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Financial Liberalization and Current Account Developments in New EU Member States

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***Abstract*:** *Due to negotiations on accession to the EU, the new EU member states from Central and Eastern Europe went through the financial opening. In the pre-crisis period followed by high liquidity in global markets, most of the EU new member states experienced rapid credit growth, which conditioned the appreciation of the exchange rate. External imbalances and vulnerabilities built up. Countries experienced deterioration in their current accounts. This paper investigates the link between financial openness, real effective exchange rate, financial crisis and current account balance within the Panel Auto-Regressive Distributed Lag (ARDL) framework for 11 new European Union members during the period from 1999 to 2016. The results obtained by the use of pooled mean group estimator (PMG) show that in the long run, financial openness has a significant negative impact on the current account balance. In the short run, crisis significantly influences the current account balance having a positive sign.*

***Keywords*:** European Union; current account balance; financial openness; real effective exchange rate; pooled mean group estimator

JEL Classification: C33, F32, F41

Introduction

The ratio of the current account balance to gross domestic product shows the country's level of international competitiveness[1]. Most of the countries included in this analysis have deficits in their current accounts. There has been a capital inflow into

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these countries (debtors) by creditor countries, EU members. De Grauwe (2015) observes that countries that had a deficit in the pre-crisis period became the debtors[2]. It means that the sudden illiquidity of debtor countries has forced them to seek financial assistance from the Eurozone member states that have made current-account surpluses. However, debtor and creditor countries could not agree on responsibility for the accumulated debt. Countries with current account surpluses and deficits disagreed even on who should implement the policies to reduce the current account imbalances. The states with current account deficit were forced to implement tough austerity measures like spending cuts and tax increases. The creditor countries successfully transferred the more significant part of the burden onto the debtor countries. As it is usual in debt crises, those countries were pushed into a double-dip recession.

This paper assesses the long-term and short-term relationship between the current account balance and some key determinants in new EU member states. Countries used in the analysis for the period from 1999 to 2016 are Bulgaria, Czech, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia, and Slovenia.

The contribution of this paper to the existing literature is to give a better understanding of the interplay effects of the financial liberalization and exchange rate on the current account developments in new EU member states. The obtained results can be helpful for policymakers to create and perform adequate economic policy measures to achieve a sustainable level of the current account balance.

The remainder of the paper is organized as follows. Section 2 briefly provides a literature review. The data and methodology used in the econometric analysis are described in Section 3. Section 4 presents empirical findings with the discussion of the results. Finally, concluding remarks and directions for future research are provided in Section 5.

Literature Review

The old question is why some countries make persistent current account surpluses while others make deficits. From a global perspective, these imbalances are not the only source of economic conflict among countries but have a widespread impact on creating financial crises. Empirical studies that examine the relationship between the current account and its key determinants, through various methodological patterns, are quite numerous.

Beirne, Renzhi et al. (2020) examined the regional and global growth effects of current account imbalances in Japan, Germany, and China. The authors report that current account determinants are mostly in line with macroeconomic fundamentals over time. Lo Prete (2012) analyses in what way trade-related policy and financial development affect current account imbalances in OECD countries. According to the author, financial development is significantly and negatively correlated with the

current account imbalances. The process starts with credit creation at the level of the domestic banking sector. When newly created deposits are spent on imports, the country is facing a current account deterioration. Manger et al. (2019) observe that wage-bargaining institutions have the main impact on current account imbalances in OECD countries, due to their effect on the trade balance. Their result contradicts the empirical results obtained in many empirical studies where the choice of exchange rate regime has a prevailing effect. One explanation can be found in a good wage bargaining system, which slows down the path of their industrial transformation from manufacturing to services.

Darvas (2015) finds that before the global financial and economic crisis, the EU became the main contributor to global current account imbalances, while there has been a major correction since then.

