioration. *Wood products and Furniture* has decreased their cumulated surplus from 2% of GDP in 2003-2004 to 0.6% of GDP in 2007 (figure 14). This trend was due mainly to the decreasing exports (as % of GDP) from above 3% of GDP in 2003-2004 to less than 2% of GDP in 2007, mainly as a result of the appreciating currency starting end of 2004.

Figure 14 – Trade balance for Wood products and Furniture (% of GDP)

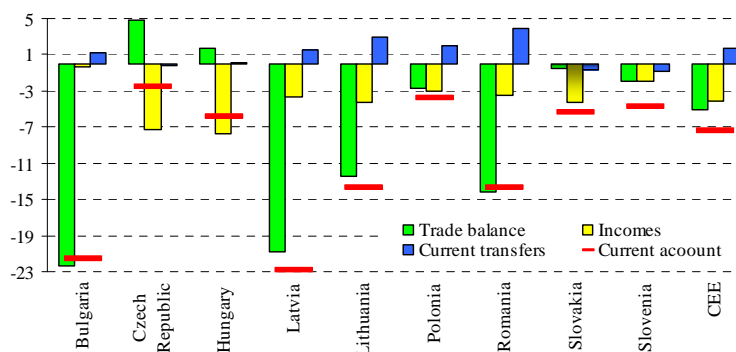


Source: NIS, author's calculation

2.2 Income balance and current transfers

As we stated above, the main driver for the CA deficit in Romania is the development in trade balance. The second component of the CA, the income balance, had also a negative contribution. We could expect the income balance to increase its negative contribution in the coming years, as we can anticipate that the repatriated profits and dividends to be paid for FDIs to increase (due to the high stock of FDIs and given the experience from other countries from the CEE, figure 15, Czech Republic experiencing a CA deficit despite of a trade balance surplus).

Figure 15 – The components of the CA in CEE countries (2007, % of GDP)



Source: IMF. Note: CEE: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Macedonia, Poland, Romania, Slovakia, Slovenia.

The last component of the CA, current transfers, reflecting mainly remittances from Romanians working abroad and current transfers with EU budget, is positive. The net current transfers had a surplus of 4.2% of GDP in 2008 Q1, accounting for 30% of the CA deficit. Nevertheless, the positive contribution stemming from this component decreased in the last years, the remittances growth decelerating. Moreover, the EU budget contribution of Romania (around 1% of GDP in the next years) and the fact that the main part of EU funds for Romania would be accounted on the capital account would lead to a decrease in the positive contribution of current transfers.

4. The quantitative assessment of the CA deficit

4.1 Macroeconomic balance approach

In this approach (Isard and others, 2001 and IMF, 2006a, 2008, Debelle and Faruqee, 1996), the CA balance development is explained by the saving-investment balance from the economy, so the CA balance is explained by factors which are affecting the saving and investment

4.1.1 The data

Based on the empirical literature, the following fundamentals for the equilibrium CA deficit (as % of GDP) were selected:

