Current account imbalances in the context of European integration

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Abstract—This paper presents an empirical investigation of a large number of potentially significant determinants of current account deficits in five EU accession countries (Albania, Croatia, Macedonia, Serbia and Turkey) in the period 2005 Q1-2017 Q4. Using panel regression techniques we find that current account imbalances in the accession countries are mainly determined by domestic investment, financial development, foreign exchange reserves, status of the observed countries in the process of EU enlargement, and the degree of trade openness. Other factors that have a significant impact on current account balances include fiscal deficit, initial net foreign assets, foreign direct investment inflows, and real GDP growth rate. We would like to emphasize that the status of the observed country (an EU candidate or a potential candidate country) does have very significant effect on the current account balance. It is expected that further economic and financial development of the accession countries would encourage domestic saving and contribute to improvement of their current account positions.

Keywords—current account balances, current account determinants, accession countries, panel regression techniques.

1. INTRODUCTION

Current account sustainability has been in the focus of economic theory and policy for a very long time. As a result of the process of globalization the volume of international trade and capital mobility have increased which, in turn, led to larger current account deficits in many countries and brought about new forms of financial instability [Daianu and Vranceanu, 2003].

The issues of the determinants and sustainability of the current account imbalances are of special importance to the accession countries on their way of becoming full members of the European Union (EU). External imbalances, reflected in persistent current account and trade deficits, are a key challenge that most of the accession countries are facing and one of the major problems that they must solve in order to fulfill the economic criteria for full integration into the European Union. Maintaining the current account and fiscal deficits below certain limits is, after all, one of the criteria for joining the European Union. The latest global financial crisis has demonstrated that persistent current account and trade imbalances increase the potential exposure of the accession countries to a crisis and can have a serious adverse effect on the ability of these countries to fight external economic and financial shocks. The fact that most of the countries that are subject of analysis (with the exception of Turkey) are small and open economies implies the importance of dealing with the persistent current account deficits in order to diminish vulnerabilities to future economic and financial crises.

There are various theoretical models and numerous empirical studies that examine the determinants of current account imbalances. However, the majority of the existing empirical studies focus on the developed and emerging Asian economies, while studies of the current account determinants in the accession countries are very scarce and based on annual data i.e. small sample size leading to debatable results. In order to increase the precision and statistical significance of the estimated results, we employ actual quarterly, instead of annual data on a wide range of macroeconomic determinants of current account imbalances in a relatively long period of time (from the first quarter of 2005 up to the last quarter of 2017). Another contribution of our paper is that unlike the previous empirical studies, we focus only on the accession countries (Albania, Croatia, Macedonia, Serbia and Turkey) in order to find out the relevance of EU membership on current account imbalances. We have performed the analysis without putting together the countries subject of interest with other developing countries or emerging economies, thus increasing the homogeneity of the empirical findings. To the best of our knowledge, this is the first paper which empirically investigates the determinants of the current account imbalances for the above mentioned accession as a group. While these countries are analyzed as a group as much as possible, we also take into account specific characteristics of particular countries where relevant.

Using panel regression techniques and actual quarterly data for twelve potentially significant determinants, we find that current account balances in the accession countries are positively correlated with the current account balances from the previous period, fiscal balance, trade openness, relative per capita income, foreign direct investment inflows, financial development, foreign exchange reserves and status of the observed countries in the process of EU enlargement, while negatively associated with crude oil trade deficit, real GDP growth rate, domestic investment and initial net foreign assets position. The obtained panel estimates, which are in line with previous theoretical and empirical findings, confirm that the current account imbalances in the accession countries are mainly determined by factors characteristic of the economic catching-up process, namely domestic investment, financial development, foreign exchange reserves, status of the observed countries in the process of EU enlargement, and the degree of trade openness. Other factors that have a significant impact on current account balances include fiscal deficit, initial net foreign assets, foreign direct investment inflows, and real GDP growth rate. It is expected that further economic and financial development of these countries would encourage domestic saving and contribute to improvement of their current account positions. One of the findings of our empirical analysis is that the status of the observed country in the EU enlargement process (an EU candidate or a potentiality candidate country) does have a significant effect on the current account balances of these countries.

The rest of the paper is structured as follows: Section 2 gives an overview of the existing theoretical and empirical literature on current account determination. Current account developments in the accession countries in the period 2005-2017 are in details presented in Section 3. Section 4 examines the potentially significant determinants of current account balances. Section 5 lays out the empirical framework of our research. In subsection 5.1 we explain the data and the chosen methodology and subsection 5.2 gives the estimation results and various interpretations. Finally, in Section 6 we draw conclusions and offer direction for future research.

2. LITERATURE REVIEW

There is a large and growing body of theoretical and empirical literature on the dynamics and determinants of the current account. Although my paper belongs to the group of empirical studies, before reviewing the relevant empirical studies on this topic, we will briefly discuss the theoretical literature on this topic.

There are many different theoretical models that analyze the determinants of the current account balance and interpret their impacts on its level. The traditional models of current account imbalances based on the elasticity approach emphasize the role of the exchange rate and trade flows in the current account adjustments. On the other hand, the absorption approach views the current-account balance as a difference between income and absorption i.e. saving and investment flows. The more recent approach to current account sustainability is the intertemporal approach based on assumptions of representative individuals that made forecasts of the relevant variables in a rational expectations context. The standard intertemporal approach was further developed by Obstfeld and Rogoff [1995], Atish and Ostry [1995], Milesi- Ferretti and Razin [1996] and Milesi-Ferretti and Razin [1998]. Obstfeld and Rogoff [1995] add dynamic saving and investment expectations to the standard intertemporal approach. Ghosh and Ostry [1995] test the standard intertemporal model on a sample of 45 developing countries and conclude that the model explains well the direction of current account movements in these countries. Milesi-Ferretti and Razin [1998] examine a list of potential sustainability indicators for a group of developed and emerging countries that ran persistent current account imbalances. They conclude that a specific threshold on persistent current-account deficit could not be treated as a sufficiently informative sustainability indicator, and that the level of the current-account imbalance should be considered in relation to the exchange-rate policy, the level of trade openness, the degree of stability and development of the financial system and the savings-investment ratio. According to Bussière, Fratzscher and Muller [2006] the standard intertemporal current account model represents an appropriate tool to analyze current account balances in the EU candidate and pre-accession countries