Baimbridge et al. (2017), observing the structural imbalances between core economies and southern periphery economies in Eurozone, note that differences in competitiveness play a crucial role in the divergences between the current account imbalances after joining and adopting the euro. Comunale et al. (2014) offer explanation that membership in the euro area, i.e., pegged exchange rate, has a positive and significant impact on the current account balance. Atoyan et al. (2013) investigate current account developments in Eurozone periphery and emerging European countries with fixed exchange regimes. Their results show that in these two regions, a strong private-sector-led domestic demand boom created large current account imbalances. While in emerging Europe, rising investment has a more substantial role than declining savings, in the case of the Eurozone periphery imbalances are results of declining private sector saving. Bogdan et al. (2017) examined whether the exchange rate policies affect current account balance and export performances in new member states of the European Union. The authors revealed that countries with a flexible exchange rate have better performance in current account and export. Herrmann et al. (2013) evaluate current account dynamics with different exchange rate regimes for 27 EU countries from 1994-2011. The results of their study show that the exchange rate regime does indeed determine current account adjustment. Namely, current account adjustment is prevented in members of the monetary union.

A smaller number of papers have analysed current account divergence in the European context of fiscal policies. One of them (Schnabl, 2018) concludes that divergent fiscal policies in European Monetary Union combined with monetary expansion have a crucial role in current account divergence within the euro area, which led to debt and financial crisis.

It is well known, based on real convergence, that the new EU member states are in process of catching-up. Financial liberalization through capital openness in the EU makes this process achievable[3]. In that sense, bank-intermediated large-scale capital inflows from core EU countries fuelled a domestic demand boom in emerging EU countries, widening the current account deficit.

Carranza et al. (1999) and Gürsoy et al. (2013) examine the causality between financial liberalization and current account in Central and Eastern and Southeastern European countries as well as in some other emerging economies. The authors offer explanation that current account imbalance is a repercussion of a high level of capital mobility in emerging countries. Some other papers give additional information on that phenomenon. As Unger (2017), Spiegel (2009), Lane (2013), Hobza et al. (2014) point out, the banking system in the deficit country has to be refinanced from banks in the surplus countries. The final result is that a bank in the surplus country ultimately finances loans postponed by a bank in the deficit country. Results of Karahan et al. (2018) analysis show that bank loans play a significant role in determining the behaviour of the current account. Spending approved loans on imports leads to a current account deficit. Wyplosz (2013) states that one of the reasons for the crisis was unsustainably rapid credit growth that caused the bubble on the housing market. Fernandez-Villiaverde et al. (2013) conclude that countries, which can cheaply borrow, prolong the credit boom and delay the response to the bubble when the speculative nature of the cycle is already evident, abandoning the reform process and postponing painful reforms. Cesaroni et al. (2015) analyse the impact of financial integration based on Chinn-Ito index as a measure of capital openness in determining the dispersion in current account balances within Eurozone members. The authors find a negative impact of financial integration in the Eurozone periphery and reduced competitiveness impact on current balance over time.

Data and Methodology

The analysis includes 11 new EU member countries, i.e., Bulgaria, Czech, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia, and Slovenia, over the period from 1999 to 2016. Using annual data allows us to overcome the potential problem of strong seasonality in data. As a dependent variable in the model, we use current account balance, while independent variables are financial openness, real effective exchange rate, and crisis.

Current account balance (*cab*), defined as the difference between the country's savings and investment, is measured as a percentage of GDP with positive values indicating that savings exceed investments and negative values point to the opposite.

Real effective exchange rate (reer) is employed as the competitiveness proxy and is expressed as an index with the base year 2010. An increase in the value of this indicator denotes real appreciation. Since changes in the real effective exchange rate are important for raising export, it is to expect that an increase in reer negatively affects the current account. This variable is log transformed (lreer).

The financial crisis is captured by a dummy variable crisis, which takes the value of one in the years of crisis, i.e., in the period from 2009 to 2016, and zero otherwise.

The analysis covers a pre-crisis period, slump, and the period of expansion (post-crisis period).

As a proxy for financial liberalization, we used the Chinn-Ito Financial Openness Index (open). Chinn-Ito index is a measure of financial openness of the country through measuring the country's capital account openness (Chinn and Ito, 2008). Besides measuring the intensity of capital controls, insofar as the intensity is correlated with the existence of other restrictions on international transactions, this index also takes into account the regulatory aspects of capital account openness. Furthermore, one of the advantages of this indicator is the transparency of its construction. The indicator is based on binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange and Restrictions and the sum of foreign assets and foreign liabilities (gross foreign assets).