- **Fiscal balance (Def).** A higher fiscal balance would lead to an increase in the saving in the absence of a full Ricardian equivalence. The expected sign is positive, a higher budget deficit leading to a higher CA deficit. In countries with a more developed financial system and less liquidity constraints in the private sector, the impact of the fiscal balance on CA balance could be lower. The variable is expressed as percentage of GDP.
- **Demographics (pop and dep).** A higher share of inactive population could lead to a reduction in savings and CA balance deterioration. We used two alternative measures for dependency ratio: the share of population above 65 years old on total active population (15-65 years old) and the rate of growth of the population (as a proxy for the young age dependency, i.e. the ratio of population between 0-15 years old and to the active population). The expected sign is negative, an increase in the dependency ratio leading to a decrease in saving rate and consequently to deterioration in the CA balance.
- **Net external assets (NFAM).** The level of net external debt (net international investment position) of a country could affect the CA in 2 opposite directions. On one hand, the countries with a higher level of NFA can afford to run higher CA deficits without affecting their solvency. On the other hand, a higher NFA means higher income inflows from abroad. The empirical studies favor the later effect to be more pronounced. The variable is measured as % of GDP from the beginning of the period and the data source is Lane and Milesi-Ferretti (2006) and IMF.
- **Oil trade balance (Fuel).** A high price for oil will lead to an improvement in trade balance for oil exporting countries and will lead to deterioration in oil importing countries, caeteris paribus. The variable is the oil trade balance expressed as % of GDP. The expected sign is positive.
- **Relative income (Reli).** The poorer countries should import capital, both financial and physical in order to sustain development. The variable is used as GDP per capita at PPP as percentage of GDP per capita in US. In the developing process the countries should experience current account deficits. As soon a certain level of development will be reached, the CA should switch to a surplus in order to sustain the payments for the accumulated external debt and will export capital to the less developed countries (see also Aristovnik, 2008).
- **Economic growth (growth).** At the same level of development, the countries with higher GDP growth should experience higher CA deficit if the growth is based on foreign investments (Obstfeld and Rogoff, 1996). The variable is used as growth in real GDP per capita. The expected sign is negative.
- **Foreign direct investments (FDI).** Higher FDIs would lead to an increase in the CA deficit through higher imports (Herrmann and Jochem, 2005). The variable used is FDIs as % of GDP.
- **Remittances (Rem).** For some developing countries, the remittances from their workers abroad are an important source for disposable income which can be saved or spent. The variable used is a dummy variable with a value of 1 if remittances are higher than an arbitrary level of 5% of GDP and 0 otherwise.
- **Economic crises.** When economic crises occur, usually there is a sharp adjustment in the CA deficit due to a contraction in economic activity and/or a reduction in external financing. We used two dummy variables for Asian crisis *ACR_DUMMY* (for China, Hong Kong, India, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand for 1997-2004 period) and for banking crises episodes from different countries *BCR_DUMMY* (the source of data is Demirguc-Kunt and Detragiache, 2005, and Gruber and Kamin, 2007).

The estimations were performed with panel data. The data source is IMF, World Bank and United Nations. The period covered is 1980-2007, with annual data. We performed the estimations for two samples: the first one, a larger one which includes 118 developed and developing countries (a

larger sample than in Rahman, 2008); and the second one which include a smaller sample of 56 countries (21 developed countries and 35 developing countries excluding Africa).

4.1.2 Estimation results

The results are presented in table 4. The signs are in line with the expectations, confirming the economic theory. The coefficients are in the main part statistically significant at 1% confidence level.

Table 3 – The results of estimations for the equilibrium current account

	MB1	MB2	MB3	MB4	MB5
	Pooled	Fixed effects	Fixed effects	Fixed effects	Fixed effects
<i>Dependent Variable:</i>	CA_?	CA_?	CA_?	CA_?	CA_?
<i>Sample:</i>	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007
<i>Cross-sections included:</i>	118	118	118	56	56
<i>Total pool observations:</i>	1867	1867	1867	1224	1224
DEF_?	0.243*	0.157*	0.163*	0.232*	0.231*
POP_?	-0.259*	-0.317*	-0.316*	-1.548*	-1.486*
DEP_?	-0.093*				
FDI_?	-0.008	-0.066*	-0.068*	-0.018	-0.014
REM_?	0.125	0.326	0.379		
RELI_?	0.023*	-0.358*	-0.238*	-0.049**	-0.343*
RELI_?^2		0.001**			0.002*
NFAM_?	0.053*	0.038*	0.037*	0.050*	0.047*
FUEL_?	0.200*	0.326*	0.326*	0.564*	0.511*
GROWTH_?	-0.131*			-0.162*	-0.136*
ACR_DUMMY_?	4.062*	5.987**	5.845*	5.293*	5.562*
BCR_DUMMY_?	1.225*	0.600*	0.628**		
R-squared	0.403	0.635	0.635	0.64	0.647
CA echilibru Romania 2007	-4.38	-8.43	-8.07	-8.53	-9.15

Note: * Statistically significant at 1% confidence level. ** Statistically significant at 5% confidence level.

The size of coefficients is similar with those obtained in other similar studies (Rahman, 2008, Chinn and Ito, 2005, 2007, CGER - IMF, 2006, Abiad and al, 2007).