The empirical literature on the determinants of the current account imbalances and their sustainability can be divided into two main groups. The first group of papers [Sheffrin and Woo, 1990; Otto, 1992; Ghosh, 1995 and Bergin and Sheffrin, 2000] obtain results in support of the standard intertemporal approach using tests of present-value models (PVM) of the current account (CA) developed by Campbell and Shiller, 1987. However, these models were rejected due to their poor empirical performance. Although the relaxation of some of the models' assumptions improved the models' fit, the results remained sensitive to the maintained assumptions and the selected variables. "In addition, the present-value tests do not distinguish between the temporary and permanent shocks driving the CA dynamics and hence are of limited applicability for assessing the CA sustainability, at least in the short to medium run perspective." [Urošević, Nedeljković and Zildžović, 2012, p. 268]. The second group of empirical studies have tried to identify the long-run determinants of the current account applying intertemporal approaches with infinitely lived agents and overlapping generations models [Debelle and Faruqee, 1996; Chinn and Prasad, 2003]. Below we summarize the key findings of the empirical studies that refer to emerging economies.

Employing a cross-section and panel data estimation, Debelle and Faruqee [1996] examine the current account determinants of a sample of 34 industrial and developing countries. While the results of their cross-section analysis identify the stage of

development and demographic factors as the most important determinants of current account, the panel data analysis indicates that a fiscal policy has a short- and long-run impact on the current account movements. The authors also find that the real exchange rate, the business cycle and the terms of trade affect the current account balance on a short-term basis, while the stage of development and demographics have longer-run influence.

Roubini and Wachtel [1998] analyze a great number of determinants of current account sustainability in transition economies and find that the real exchange rate appreciation in these countries has led to worsening of the current account imbalance. Other significant factors of current account imbalance include underdeveloped financial and banking system, large fiscal imbalances, low foreign exchange reserves, increasing foreign debt and foreign debt-burden ratios. Based on an empirical research of a panel of 44 developing countries, Calderon, Chong and Loayza [2002] find that high current account deficit is closely associated with output growth, in terms of trade shock and currency appreciation. On the other hand, private and public saving rates either have moderate negative effect on the current account deficit or they do not affect it at all.

Chinn and Prasad [2003] investigate the medium-term determinants of current accounts in 18 developed and 71 developing countries, using a structural approach that reflects the impact of the fundamental macroeconomic determinants of saving and investment. In order to capture the properties of current account variations across countries and over time they apply cross-section and panel regression techniques. The results of their study imply that current account balances are positively correlated with government budget balances and initial stocks of net foreign assets. Among developing countries, indicators of financial deepening are positively associated with current account balances, while trade openness negatively affects current account balances.

Applying a solvency constraint, Doisy and Herve [2003] estimate a benchmark for current account positions and among many investigated factors they identify the fiscal balance, the share of the private sector in value added, the per capita income, the ratio of capital income to wage income and the trade openness as main determinants current account balance. Regarding transition countries they find that foreign direct investment, which is a main source of financing of current account deficits, do not increase the external debt of the country and that this type of financing should be taken into consideration when calculating a sustainable level of current account balance in these countries.

Zanghieri [2004] investigates the issue of current account sustainability in the new EU member states using, first a simple accounting framework, and then, a simple theoretical model which he created under budgetary constraints. His main findings imply that current account imbalances do not seem to be unsustainable in the short and medium run. Zanghieri [2004] points out the importance of maintaining large inflows of foreign capital and pursuit of a prudent fiscal policy as crucial factors for sustainable external balances. According to him current account deficits must be carefully monitored, taking into account whether the main driving force is the dynamic of savings or investment. A deficit created by reduced savings is a matter of greater concern than a deficit caused by an investment increase. He also finds out that foreign direct investments are the most appropriate instrument of external financing compared to short-term debt instruments.

Using two accounting frameworks, Aristovnik [2006] examines the determinants of current account sustainability in seventeen transition countries. The empirical results indicate that if the observed level of foreign direct investment flows are maintained, almost all sample countries (except Baltic States, Hungary, Macedonia, Moldova and Romania) could optimally have a higher level of external deficit in the medium run. He concludes that maintaining large foreign direct investment inflows is of crucial importance for future external sustainability of transition countries. His findings indicate that current account deficits of transition economies above five percent of GDP could worsen their sustainability. Aristovnik [2007] also investigates the determinants of current account balances of selected Middle East and North African economies in the period 1971-2005 based on a dynamic panel regression technique. The results indicate that higher (both domestic and foreign) investment, government expenditure and foreign interest rates have a negative effect on the current account balance. On the other hand, higher trade openness, higher oil prices and higher domestic economic growth (a larger increase in domestic savings than investment) could improve the external balances of these countries. Finally, the results indicate that current account imbalances are highly persistent and are not associated with the stages of development hypothesis as poorer countries in the sample have lower current accounts deficits or even surpluses.

Calderon, Chong and Zanforlin [2007] investigate the determinants of current account deficits in the developing and low income economies in Africa and identify the overvaluation of the real exchange rate and deterioration of total terms of trade as main factors that contribute to worsening of the current account deficits. Chinn and Ito [2007] build upon the work of Chinn and Prasad [2003] and develop a structural model of current account imbalances that includes a number of financial, legal and institutional factors that affect saving and investment behavior and economic growth in emerging East Asian economies. Using panel data for the ten new EU member states at that time, Rahman [2008] finds that this group of countries has run considerably higher current account deficit than other developing economies. However, due to lower net foreign assets position and higher share of old citizens in total population, they can manage higher deficits. Hermann and Winkler [2009] analyze the current account imbalances during the process of convergence in developing countries in Asia versus developing countries in Europe. They identify the development of the financial market and financial integration as the most significant determinants of current account balances, among others. According to them the more sophisticated financial markets and higher degree of financial integration during the process of convergence lead to higher current account deficits as these countries can borrow from abroad

and thus increase domestic consumption and savings. Vamvakidis [2008] develops a model of intertemporal optimization of current account balances of emerging Europe during the process of regional convergence and finds that time effect, relative income per capita, demographics factors and real growth rate significantly affect current account deficits in emerging European economies.