Data for current account balances and real effective exchange rates are obtained from World Development Indicators of the World Bank. Chinn-Ito index data comes from Portland State University. The construction of this index shows it is de iure measure of financial openness due to the measurement of regulatory restrictions on capital account transactions. The greater value of Chinn-Ito index means more financial openness. In some studies, the index is normalized with the value of 100 as the highest degree of financial openness and with zero value as the lowest degree.

Although each country has its own path of catching up the process and the different exchange rate regime, the descriptive analysis of the common features of the variables for analysed countries for the period from 1999 to 2016 (Table 1) shows some interesting facts.

Current account balance ranges between -25.55% (recorded for Bulgaria in 2007) and 7.90% (recorded for Latvia in 2009) with an overall average of -4.01%. For the panel, the current account standard deviation is 5.17%. The highest standard deviation of 8.21% is recorded in Bulgaria and the lowest of 2.00% in the Czech Republic, indicating a very high variability of data[4].

Real effective exchange rate index ranges between 51.40 (in Slovakia in 1999) and 111.65 (recorded for Romania in 2007), with an overall average of 92.36 and a standard deviation of 10.7. Slovenia has the lowest standard deviation of 1.94, while the highest standard deviation of 18.94 is recorded for Slovakia.

The minimum value of Chinn-Ito financial openness index is -1.20 (recorded for Bulgaria in 2002) and a maximum 2.36 (recorded or Bulgaria in 2007), which shows that Bulgaria, the country that was least financially open in 2002, has become the most financially open country since 2007. The overall average value for the index is 1.42 with a standard deviation of 1.13.

Table 1: Summary statistics for new EU members (1999-2008)

Variable	Observations	Mean	Standard Deviation	Min	Max
cab	198	-4.0128	5.1757	-25.5486	7.9045
reer	198	92.365	10.7004	51.4012	111.6519
lreer	198	4.5181	0.1284	3.9397	4.7154
open	198	1.4154	1.1285	-1.2024	2.3600

cab – current account balance, *lreer* – ln of real effective exchange rate, *open* – financial openness (Chinn-Ito index).
Source: Authors' calculations

The next step is to determine the order of integration of the variables employed in the analysis. For that reason, the two panel unit test were performed, LLC test (Levin, Lin & Chu, 2002) and CIPS test of Pesaran (2007). The null hypothesis for the LLC test is that the series has a unit root while the alternative states that the series is stationary. On the other hand, CIPS is a panel unit root test in the presence of potential cross-sectional dependencies with the null of a homogeneous non-stationary, i.e., that all panels have a unit root. The alternative hypothesis of CIPS is that at least one panel is stationary. Unit root test results are presented in Table 2. It is evident that all variables in the study are either stationary in levels or first differences.

Table 2: Panel unit root test results for the European Union countries in 1999–2016.

Variable in levels	LLC	CIPS
Cab	-0.6824 (0.2475)***	-2.423***
Lreer	-1.0747 (0.1413)***	-2.618
Open	-27.2980 (0.0000)	-2.052*
First differences		
d(cab)	-7.7268 (0.0000)	-3.989
d(lreer)	-4.7318 (0.0000)	-4.457
d(open)	-16.1182 (0.0000)	-3.332

Note: ***, **, * refer to the unit root process (non-stationarity) at the 1%, 5% and 10% significance level. LLC test-values in parentheses are p-values. CIPS test- *critical value at 1% = -2.47, 5% = -2.26 and 10% = -2.14*
Source: Authors' calculations

Since the variables under study are a combination of variables with different levels of integration, I(0) variables and I(1), the long-run relationship between current account balance, real effective exchange rate, and financial openness cannot be consistently estimated. However, if the variables are cointegrated, *i.e.,* there is evidence of mean reversion to a non-spurious long-run relationship, the consistent estimates can be obtained. Therefore, the null hypothesis of no co-integration is tested using panel cointegration tests developed by Pedroni (1999, 2004) and Westerlund (2007). Pedroni test is a residual-based test, while the Westerlund test is based on the structural rather than the residual dynamic. Both tests have a common null hypothesis of no cointe-

gration. The main idea of the Westerlund test is to test whether the error-correction term in a conditional panel error-correction model equals zero (Persyn et al., 2008). The alternative hypothesis of Pedroni test is that the variables are cointegrated in all panels, while the alternative hypothesis in Westerlund test is that some (not necessarily all) of the panels are cointegrated. The results of both panel cointegration tests are presented in Table 3.