Here are some comments regarding the estimated coefficients:

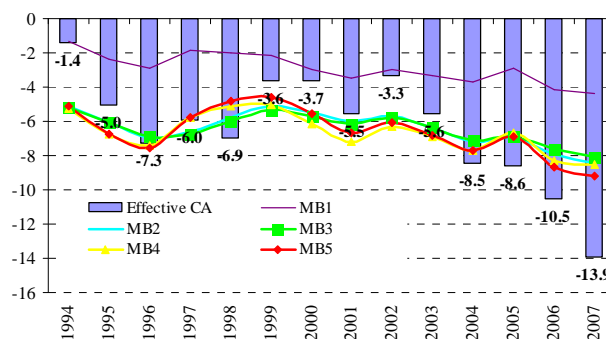
- The fiscal balance coefficient shows that an increase in the fiscal balance deficit with 1 pp of GDP, the current account deficit will increase with 0.157%-0.243% of GDP. The results are consistent with other empirical studies which have a coefficient between 0.15-0.4.
- A higher dependency ratio will lead to deterioration in CA balance. A 1% growth of population will deteriorate de CA balance with 0.26-1.55% of GDP, depending on the model.
- The FDIs coefficient is statistically significant at 1% confidence level only for the models MB2 and MB3. Moreover, the size of the coefficient is small, 1 pp increase in FDIs share in GDP will lead to an increase of the CA deficit of 0.008%-0.066%. This could be explained by a heterogeneous effect of FDIs on CA in the countries from the sample, reducing the total impact.
- The coefficient for NFA implies that when the net foreign assets are increasing with 10% of GDP, the current account balance will improve with 0.37%-0.53% of GDP, being in line with the empirical literature (Lane and Milesi-Ferretti, 2002, Chinn and Prasad, 2003, IMF, 2008).
- The coefficient of oil trade balance shows that when there is an increase of oil balance of 1% of GDP there will be an increase of the CA balance of 0.2-0.56% of GDP. The higher coefficient for fixed effects models shows that there is a negative correlation between the oil balance and the

fixed factor. The oil exporting countries spend a part of the incomes importing some other goods, leading to a lower surplus in the CA.

- The coefficient for relative income is debatable even from theoretical point of view. In the model MB1, if a country will have a higher GDP per capita relative to US, it will experience a higher CA balance. In the models MB3 and MB4, an increase in relative income will deteriorate the CA balance. The relationship is more complex, being expected to have a threshold for the relative income when the impact will change. In order to capture this effect, we introduced also the relative income squared in regression.
- The coefficient of economic growth show that when GDP per capita increase with 1%, the CA balance will deteriorate with 0.13-0.16% of GDP.
- The Asian crises and banking crises lead to a sharp improvement in the CA balance of 4-6% of GDP respectively 0.6-1.2% of GDP, confirming the adjustment effect of the crises.

In Romania's case the results show an equilibrium CA deficit between 4.4% and 9.2% of GDP in 2007, depending on the model which is considered. Nevertheless, the fixed effects models are more appropriate, meaning that we can say that the equilibrium CA deficit was between 8.1-9.2% of GDP, depending on the model. The results are similar with those obtained by Rahman (2008). Also, the results suggest that starting with 2004 the effective CA deficit was higher than the equilibrium level based on fundamentals (figure 18).

Figure 16 – The effective and the equilibrium CA deficit (% of GDP)



4.2 The intertemporal approach and the persistence of the CA deficit

The intertemporal approach of the CA deficit was initially proposed by Sachs (1981) and extended by Obstfeld and Rogoff (1995, 1996). This approach is based on the saving and investment of a representative agent which is smoothing consumption over time borrowing and lending from/to abroad. A country will experience a CA deficit if temporary will have a high investment rate or a lower saving rate. This approach is appropriate for the countries which are in the convergence process which are experiencing high rates of investment which are fuelling the CA deficit.

The model used is similar with Bussiere, Frazscher and Muller (ECB, 2004) and Zanghieri (2004). Their model introduces the empirical observation of the persistence of the CA deficit and the absence of a full Ricardian equivalence.