Ca'Zorzi, Chudik and Dieppe [2009] examine two approaches for calculating current account benchmarks: the external sustainability approach á la Lane and Milesi-Ferretti (LM) versus the structural current account approach (SCA) based on panel econometric techniques. The results obtained with the LM approach indicate that the outcome depends on the normative choice for external indebtedness and the decision to exclude the foreign direct investment subcomponent from the net financial assets (NFA) aggregate. According to the SCA, current account deficits in Czech Republic, Slovakia, Poland and Hungary in 2007 imply stable external indebtedness, contrary to the remaining countries in the sample, which deficits indicate growing external indebtedness and such should be adjusted in the medium run. They conclude that both the LM and SCA approaches have serious disadvantages and conceptual problems.

Medina, Prat and Thomas [2010] calculate the equilibrium current account balances for a sample of 33 emerging market economies employing a modified version of the IMF's Consultative Group on Exchange Rate Issues (CGER) methodology - 2006. They find that the unlike the advanced economies, the fiscal balance significantly determines the equilibrium current account balances in emerging economies and that the increase of net foreign assets leads to improvement of their current account balances.

The above brief review of the existing literature shows that there is a lack on studies of the current account determinants for the accession countries. Thus, the objective of this research is to evaluate the effect of twelve potentially significant variables on the current account imbalances in the accession countries as a group of countries during the period of observation and to identify the main determinants among them especially to find out the effect of EU membership, employing panel regression techniques. The main reference comes from Calderon, Chong and Loayza [2002], Chinn and Prasad [2003], Aristovnik [2006, 2007] Chinn [2007], Rahman [2008] and Herman and Winkler [2009].

3. CURRENT ACCOUNT DEVELOPMENTS IN THE ACCESSION COUNTRIES IN THE PERIOD 2005-2017

Before we investigate the determinants of current account imbalances in the accession countries, we will first analyze the current account trends in these countries in the period 2005-2017 in order to check if the external imbalances are persistent or not. Looking back to the years before the global financial crisis (period 2005-2008) the accession countries were focused on political and economic integration with the EU which led to higher rates of economic growth and rapid catching up with the EU. Unlike catching-up processes in other parts of the world, the process of real convergence in the accession countries(with the exception of Turkey) has been characterized by significant and widening current account deficits in the years before the global financial crisis of 2008. "The most significant common feature of the EE countries has been their growth strategy. Until the fall of 2008 it was conventional wisdom – and widespread practice – that the most appropriate sustainable growth (and catching-up) strategy for the small, open economies of EE is a rapid increase in their exports and investment, actively supported by sustained net capital inflows. This growth model and the implied catching-up process involved persistent current-account deficits." (Marer - 2010, p. 10). Current account deficits in the analyzed accession countries (Albania, Croatia, Macedonia, Serbia and Turkey) almost doubled on average, from 6.08% in 2005 to 12.64% of GDP in 2008. However, as depicted in Fig. 1 there are significant differences between the observed countries. Over the period 2005-2008 Macedonia's current account deficit rose six times, from 2.6 % of GDP to 12.8 % of GDP, while Croatia's and Turkey's current account deficits increased relatively moderate, from 5.6% and 4.6% to 8.8% and 5.5% of GDP, respectively. Serbia and Albania exhibited higher current account deficits compared to their average economic growth. In the analyzed period, Serbia increased its current account deficit for 136%, and Albania's external deficit rose from 8.9% of GDP in 2005 to 15.5 % of GDP in 2008.

Fig. 1 Current account balance in percent of GDP in selected accession countries in the period 2005-2017
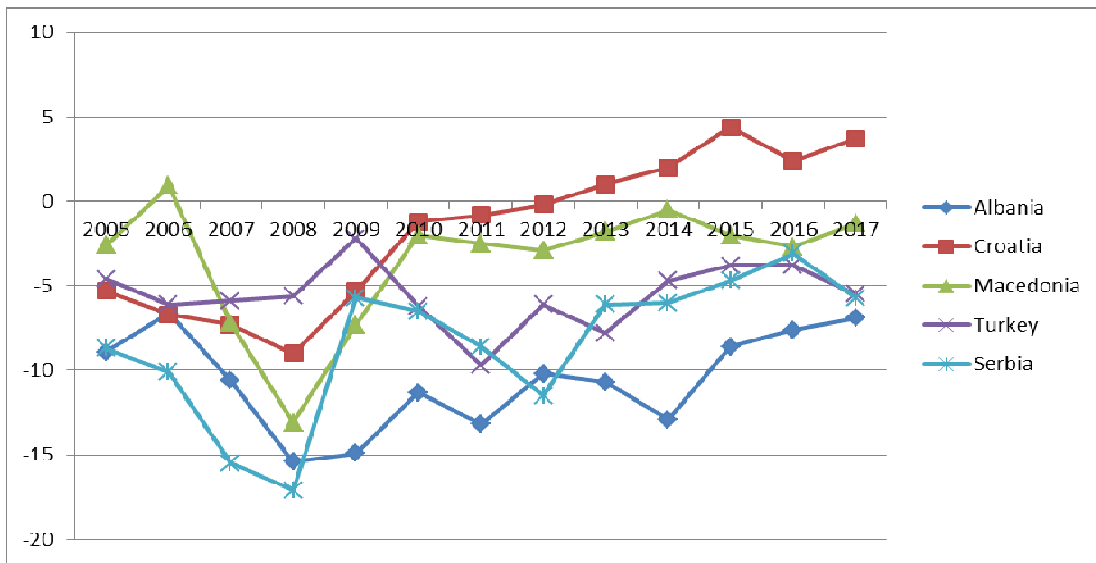
Source: https://ec.europa.eu/eurostat/data/database

The two most important driving forces behind the widening of the trade and current account deficits in the above analyzed countries in the years before the global financial crisis were a steady decline of gross savings rate, on one hand and an increase of investment ratio, on the other hand.. In Albania the gross savings rate declined sharply, from 30% of GDP in 2005 to 20% in 2008 and in Serbia from 16.5 % of GDP in 2005 to 10% of GDP in 2008. On average, the savings ratio in the accession countries declined to slightly above 17% of GDP in 2008, compared to a gross savings rate of close to 21% of GDP in 2005. At the same time, as depicted in Fig. 3 investment, expressed as a share of gross fixed capital formation in GDP, increased steadily in Croatia, Macedonia and Serbia and declined slightly in Turkey and Albania which used external financial resources primarily for financing of a domestic private consumption boom.