Table 3: Panel cointegration tests results

Test	Null hypothesis	Alternative hypothesis	Test statistics	p-values
Westerlund	No cointegration	Some panels are cointegrated	Variance ratio	0.0147**
Pedroni	No cointegration	All panels are cointegrated	Modified PP t	0.0007***
			PP t	0.0056***
			ADF t	0.0019***

Note: ***, **, * denote significance at the 1%, 5% and 10% significance level.
Source: Authors' calculations

According to the results in Table 3, all the test statistics reject the null hypothesis of no cointegration in favour of the alternative hypothesis, i.e., that current account balance, real effective exchange rate, and financial openness are cointegrated.

The analysis of the long-run and short-run effects of the determinants of the current account balance in this paper is performed using panel auto-regressive distributed lags (ARDL) methodology, proposed by Pesaran et al. (1999). To estimate the nonstationary dynamic panels, the mean group (MG) and pooled mean group (PMG) estimators are employed and compared. Mean group estimator is obtained by estimating N time-series regressions and calculating the average value of the coefficients. On the other hand, PMG estimator is a combination of pooling and averaging of coefficients with a very flexible assumption regarding the panel model. In the model, intercept, short-run coefficients and error variances can differ across groups, while the long-run coefficients are restricted to be equal across the groups. Thus, one of the advantages of the PMG estimator is that it allows short-run heterogeneity with the assumption of long-run homogeneity in the panel ARDL model. By selecting the appropriate lag structure for dependent and independent variables, it is possible to overcome the problem of serial autocorrelation and the problem of endogenous regressors.

Model specification

We assume that the long-run relationship between variables is specified as follows

$$cab_{i,t} = \theta_{1i} open_{i,t} + \theta_{2i} lreer_{i,t} + \mu_i + \varepsilon_{i,t}, \text{ i=1,...,N, t=1,...,T} \quad (1)$$

where $cab_{i,t}$ is a current account balance, $open_{i,t}$ is financial openness and $lreer_{i,t}$ is the logarithm of the real effective exchange rate. μ_i is the group-specific effect and $\varepsilon_{i,t}$ is the error term.

An *ARD*L(p,q,q) dynamic specification of (1) is

$$cab_{i,t} = \sum_{j=1}^{p} \lambda_{i,j} cab_{i,t-j} + \sum_{j=0}^{q} \delta_{10i,j} open_{i,t-j} + \sum_{j=0}^{q} \delta_{20i,j} lreer_{i,t-j} + \mu_i + \varepsilon_{i,t}. \qquad (2)$$

In our study, the ARDL (1,1,1) dynamic panel specification for the relationship between variables is used[5], i.e. the model

$$cab_{i,t} = \lambda_i cab_{i,t-1} + \delta_{10i} open_{i,t} + \delta_{11i} open_{i,t-1} + \delta_{20i} lreer_{i,t} + \delta_{21i} lreer_{i,t-1} + \mu_i + \varepsilon_{i,t} \qquad (3)$$

As the results show, all variables in the study are either stationary in levels or first differences and cointegrated, making the error term $\varepsilon_{i,t}$ stationary I(0) process for all i. The main feature of cointegrated variables is their response to any deviation from the long-run equilibrium. Equation (3) can be reparametrized into the error-correction model, which incorporates both the short-run dynamics of the variables, as well as the deviation from equilibrium[6].

$$\Delta cab_{i,t} = \phi_i \left(cab_{i,t-1} - \theta_{1i} open_{i,t} + \theta_{2i} lreer_{i,t} \right) + \delta_{11i} \Delta open_{i,t} + \delta_{21i} \Delta lreer_{i,t} + \varepsilon_{i,t}, \qquad (4)$$

where: $\phi_i = -\left(1 - \lambda_i\right)$, $\theta_{1,i} = \dfrac{\delta_{10i} + \delta_{11i}}{1 - \lambda_i}$ and $\theta_{2,i} = \dfrac{\delta_{20i} + \delta_{21i}}{1 - \lambda_i}$.