4.2.1 The model

The theoretical model is based on the permanent income theory, the temporary shocks to income being offset by temporary variations in aggregate savings and current account (Obstfeld and Rogoff, 1995, 1996).

The economy is a small open economy, with a constant international interest rate. We assume that the economy is populated by a continuum of individuals normalized to one. Bussiere, Frazscher, and Muller (ECB, 2004) introduced the possible heterogeneity of the population.

The representative agent is maximizing his utility function on his lifetime:

$$\sum_{j=0}^{\infty} \beta^j E_t(u(C_{t+j})) \quad (1)$$

where β is the discount factor, $0 < \beta < 1$, E_t is the expectations operator conditional on the information set at time t , and C is private consumption.

The budget constraint is:

$$\begin{aligned} C_t + I_t + G_t + B_{t+1} &= Y_t + (1+r)B_t \quad (2) & Y - \text{GDP}; \\ B_{t+1} - B_t &= Y_t + rB_t - C_t - I_t - G_t \quad (3) & B - \text{net financial assets}; \\ & & I - \text{investments}; \\ & & G - \text{Government consumption}; \\ & & CA - \text{current account balance}. \end{aligned}$$

Applying the expectations operator on relation (2), we can obtain the following intertemporal constraint:

$$-(1+r)B_t = \sum_{j=0}^{\infty} \left(\frac{1}{1+r} \right)^j E_t(Y_{t+j} - C_{t+j} - I_{t+j} - G_{t+j}) + \lim_{T \rightarrow \infty} \left(\frac{1}{1+r} \right)^T E_t(-B_{T+1}) \quad (4)$$

Iterating and imposing a "no-Ponzi game" condition gives:

$$\lim_{T \rightarrow \infty} \left(\frac{1}{1+r} \right)^T E_t(-B_{T+1}) = 0 \quad (5).$$

From equation (4) we obtain:

$$-(1+r)B_t = \sum_{j=0}^{\infty} \left(\frac{1}{1+r} \right)^j E_t(Y_{t+j} - C_{t+j} - I_{t+j} - G_{t+j}) = \sum_{j=0}^{\infty} \left(\frac{1}{1+r} \right)^j E_t(TB_{t+j}) \quad (6).$$

According with (6), the external debt stock should be equal with the present value of the future trade balance surpluses.

We can derive the optimal consumption maximizing relation (1) and under the budget constraint (2). We obtain:

$$E_t(U(C_{t+j})) = (1+r)\beta E_t(U(C_{t+j+1})), \quad j = 0, 1, \dots$$

For $j=0$:

$$U(C_t) = (1+r)\beta E(U(C_{t+1})) \quad (7).$$

The standard intertemporal model is also modified by Bussiere, Frazscher and Muller (ECB, 2004) by introducing two types of agents. In the first category are the agents which have liquidity constraints and they spend their entire disposable income each period and the second category which have an optimal behavior with respect to the intertemporal allocation of consumption. The second category of agents have also *habit formation persistence*, the intra-period utility depends not on actual consumption as such, but on the degree by which actual consumption exceeds some fraction γ of last period's aggregate consumption.

For deriving the optimal level of the current account deficit, we use the assumption that a permanent change in the current account is materializing only in the presence of a *habit formation*, with a gradual impact in time on the current account. The structural level of the current account is the level without cyclical influence and can be considered to be normal from intertemporal point of view and with some degree of persistence.

According with Obstfeld and Rogoff (1995, 1996) we define the current account as the increase in residents' claims on foreign income: $CA_t = B_{t+1} - B_t$. In terms of national accounts these net

savings of the open economy correspond to the sum of net income (returns on net foreign assets) rB_t and net output $NO_t=Y_t-I_t-G_t$ minus aggregate consumption:

$$CA_t = rB_t + NO_t - \overline{C}_t \quad (8)$$

We can derive the following dynamic model of current account determination:

$$CA_t = (1-\lambda)\gamma CA_{t-1} + \lambda(T_t + rB_t^G - G_t) + \frac{\gamma(1-\lambda)}{1+r} \Delta NO_t + (1-\lambda)\left(1 - \frac{\gamma}{1+r}\right)(NO_t - E_t \overline{NO}_t) \quad (9)$$

where:

CA – current account;

T – budget revenues;

B_t^G – budget net assets;

G_t – budget expenses;

NO – net output $NO=Y-I-G$;

$E_t \overline{NO}_t$ - the expected value of permanent level of net output;

λ the share of non Ricardian agents and γ is the *habit persistence*.