Fig. 2 Gross savings as percent of GDP in selected accession countries in the period 2005-2017
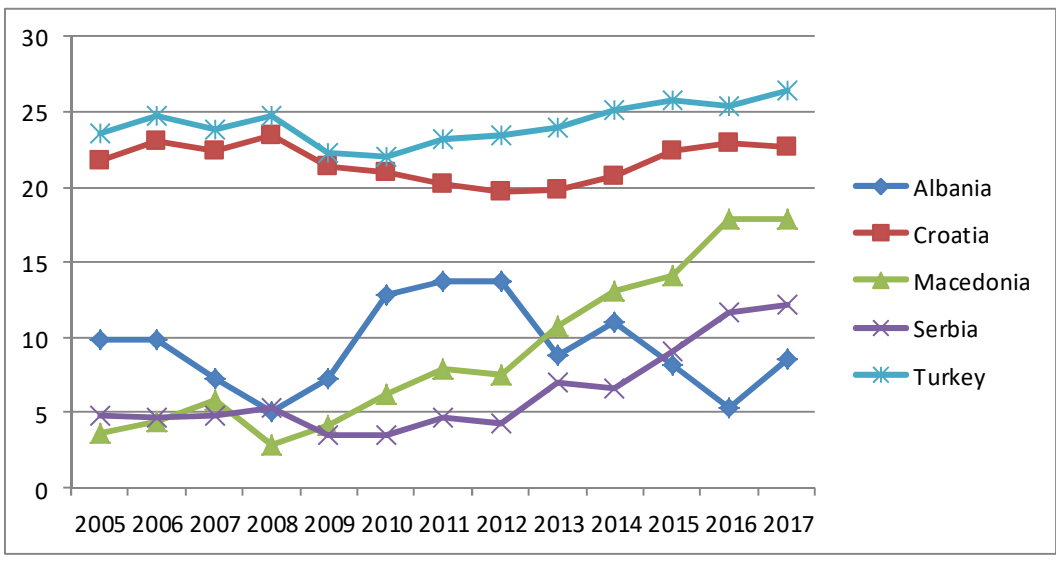

Source: https://ec.europa.eu/eurostat/data/database

Fig. 3 Gross fixed capital formation as percent of GDP in selected accession countries in the period 2005-2017
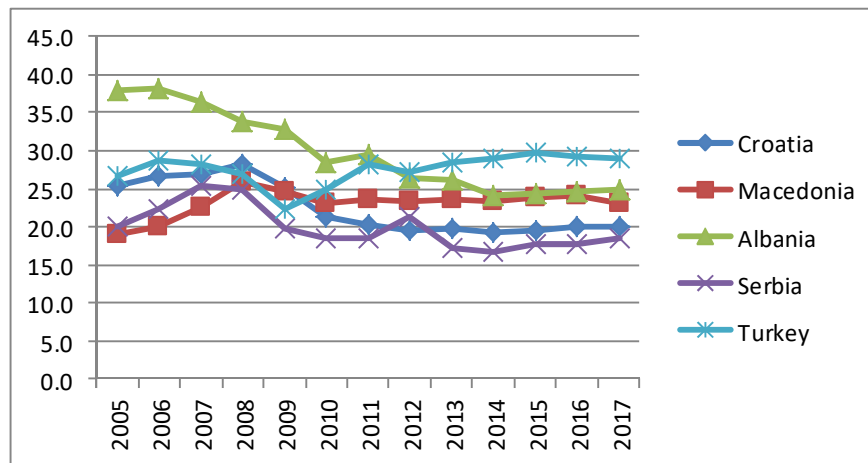
The global economic and financial crisis of 2008 hit the accession countries mainly during the fourth quarter of 2008 and the first quarter of 2009 via three channels: foreign trade, foreign direct investments (FDI) and remittance inflows. Exports dropped sharply to levels registered in 2006 and imports contracted up to 50% mainly due to lower energy prices and a depressed domestic demand. It is noteworthy that countries with a relatively small and not diversified trade sector, such as Serbia, recorded the highest decline in exports. As a result of larger import base, lower volume of foreign trade contributed to reduction of current account deficits in the accession countries, with exception of Albania, where the current account deficit increased by more than half compared to 2007 as a result of high imports for public infrastructure investments. However, during the second and third quarter of 2009, exports recovered in the accession countries due to the improved external demand, and imports declined significantly. Consequently, trade deficits in the accession countries dropped from around 22% of GDP on average at the end of 2008 to 18% at the end of 2009. The reduced trade deficits led to further improvement of the current account imbalances in the accession countries. At the end of 2009 the current account deficit in Turkey narrowed down to 2.2% of GDP, in Croatia to 5.1% of GDP, in Macedonia to 6.7% of GDP and in Serbia to 7.4% of GDP. Only Albania recorded a high, two-digit current account deficit of 15.2% of GDP.