Since we expect that the global financial crisis can have an impact on current account balance, the dummy variable *crisis* is additionally included in equation (4) as well as the constant term. Therefore, we estimated a panel error correction model

$$\begin{aligned} \Delta cab_{i,t} = {} & \phi_i \left(cab_{i,t-1} - \theta_{1i} open_{i,t} + \theta_{2i} lreer_{i,t} \right) + \\ & + \delta_{11i} \Delta open_{i,t} + \delta_{21i} \Delta lreer_{i,t} + \theta_{1t} crisis + \theta_{0t} + \varepsilon_{i,t}. \end{aligned} \qquad (5)$$

Parameter ϕ_i is the group-specific (error-correcting) speed of adjustment. If the variables tend to return to the long-run equilibrium (evidence of cointegration), the value of the parameter is expected to be negative. Our interest is on parameters θ_{1i} and θ_{2i}, which are the long-run parameters, i.e. the parameters of the long-run relationships between the variables. Parameters δ_{11i} and δ_{21i} are the short-run parameters, indicating the impacts of financial openness and real effective exchange rate on the current account balance in the short-run. The effect of the global financial crisis is depicted by θ_{1t}.

Empirical Results

The pooled mean group (PMG) and mean group (MG) estimates[7] for the model (5) are presented in Tables 4 and 5. Table 4 presents the estimation results for both models regarding the short-run parameters.

Table 4: PMG and MG estimation results in the short run

Variable	PMG	MG
speed of adjustment	-.5077 (0.000)***	-.4589 (0.000)***
d.lreer	8.6064 (0.248)	17.8964 (0.001)***
d.open	1.8313 (0.169)	1.7193 (0.210)
Crisis	5.9364 (0.000)***	5.6321 (0.001)***
Intercept	10.1157 (0.000)***	75.6830 (0.064)*
Observations	187	187
Number of groups	11	11

Notes: p-values are in parentheses, ***, **, * denote significance at 1, 5 and 10 % level.
Source: Authors' calculation

In both models, the obtained results from Table 4 reveal that the adjustment coefficient has the correct negative sign, which is statistically significant. As expected, the short run effect of the financial crisis is significant and has a positive impact on the current account balance indicating its improvement. Namely, during the period of the financial crisis, import significantly declined due to decline in the gross domestic product in all analysed countries.

Estimation results for the long-run parameters are presented in Table 5. In the long run, financial openness is a statistically significant variable in both models. It has a negative impact on the current account balance, suggesting that in the long-run higher degree of financial openness intensifies current account imbalances. This result confirms the widely accepted opinion that the domestic business cycle boosts more (debt) inflows, even though in financially open countries, portfolio equity inflows are exposed to the external interest rates (Borio et al., 2015). Although with the correct negative sign, the effect of the real exchange rate on the current account balance proved to be insignificant.

Table 5: PMG and MG estimation results in the long run

Variable	PMG	MG
open	-2.1617 (0.001)***	-8.8660 (0.046)**
lreer	-5.8433 (0.334)	-16.0017 (0.587)
Observations	187	187
Number of groups	11	11

Notes: open – financial openness (Chinn-Ito index), lreer – logarithm of real effective exchange rate p-values are in parentheses, ***, **, * denote significance at 1, 5 and 10% level.
Source: Authors' calculation

From the obtained results, Table 4 and Table 5, it follows that parameter estimates for both models are very similar regarding the sign and its significance. However, in order to distinguish the PMG and MG estimation methods the Hausman (1978) test was performed. Namely, the PMG estimator is consistent and efficient only when the slope coefficients are homogeneous, and intercepts are fixed, i.e. PMG estimator constrains the long-run elasticities to be equal across all panels. If the restrictions are true, PMG estimates are efficient and consistent. On the other hand, if the true model is heterogeneous, the PMG estimates are inconsistent, while the MG estimates are consistent in both cases, Pesaran et al. (1999). The difference in these models is tested with the Hausman test.