We can observe that if λ and γ are zero, equation (9) becomes: $CA_t = NO_t - E_t \overline{NO}_t$ which reflects that if the Ricardian equivalence is valid and there is no habit persistence, the CA deficit reflects only net output deviations from its permanent value. If λ and γ are different from zero, the CA deficit depends on: its previous value, the fiscal deficit, first difference of net output and the deviation of net output from its permanent value.

4.2.2 Data and results

As we already mentioned, we used in the estimations the methodology proposed by Bussiere, Frazscher and Muller (ECB, 2004). They used panel data for OECD countries plus the New Member States (from the 2004 and 2007 accession waves) for the period 1980-2002. In this paper we used a larger sample (138 countries) for the period 1980-2007 (1995-2007 for developing countries). The OECD countries are used as a benchmark. The main source for data was IMF and World Bank.

According with the theoretical model, the variables used to explain the dynamics in the CA deficit (as % of GDP) are:

- **The previous value of the CA ($CA(-1)$)** – the expected sign is positive;
- **Fiscal balance as % of GDP (Def)** - the expected sign is positive;
- **Relative income ($YPPPC$)** derived as $100 \cdot \ln(\text{country}_{it} / \text{OECD}_t \text{ average})$ for OECD countries and $\ln(\text{country}_{it} / \text{average for the entire sample}_t)$ for the other countries, the primary variable being GDP *per capita* in USD at PPP. The difference between the two methods of calculation is explained by the convergence process. The expected sign is positive, a GDP per capita below average being associated with a CA deficit.
- **Investment rate ($INVC$)**: $\text{country}_{it} - \text{OECD average}_{it}$ for the entire sample. The primary variable is gross capital formation as % of GDP. The expected sign is negative, an investment rate above its permanent value being associated leading to a deficit of the CA.
- **Public spending rate ($GOVEC$)**: $\text{country}_{it} - \text{OECD average}_{it}$ for the entire sample. The primary variable is the budget expenditure as % of GDP. The expected sign is negative, a spending rate above its permanent value being associated leading to a deficit of the CA.
- **Δ Net output as % of GDP (Dno) calculated as $\Delta(\text{GDP} - \text{Investment} - \text{Government consumption})/\text{GDP}$** . The expected sign is positive.
- **Real effective exchange rate ($REER$) calculated as $\ln(\text{REER country}_{it}/\text{average country}_i)$** . The primary variable is REER (based on CPI), being introduced only in the alternative specification.

The expected sign is negative, an exchange rate above trend (increase=appreciation) being associated with a CA deficit.

Table 5 presents the CA deficit, the budget deficit, the investment rate and the Government expenditure rate in the New Member States plus Turkey and Croatia, but also for OECD countries. Beside Slovenia, which experienced low CA deficit, the other CEEC12+2 experienced high deficits, the average being -5.9% of GDP in comparison with a surplus of 0.2% din GDP in OECD countries.