Fig. 4 Trade balance as percent of GDP in accession countries in the period 2005-2016
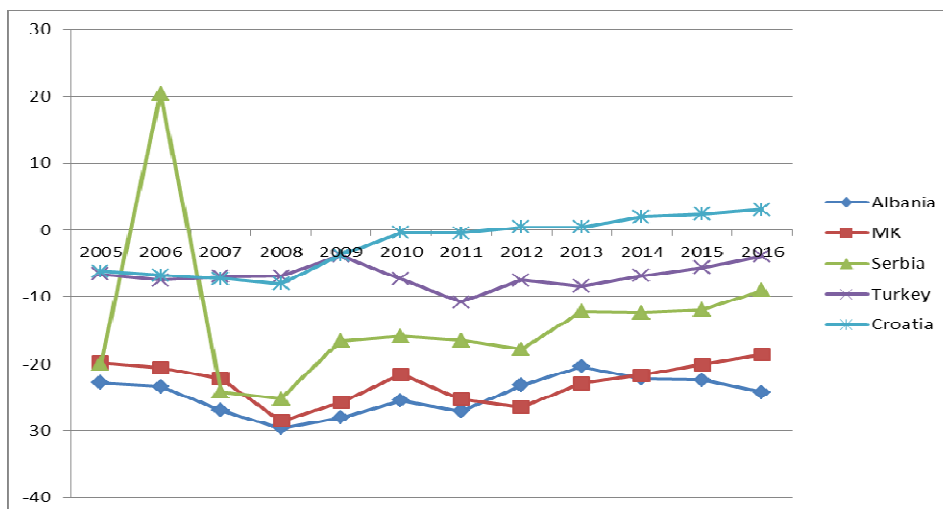
Current account balances continued to improve in the majority of the accession countries in the first quarter of 2010, triggered by better exports. In Croatia and Macedonia the current account deficits declined significantly, from 5.1% of GDP in 2009 to 1.1% of GDP in 2010 and from 6.7% to 2.2% of GDP, respectively. In 2010 external deficits generally moderated in Serbia and Albania. On the contrary, as a result of significantly increased imports and a widening of the trade deficit to 7.8% of GDP, Turkey's current account deficit roughly tripled in 2010 compared to 2009. The long standing current account deficit in Croatia hardly improved in 2011 (0.7% of GDP), and in Macedonia the current account deficit deteriorated to a limited extent (2.9% of GDP). Albania and Serbia recorded moderate worsening of their external imbalances. However, stronger deteriorations occurred in Turkey. Triggered by a deterioration of trade deficits as imports increased and an expansion of economic activity, Turkey's current account deficit practically doubled over one year, reaching 9.6% of GDP in 2011. External imbalances continued to improve in 2012 in the observed accession countries, except in Serbia and Macedonia, where the current account deficits widened respectively to 11.6% of GDP and 3.2% of GDP, mostly driven by a widening of the trade deficits. Particularly significant is the improvement of the Turkey's current account deficit (it narrowed from 9.6% of GDP in 2011 to 6.1% in 2012) due to a weak domestic demand and continued strong export growth. Albania also reduced its current account deficit (from 13.2 of GDP to 10.2% of GDP) thanks to improvement of the trade balance. After 17 consecutive years of deficit, Croatia even returned to a very modest surplus (0.03% of GDP) mainly as a result of the weak internal demand.

The achieved adjustment of external imbalances during 2012, continued to improve strongly in 2013. Particularly impressive was the improvement of Serbia's current account deficit which was halved to 6.1% of GDP mainly due to very strong exports performance. While in Turkey and Albania the current account deficits widened to respectively 7.7% of GDP and 10.9% of GDP, the current account deficit in Macedonia narrowed thanks to improved export performance and low domestic demand and imports. Croatia ended 2013 with a current account surplus of 1 % of GDP.

Current account deficits widened further in the accession countries in 2014. The end of year brought an improvement in exports and a reduction in the current account deficit in Macedonia and Serbia. Macedonia recorded the lowest current account deficit in the Western Balkan region (0.8% of GDP), due to considerable exports growth. In Turkey, as a result of stronger exports and declining imports, especially of gold, the current account deficit has gradually declined from 7.7% of GDP in 2013 to 5.5% of GDP in 2014. The current account surplus recorded in the newest EU member state-Croatia in 2013, remained stable during 2014, as a result of better exports and lower prices of merchandise imports. On the contrary, Albania's current account deficit widened further, reaching 12.9% of GDP.

External imbalances, reflected in large trade deficits (above 20% of GDP) and persistent current account deficits remained a key challenge for the accession countries in 2015. As a result of the large trade deficit in the fourth quarter of 2015, Macedonia's current account surplus recorded in the third quarter of 2015, slipped back into deficit in the last quarter of 2015 and worsened on an annual basis, from 0.8% of GDP in 2014 to 1.4% of GDP in 2015. In Turkey, current account deficit decreased further in 2015 to 4.5% of GDP mainly as a result of the oil price decline. Albania recorded a reduction in the current account deficit to 11.2% of GDP compared to 12.9% in 2014, as the rise of merchandise trade deficit was compensated by a services surplus. Serbia's e current account deficit decreased to 4.8% of GDP, as a result improved services balance and higher net transfers. Contrary, Croatia recorded the highest in its history current account surplus (5.2% of GDP), mainly as a result of high tourism income, import compression and lower energy import costs.

Large trade merchandise deficits (ranging from 12% of GDP for Serbia to 40% for Kosovo and Montenegro) remained a concern in most accession countries in 2016, while the average current account deficit declined to 5% of GDP in 2016, the lowest in many years.

In 2017 merchandise trade deficits remained very high across the accession countries, ranging from 12% of GDP for Serbia to 18% or above for Albania and Bosnia and Herzegovina and equal to 42% or above for Kosovo and Montenegro. Compared to the year before, annual current account deficits widened in Serbia and Montenegro whereas they narrowed in Macedonia, Albania and Kosovo. In Bosnia and Herzegovina the current account deficit stood at the same level as in 2016. Overall, the regional current account deficit stood at around 6% of GDP in 2017, compared to 5% a year before.

As reviewed above, the analyzed accession countries have permanently run current account deficits in the years before, during and after the global financial crisis of 2008, raising issues about their sustainability. Therefore it is of vital importance to investigate the determinants of these imbalances.

4. Determinants of current account balances in the accession countries

Before we proceed with a model estimation, we will first portray the main determinants of current account developments in the accession countries based on the above review of the existing theoretical and empirical literature.

Persistence. This variable is expressed as a lagged current account balance to GDP ratio. Persistent current account deficits could be attributed to habit formation in consumption and savings, agglomeration effects in investment and an increase in

income inflows. Countries running long-term current account deficits will build up increasing debts that will have to be repaid in the subsequent years, thus causing income outflows. Therefore a positive coefficient is expected.

Fiscal balance (with a time lag of one quarter). This independent variable is captured by the central government's budget balance as a share of GDP. If Ricardian equivalence holds, a government budget deficit should not affect the current account deficit. However, in the absence of full Ricardian equivalence, a higher fiscal balance increases the current account balance as a result of private saving growth. Therefore a positive coefficient is expected. However, the intensity of the fiscal balance impact on the current account will depend on the level of financial system development, implying that in countries with less developed financial markets budget balance will stronger affect the current account balance [Rahman, 2008; Medina, Prat and Thomas, 2010]. The positive relationship between the budget and the current account balance supports the "twin deficits" hypothesis [Aristovnik, 2006; 2007]. Studying the determinants of current account balances in central eastern European (CEE) inflation targeting countries (the Czech Republic, Hungary, Poland, Romania and Serbia) over the past decade, Urošević, Nedeljković and Zildžović [2012] "find a positive coefficient on fiscal balance in all countries which supports the "twin deficits" hypothesis.