In our case, the calculated Hausman statistic is 2.44 (p-value 0.6555)**,** so it can be concluded that the PMG estimator, the efficient estimator under the null hypothesis of long-run homogeneity, is preferred over the MG model. According to test results, the PMG estimator is appropriate for the panel data of our study.

The results of the baseline model presented in Table 4 show that the adjustment coefficient in the PMG model for the analysed panel has the correct negative sign and is statistically significant at the 1% significance level. Its value of -0.5077 indicates that that long-run equilibrium will be reached in about two years.

In the long-run, Table 5, only variable financial openness, is statistically significant and influences a current account balance with a negative sign.

The results of the performed analysis confirm that in observed countries, the financial liberalization of the new members of the EU, opening, and financial gravity of these countries have caused the deterioration of the current account balance. These countries, in the pre-crisis period, have accumulated current-account deficits and became debtors. On the other hand core countries of the EU, in particular, Germany, have accumulated current-account surpluses and became creditors[8].

As it is expected, in the short run, the only significant variable is the financial crisis, with significantly positive impact on the current account balance. The intensification of the financial crisis in 2008-2009 led to a temporary withdrawal of foreign capital by international investors and deleveraging in several of the central and eastern European EU member states (European Central Bank, 2014). All new EU member states improved their current accounts in that period because of the sharp decline in imports and a simultaneous drop in export. Over the period 2010-2016, export increased again, and imports recovered[9].

Concluding remarks

The new EU member states followed a rapid process of catching up with the rest of the European Union, with financial openness and capital inflow associated with it. Until the financial crisis, in most countries, that process was characterized by strong

domestic credit growth and economic overheating. In such circumstances, they are faced with current account deteriorating.

Since the beginning of the financial crisis, the new EU member states have been improving their current accounts, due to the withdrawal of foreign capital, sharp decline in imports and domestic demand, and real depreciation.

Using 1999-2016 data authors examined the short-run and long-run relationship between real effective exchange rate, financial liberalization, crisis, and current account balance. For that purpose, the panel ARDL model was used. Following the methodology of Pesaran et al. (1999), and using the PMG estimator, the obtained results show that there exists a long-run relationship between the current account balances, financial openness and real effective exchange rate. Financial openness has a statistically significant negative impact on the current account balance in the long run, while the financial crisis positively affects the current account balances of countries in the short run.

Additionally, the statistical significance of the error-correction speed of adjustment coefficient and its negative value, suggest that the long-run relationship between current account balances, real effective exchange rate, and financial openness is reached in about two years.

The findings of this research confirm that new EU member states in catching up process accumulated external imbalances and vulnerabilities in the years leading up to the financial crisis. This process was followed by financial openness and real exchange rate appreciation.

These results suggest that countries need to implement preventive frameworks to reduce potentially substantial external imbalances in times of economic booms and the probability of future crises.

NOTES

[1] The current account is equal to the difference between domestic investment spending and domestic saving (also equals the country's net lending to foreigners) and plays an essential role in a country's decision-making process.

[2] According to Borio and Disyatat (2015), the impact of the financial imbalances can make a more important source of macroeconomic dislocations then it is suggested by their impact on current account imbalances.

[3] However, the main issue for these countries is to identify the adequate policy for a sustained process of catching-up.

[4] To save space, descriptive statistics for each country is not presented but are available upon request.

[5] The optimal lag length for the ARDL model for each country is obtained by minimizing the Schwarz (SC) information criterion. The most common lag for each

variable by the country is chosen as the optimal lag length for the model. The results are not presented but can be obtained upon the request.

[6] According to Granger representation theorem, error correction and cointegration are actually equivalent representations (Engle and Granger, 1987).

[7] The cross-sectional dependence in panel data indicated by Pesaran CD test (Pesaran, 2004, 2015), with the value of test statistic of 4.130 and p-value of 0.0000 is reduced by adding the cross section means of variables. According to Chudik and Pesaran (2015), that way, both estimators gain consistency.

[8] In the wake of the crisis, some new EU member states turned their current accounts deficits into surpluses as a result of improvements in trade balances.

[9] The European Central Bank study (2014) shows that the drivers of the adjustment in current accounts vary significantly across countries.

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