Table 4 – The indicators used for the period 1995-2007

	Current account (% of GDP)			Fiscal balance (% of GDP)	GDP per capita (USD at PPP)	Investment (% of GDP)	Government expenditure (% of GDP)
	Average	Max	Min	Average	Average	Average	Average
Bulgaria	-6.9	4.1	-21.4	1.0	7,624	19.2	38.7
Cyprus	-3.8	3.0	-7.1	-3.2	19,093	18.5	40.2
Czech Republic	-4.1	-1.6	-6.3	-2.2	17,318	26.8	40.7
Estonia	-10.2	-5.2	-16.0	0.9	12,899	29.6	35.8
Croatia	-7.2	-2.9	-14.1	-4.5	11,109	26.1	49.9
Hungary	-6.9	-4.6	-8.4	-5.2	14,192	22.6	50.7
Lithuania	-8.5	-4.7	-13.0	-2.7	11,015	22.3	34.9
Latvia	-11.2	-4.7	-23.3	-1.1	10,245	25.9	36.5
Malta	-5.6	2.5	-12.3	-6.0	19,111	20.9	48.8
Poland	-3.7	-1.6	-7.4	-2.9	11,674	20.9	21.9
Romania	-6.9	-3.3	-13.9	-2.9	7,745	21.5	33.1
Slovakia	-6.7	-0.9	-9.5	-5.5	13,370	28.0	47.6
Slovenia	-1.7	1.1	-4.8	-1.0	19,527	25.3	45.9
Turkey	-3.0	2.3	-8.1	-6.0	6,585	20.0	26.3
CEEC_12+2	-5.9	4.1	-23.3	-2.8	12,297	23.3	39.4
OECD	0.2	17.2	-15.3	-1.8	22,277	21.3	44.9

The estimated model is the following dynamic model:

$$y_{it} = \alpha y_{it-1} + \beta X_{it} + u_{it} \quad (10) \text{ where } i = 1 \dots N \text{ and } t = 1 \dots T \text{ are the country, respectively the time.}$$

The dependent variable y is the CA deficit as % of GDP. The model is dynamic due to the presence of the previous value of dependent variable. The explanatory variables X are the change in net output, the fiscal balance, relative income, the relative investment ratio and the relative ratio of public expenditure.

The estimations were performed with 3 different econometric methodologies in order to avoid some econometric problems and to obtain consistent and unbiased estimators. The Least square dummy variable (LSDV) could lead to biased estimators due to the correlation between the errors and the previous value of the dependent variable when we use limited samples (the „Nickell bias”, Nickell, 1981). In this paper we used a higher sample, much higher than the one used by Bussiere, Frazscher and Muller (ECB, 2004).

Alternatively, we used 2 methods which can diminish the disadvantages from the LSDV method. The first one is the two-stage least squares or instrumental variables (IV) or Anderson-Hsiao estimator (1982). The second one is based on Generalized Moments Variable (GMM) and was developed by Arellano and Bond (1989).

The estimation results are presented for the baseline specification in table 6. We should observe that despite that in the case of some estimators the differences are high, for long term relations the differences are much lower, excepting IV. All the estimators are statistically significant and have the expected sign, excepting the coefficient for fiscal balance in the case of IV which is low and not statistically significant. Also, R^2 is high for all estimations.

Table 5 – The dynamic model, baseline specification

	LSDV		IV		GMM	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
CA(-1)	0.45	29.43	0.46	11.68	0.39	992.56
DEF	0.30	11.18	0.02	0.30	0.39	839.99
DNO	0.03	5.88	0.18	4.27	0.08	471.55
YPPPC	0.02	2.51	0.02	2.39	0.001	81.93
INVC	-0.42	-19.50	-0.18	-3.77	-0.56	-556.98
GOVEC	-0.03	-1.41	-0.14	-3.35	-0.05	-148.21
R ²	0.71		0.64			

The coefficient of the previous value of the CA is around 0.4, being in line with the existing literature (Chinn and Prasad, 2003, Bussiere, Frazscher and Muller, 2004, Copaciu and Racaru, 2006). Between 37-46% from the previous value of the CA is reflected in the current CA, showing a certain degree of persistence and the current account does not fully respond to changes in fundamentals instantaneously.

From the increase in fiscal deficit around 30% is reflected in an increase in the current account deficit. Moreover, the long term impact is higher (table 8). This confirms the absence of the full Ricardian equivalence. The increase in net output is consumed in the main part, only a small part being reflected in higher savings and consequently in the current account.

The coefficient of relative income shows that a per capita income below the average will be associated with a current account deficit. A per capita income of 10% below the average lowers the current account by around 0.2 % of GDP (the long run effect will be more than twice as much). The poorer countries can be assumed to grow more rapidly than the average and are thus borrowing based on expected future income.

An investment and a public spending ratio 1% above their "permanent" (average) levels are expected to induce an current account deficit higher with 0.18-0.42% of GDP, respectively 0.03-0.14% of GDP.