Net foreign asset position (NFA). This variable is expressed as the sum of foreign assets held by monetary authorities and deposit money banks minus their foreign liabilities at the beginning of the period (to avoid the problem of endogeneity) relative to GDP. The NFA or wealth of a country can affect the current balance in two opposite directions. Countries with higher NFA positions can afford to run trade deficits on a long run and still remain solvent, potentially leading to a negative impact of the NFA on the current account balance. On the other hand, higher NFA implies a higher net foreign inflow and a positive relationship between the NFA position and current account balance [Ca' Zorzi et al. – 2009]. Hence the expected sign is ambiguous.

Crude oil trade balance. The variable used here is expressed as a share of crude oil trade balance in a country's GDP. It serves as a proxy for the impact price and volume changes of crude oil on the current account balance. When the prices of crude oil increase, the current account balance of oil-exporting countries will increase, and the balance of oil-importing countries will decrease. Urošević, Nedeljković and Zildžović [2012] find that there is a negative relationship between the oil balance and the current account balance in all analyzed CEE inflation targeting countries, except Czech Republic and that its impact is much stronger in the less developed countries (Romania and Serbia). Sign is ambiguous.

Economic growth. This variable is measured as real GDP growth rate. Economic growth affects current account balance both through savings and investment. If higher GDP growth rates are viewed as a signal for future income increase, which is typical for catching up economies, then households will be more willing to spend their money. Thus, the declined savings rate leads to worsening of the current account position. Contrary to that, if GDP growth rates are interpreted as being transitory, households will tend to increase their savings, resulting with improved current account balances. From investment point of view, high rates of GDP growth are a result of higher productivity and therefore are related to higher levels of investment, which improves the current account balance. Therefore the net effect of GDP growth on current account balances is ambiguous, although most of the previous empirical studies find a negative relationship. According to Rahman [2008] the different signs for the impact of GDP growth possibly reflect the fact that faster growth can be export-led or domestic-demand led resulting in an ambiguous sign.

Relative income. This variable is measured by the real GDP per capita in the individual accession countries relative to the real GDP per capita in the EU-28. Relative per capita income is used as a proxy for the level of a country's economic development. Herrmann and Jochem [2005] find that the deficits in the new EU member states are mainly determined by the relative income level. Urošević, Nedeljković and Zildžović [2012] also confirm the significant impact of the relative income on the CA balance in Poland and Czech Republic. We expect a positive coefficient.

Domestic investment (with a time lag of four quarters). This variable is expressed as a share of gross fixed capital formation in GDP. According to Glick and Rogoff [1995] current account developments are partly driven by expectations about future wealth, and to that extent future productivity gains from current investment would be correlated with a current account deficit. "An increase in demand variable, such as investment, leads to an increase of domestic demand and thus worsening of the foreign trade balance." [Ca'Zorzi, Chudik and Dieppe, 2009, p. 9]. Aristovnik [2007] also finds a negative relationship between domestic investments in MENA countries and the current account balance. On the other hand, Petrasek [2005] examines the determinants of current account dynamics on a large sample of 129 countries over the period 1991 to 2000 and finds that for countries with classified debt, or per capita income of less than $10,000 gross fixed capital formation is positively related to current account surpluses. Therefore the expected sign is spurious.

Foreign direct investment (with a time lag of one quarter). The variable included here is measured by the share of foreign direct investment (FDI) inflows in a country's GDP. Increased FDI inflows are a signal of an improved investment climate in the accession countries. They are considered as a vital source of external financing of the current account deficit. On the other hand, huge FDI inflows could negatively affect the current account balance as they increase imports. In this case a negative relationship between FDI inflows and a current account balance is expected. Hence we conclude that the sign of the coefficient in front of the FDI variable is ambiguous. It depends on the import content of FDI and whether FDI increases investment or acquires existing capital stocks (Rahman, 2008; Mencinger, 2008).

EU candidate country. This is a dummy variable capturing a country's status on the road to EU membership. It takes the

value of 1 if the observed country is an EU candidate country, and 0 if it has a status of a potential candidate country. There are currently five candidate countries for EU accession: Albania, Macedonia, Montenegro, Serbia and Turkey. The status of the country on the way to its full EU integration is expected to decrease its current account balance through an increased domestic consumption and higher capital inflows. Hence a negative sign of the coefficient is expected.

Trade openness (trade integration). This variable is expressed as a ratio of the sum of exports and imports of goods and services to GDP. It can affect the current account balance in two opposite directions. Countries with a lower degree of trade integration (openness usually serves as a proxy for trade barriers) have lower imports, thus increasing the current account surplus or narrowing the current account deficit. On the other hand, the higher the degree of trade openness, the higher is the current account surplus as more open countries earn larger foreign exchange funds that serve as sources of external financing of the current account deficit. The openness variable could be also correlated with other attributes, such as receptiveness to transfer of technology, which leads to higher foreign capital investment. However, a more open economy is more vulnerable to external shocks ([Chinn and Prasad, 2003, Aristovnik, 2007]. Therefore sign of the coefficient is ambiguous.

Financial development. This variable is expressed as a private credit to GDP ratio. The traditional interpretation of the financial development variable suggests that a more developed financial system motivates saving and thus improves a current account balance. Chinn and Prasad (2003) find that the level of financial development positively affects the current account balance in developing countries. On the other hand, a higher degree of financial development could reduce savings as more developed financial markets are capable to allocate financial resources more effectively and thus could negatively affect the current account balance [Rahman, 2008; Mendoza, Quadrini and Ríos-Rull, 2009; Cheung, Furceri and Rusticelli, 2013]. The rapid pace of financial deepening is considered to be central in the convergence story. "Increased credit to private sector is likely to have a negative impact on the CA balance through increased imports, thus decreasing the divergence from the norm deficit" [Rahman, 2008, p. 17].