In the next step we introduced also the Real Effective Exchange Rate as explanatory variable, obtaining an alternative estimation. The influence of REER is low, an overvalued REER with 10% lead to a higher CA deficit but only with 0.2-0.3% of GDP (table 7). The long term effect is higher (table 8).

Table 6 – The dynamic model, alternative specification

	LSDV1		GMM1	
	Coefficient	t-stat	Coefficient	t-stat
CA(-1)	0.43	25.89	0.30	11.96
DEF	0.27	10.05	0.29	8.23
DNO	0.04	7.36	0.05	4.50
YPPPC	0.02	2.73	0.03	1.20
INVC	-0.45	-19.59	-0.40	-8.75
GOVEC	-0.06	-2.66	-0.12	-2.96
REERC	-0.03	-6.88	-0.02	-2.50
R ²	0.73			

We calculated also the long term relationship (table 8), deriving the structural deficits, meaning the deficits which can be considered to be “normal” from intertemporal point of view and when cyclical factors disappear. We used the methodology of Isard et al (2001). So, the long term coefficients were calculated as $\frac{\beta}{1-\alpha}$. The change in net output was ignored.

Table 7 – The long term coefficients and the structural CA deficit in Romania in 2007

	LSDV	TSLs	GMM	LSDV1	GMM1
DEF	0.545	0.046	0.635	0.480	0.604
YPPPC	0.028	0.042	0.002	0.032	0.087
INVC	-0.767	-0.324	-0.925	-0.781	-0.866
GOVEC	-0.057	-0.259	-0.088	-0.107	-0.223
REERC				-0.053	-0.036
<i>Structural CA deficit in Romania in 2007</i>	<i>-10.7</i>	<i>-10.9</i>	<i>-6.3</i>	<i>-10.3</i>	<i>-7.8</i>

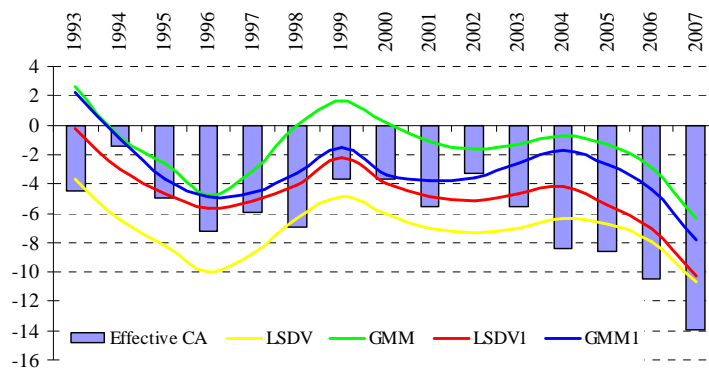
Based on the estimated long term relationships we can say that the structural current account deficit in 2007 was between 6.3-10.9% of GDP, depending on the model taken into consideration. The structural level was lower than the effective level meaning that there was an excessive CA deficit, which is in line also with the findings from the previous sections of the paper. Moreover, since 2004 the deficit can be considered to be excessive (figure 19).

We derived also the structural current account deficit for the other CEE countries as well for Baltic States in 2007 (table 9). According with our estimations, Romania, Bulgaria and the Baltic States experienced excessive deficits, at the same time, the other countries had CA deficits very close to the equilibrium levels.

Table 8 – Structural and effective current account deficit in 2007

	Effective CA deficit in 2007	Structural CA deficit in 2007 (based on LSDV1)
Bulgaria	-21.37	-16.31
Czech Republic	-2.50	-2.31
Estonia	-15.99	-10.31
Hungary	-5.60	-6.76
Lithuania	-13.01	-11.09
Latvia	-23.34	-15.21
Poland	-3.68	-3.53
Romania	-13.93	-10.30
Slovakia	-5.33	-4.99
Slovenia	-4.82	-3.42

Figure 17 – Development in the effective and structural CA deficit



The contributions of the explanatory variables (based on models LSDV1 and GMM1) on the structural CA deficit in Romania in 2007 were the following (table 11):

- A fiscal deficit of 2.3% of GDP led to a CA deficit of -1.1% respectively -1.4% of GDP;
- A relative income below the sample average 2007 (the GDP per capita USD at PPP was 11419 dollars, compared with the sample average 14109 dollars) led to a CA deficit of -0.7% respectively -1.8% of GDP;

- An investment rate much above the OECD average led to a CA deficit of -4.76% respectively - 5.27% of GDP;
- An spending rate below the OECD average (the “permanent” value) led to a reduction of CA deficit of 0.97% respectively 2.04% of GDP;
- The real effective exchange rate overvalued compared with the average led to a deficit of 1.98% respectively 1.34% of GDP.

Table 9 – The contributions of explanatory variables to the structural CA deficit in Romania in 2007

	Value	Contribution to the structural CA deficit based on LSDV1 model	Contribution to the structural CA deficit based on GMM1 model
Fiscal balance	-2.30	-1.10	-1.39
Relative income	-21.15	-0.69	-1.83
Relative investment	6.09	-4.76	-5.27
Relative government expenditure	-9.13	0.97	2.04
Relative real effective exchange rate	37.59	-1.98	-1.34
Fixed effect		-2.75	
Structural CA deficit		-10.30	-7.80

5. Conclusion

The present paper assessed the sustainability of the current account deficit for CEE countries, particularly for Romania, using a qualitative and a quantitative analysis. The paper estimated the structural CA deficit based on fundamentals. In the first part of the paper, using a qualitative assessment, we emphasized the structure of the trade balance deficit and his main drivers based on the Combined Nomenclature. Three out of the 19 sections of the combined nomenclature explained the largest part of the foreign trade deficit: *V – Mineral products*, *VI – Chemical products*, and *XVI – Machinery and mechanical appliances; electrical equipment; sound and image recorders and reproducers*. The foreign trade deficit recorded by the three sections remained almost unchanged between 2002 and 2007, accounting for around 10% of GDP. We think that this might be considered as a structural component of the total foreign trade deficit. The foreign trade deficit in the tree sections seems to have a very strong persistence, which means that it would continue to put strong pressure on the foreign trade deficit in the next period. As a result, we see important limits for a rapid decrease in the foreign trade deficit. Also, developments of the real exchange seem to have little impact on the dynamics of deficit for these three sections.

We discussed also in the paper some competitiveness issues related to exports. Romania experienced an increase in its market share in world exports in the last years, which means that the deterioration of the trade balance is not driver by a loss in competitiveness. However, the performance of Romania is weaker than in the case of other countries from the region as the market share of Romania in CEE countries exports decreased in the last period. The structure of exports improved in the last couple of years in favor of higher technology products with higher value added.

In the second part of the paper we performed a quantitative analysis using two models used in the literature in order to calculate the level of current account deficit based on fundamentals or the structural current account deficit. In the Romania’s case, the results obtained using the macroeconomic balance approach showed that based on panel data estimation the equilibrium CA deficit in 2007 was 8.1-9.2% of GDP, depending on the model used. In an alternative approach, using the intertemporal version of the CA, the results showed also that the CA in Romania became an excessive one, the structural current account for 2007 being between 6.3% and 10.9% of GDP, depending on the model used and the econometric procedure.

Regardless the approach used in this paper the results emphasized an excessive CA deficit in Romania in the last years. The relatively low income per capita and the high rate of investment are the main drivers of the structural current account deficit, being perfectly rational to have a CA deficit for a transition country like Romania. Nevertheless, the CA deficit became excessive in some transition countries from Europe, including Romania.

Based on our results, we can say that the main driver of the CA deficit in Romania as well as for other transition countries is the convergence process. The qualitative and quantitative analysis performed in this paper showed that there is a downward rigidity in the CA deficit of Romania at 10% of GDP, a decrease below this level being possible only with a slowdown in the investment activity, with a high cost in terms of real convergence. The high CA deficit in Romania is structural and persistent at his origin, as it reflects an increasing need for investments, both in private and public sector, in order to sustain the catching-up process towards the EU development level, and a low level of income biased towards a consumption behavior and in a less extent towards savings. In order to adjust the current account deficit, the public policies should be oriented towards stimulating savings otherwise the current account deficit would be high and possible increasing for a longer period of time.

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