Foreign exchange (FX) reserves is an important factor that affects the current account balance. As a result of the substantial net capital inflows in the years before the crisis, all analyzed countries in this period accumulated and maintained significant FX reserves despite the huge current account deficits. The global financial crisis in 2008 caused a decline of the FX reserves in the sample countries (except Albania) and has changed the pattern of accumulation of FX reserves. In 2009 the official foreign exchange reserves stabilized in all sample countries and in some of them (Serbia) they even increased. Lower levels of FX reserves are more likely to cause a currency crisis as they make it more difficult to sustain large external deficits and may negatively influence the motivation of foreign investors to lend money.

5. METHODOLOGY AND DATA

We estimate the model on a basis of balanced panel data for five accession countries (Albania, Croatia, Macedonia, Serbia and Turkey) that are selected on a basis of availability of actual quarterly data for twelve potential determinants of current account balance. Quarterly data from 2005 Q1 to 2017 Q4 are used which includes years before, during and after the latest global financial and economic crisis, thus enhancing the power of our estimates. Data are obtained from various sources, mainly from the central banks and state statistical offices of the sample countries, but also from the EUROSTAT database, the World Bank Development Indicators (WDI) and the United Nations Economic Commission for Europe.

We estimate the determinants of current account balances in the five accession countries employing the linear reduced form model:

$$CAB_{it} = X_{it}\beta + u_{it} \qquad (1)$$

where the dependent variable is a vector of quarterly current account balances (CAB), expressed as a share of gross domestic product (GDP) for every country in the sample, and X is a set of twelve independent variables: persistency (CAB_{it-1}) expressed as the lagged current account balance, lagged fiscal balance in relation to GDP (BUDGET), lagged domestic investment (GFC) expressed as gross capital formation in per cent of GDP, real GDP growth rate (REALGDPGRRATE) measured by a real GDP growth rate, relative income (RELGDP) expressed as a difference between real GDP per capita in the individual accession countries and GDP per capita in the reference countries (EU-28), initial level of net foreign assets (NFA) as a share of GDP, crude oil trade balance in per cent of GDP (OIL), trade integration (TROPENESS) expressed a ratio of total exports and imports of goods and services to GDP, lagged foreign direct investment (FDI) measured as net inflows of foreign direct investment in per cent of GDP, financial development (FINDEV) as a ratio of loans to private sector to GDP, a dummy variable (CC) expressing the status of the sample countries in the process of EU integration (EU candidate country or potential candidate country) and foreign exchange reserves (RESERVES). The vector of coefficients (β) shows the sensitivity of the current account to these fundamental variables. Finally, we include a vector of standard error terms, denoted by u assumed to be independent and normally distributed. Variable descriptions, expected signs and data sources are presented in Appendix. Table 1 represents the

summary statistics of the concerned variables.

Panel unit root tests of the individual time series confirmed that all variables except RELGDP, NFA and TROPENESS are stationary. Therefore in further analysis we took the first differences of these three variables.

TABLE 1: SUMMARY STATISTICS

Variable description	accession countries (5 countries, 260 quarterly observations)			
	Mean	Std. dev.	Skewness	Kurtosis
Fiscal balance as % of GDP (BUDGET)	-6.169389	7.832040	1.562551	8.032783
Relative income D(RELGDP)	-22.59824	245.7459	0.365990	13.02590
Foreign direct investment (FDI)	-1.358673	5.452777	0.345337	3.355780
Financial development (FINDEV)	1.541872	0.785661	0.149305	2.030807
Real economic growth (REALGDPGRRATE)	2.783753	3.793996	-0.434596	4.702964
Trade integration D(TROPENESS)	75.53902	24.36011	0.271923	2.050205
Domestic investment (GFC)	24.86131	7.471819	0.452006	3.024009
Net foreign assets (NFA)	64.32767	55.62198	-0.313933	2.836431
Crude oil balance (OIL)	-2.853208	3.345099	-3.006800	17.63749
Current account balance (CAB)	-6.169389	7.832040	1.562551	8.032783
International reserves (RESERVES)	2.353095	12.01132	1.072413	7.939897

Source: Author's own calculations

6. ESTIMATION AND RESULTS

Since our sample consists of heterogeneous countries in terms of different macroeconomic and political conditions, we are going to apply more sophisticated specifications than OLS estimation. Namely, we extend the benchmark OLS model by using special techniques, i.e. the fixed effects method or Least Squares Dummy Variable method (FEM), the random effects method (REM) and seemingly unrelated regression (SUR) method, having in mind that the panel data are characterized by group-wise heteroscedastic, contemporaneously and serially correlated residuals.

The results from implementing fixed and random effects on cross-sections, periods and both cross-sections and periods as well as Feasible Generalized Least Squares (FGLS) or SUR are depicted in Table 2.

TABLE 2: ESTIMATION RESULTS

VARIABLE	PANEL LS	FIXED CROSS SECTION EFFECT	FIXED PERIOD EFFECT	FIXED CROSS SECTION AND PERIOD EFFECT	RANDOM PERIOD EFFECT	SUR
C	-5.03377	-2.88678	-4.79267**	1.45654	-5.03377***	-2.47497*
CAB(-1)	0.28291***	0.25549***	0.32459***	0.24992***	0.28291***	0.37786***
BUDGET(-4)	0.08637*	0.0901*	0.02344	0.02339	0.08637*	0.09986***
GFCF(-4)	-0.1680***	-0.19156***	-0.15477***	-0.1655***	-0.16797***	-0.11076***
D(TROPENNESS)	0.2770***	0.26543***	0.29563***	0.26312***	0.2770***	0.16927***
D(NFA)	-0.05121**	-0.04778**	-0.08832***	-0.0754***	-0.0512**	0.00444
D(RELGDP)	0.00022	-0.0001	0.00094	0.00013	0.00022	0.00103
OIL	-0.08393	-0.05003	-0.07514	-0.27328*	-0.08393	-0.08978
FDI(-1)	0.1233*	0.18797*	0.08865	0.14716	0.1233*	0.12586
FINDEV	1.37623***	0.98185	1.64350***	-0.79051	1.37623***	0.09252
REALGDPGRRATE	-0.19443**	-0.20723**	-0.23752**	-0.28887**	-0.19443**	-0.13113***
CC	3.39553***	2.23117*	2.473216**	-1.40204	3.39553***	1.86266**
RESERVES	0.24655***	0.24605***	0.194874***	0.19092***	0.24655***	0.12273**

Source: Author's own calculations

In order to test if the fixed effects are redundant, we have employed the LR test. The results can be seen in Table 3.

TABLE 3: LR TEST FOR FIXED EFFECTS

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.176242	(4,176)	0.0150
Cross-section Chi-square	16.728190	4	0.0022
Period F	1.477226	(47,176)	0.0374
Period Chi-square	79.806319	47	0.0020
Cross-Section/Period F	1.496015	(51,176)	0.0293
Cross-Section/Period Chi-square	86.429291	51	0.0014

Source: Author's own calculations

We can clearly see that according to the values of F statistics (3.176242; 1.477226 and 1.496015) there is a strong evidence of fixed cross section and period effects in the model, i.e. existence of only common intercept. This was expected since we are dealing with relative small number of countries. In order to see if there are random effects in the model we have estimated the model with random cross section and period effects. The results of Hausman test are given in Table 4.

TABLE 4: CORRELATED RANDOM EFFECTS - HAUSMAN TEST

TEST CROSS-SECTION AND PERIOD RANDOM EFFECTS				
TEST SUMMARY	CHI-SQ. STATISTIC	CHI-SQ. D.F.	PROB.	
PERIOD RANDOM	33.924417	12	0.0007	

Source: Author's own calculations

The results of Hausman test indicate that we cannot reject the hypothesis that there are random period effects. The results given in the last column of the Table 2 are the estimates obtained by implementing the SUR method which performs estimation

by using Generalized Least Squares. The SUR method consists of applying two sequential transformations on the estimated model. The first transformation removes the serial correlation, while the second simultaneously corrects for contemporaneous correlation and heteroscedasticity. Since we have a small number of cross-sections, only five, we are not able to use the GMM method even we estimate a dynamic panel. Based on the obtained estimation results we find that seven of twelve parameters (in FGLS estimation) are significant at 10% level. The Wald test confirms the significant effect of the model as a whole, and the adjusted R^2 amounts to 0.56.

Our empirical analysis shows that the lagged current account balance as a ratio to GDP has a positive and a statistically significant effect on the current account balance (The size of the obtained partial regression coefficient (0.25-0.37) suggest that the accession countries have sustainable current account imbalances. A higher level of current account persistence suggest that accession countries needs more time to revert to their long-time means and therefore run current account imbalances (deficits or surpluses) in the long-term.

The central government budget balance (BUDGET) has a positive and significant effect on CAB in most of the estimated models (except in model with fixed period effects and model with fixed cross section and period effects) thus supporting the "twin deficits" hypothesis about the co-movement between current account deficit and budget deficit and previous empirical findings [Hermann and Jochem, 2005; Chinn and Ito, 2007; Urošević, Nedeljković and Zildžović, 2012].

The financial development variable expressed as a ratio of private sector credit to GDP is one of the most significant determinants of current account balance. We find that it is positively and in most of the models strongly affecting the current account balances in the EU candidate countries.

The variable trade integration (TROPENESS) has a positive coefficient and is statistically significant at 1% level of significance in all estimated models. In fact, an increase in the ratio of exports and imports to GDP of one percentage point leads to a current account balance improvement of 0.169 to 0.295. Actually, the openness variable could be indicative of attributes such as liberalized trade, receptiveness to technology transfers, and the ability to service external debt through export earnings [Milesi-Ferretti and Razin, 1996]. Thus, the results confirm that those accession countries with greater exposure to international trade tend to be more export-orientated. These results are in line with the findings of Chinn and Prasad [2003], Aristovnik [2007] and Urošević, Nedeljković and Zildžović [2012].

The partial regression coefficient of the domestic investment variable (GFCF) is as theoretically expected negative. The accession countries show high (negative) partial correlation coefficients (between 0.11-0.19) confirming the high degree of integration of their domestic economy with international capital markets which is in line to the previous findings [Debelle and Faruqee, 1996; Bussière, Fratzscher and Muller, 2006].

The coefficient of the initial NFA position is negative, very small and mostly statistically insignificant. We find a positive, but statistically insignificant relationship between relative per capita income (RELGDP) and the current account balance.

As expected the crude oil trade balance has a negative but statistically insignificant impact on the CAB. The estimated coefficient implies that a 1 percentage point improvement in the oil balance ratio is associated with an increase in the CA balance of 0.05 to 0.273 percentage points of GDP.

The dummy variable for the EU candidate status turns out to be significant in all models and the coefficient is almost always positive. This result can be explained with the convergence hypothesis according to which capital moves from high-income to low-income countries i.e. from countries with lower to countries with higher returns on capital. This induces a current account deficit in the capital scarce countries since investments increase and savings decline [Lane and Pels, 2012].

The sign of the FDI coefficient is positive but small, and only in three of the estimated models (FCSE, REM and PLS) it shows a statistically significant effect on the CAB. A one percentage point increase in FDI ratio increases the CAB by 0.089 to 0.187 percentage point, implying a low import content of FDI, a large contribution to the existing capital stock, a large contribution to export industries and a low contribution to the production of domestic goods and services. This can be explained by the fact that in EU candidate and pre-accession countries the FDI inflows have mostly been directed to export industries [Tiusanen, 2006].

The real GDP growth rate has in all models negative and high statistically significant effect on CAB. A one-percentage point rise in GDP growth leads to 0.13 to 0.29 percentage point rise in the current account deficit. The obtained result is consistent with the theory that domestic economic growth increases the demand for foreign goods and services and consequently worsens the current account balance as well as with the previous empirical findings [Chin and Prasad, 2003; Aristovnik, 2007; Rahman, 2008; Urošević, Nedeljković and Zildžović, 2012] that real GDP growth negatively affects the current account balance.

To sum up, the results for all observed five countries (Albania, Croatia, Macedonia, Serbia and Turkey) suggest that the estimated models perform quite well in describing the current account developments in accession countries over the last decade. Our findings, which are in line with the results of previous theoretical and empirical literature, confirm that the current account imbalances of the accession countries are mainly determined by domestic investment, financial development, foreign exchange reserves, status of the observed countries in the process of EU enlargement, and the degree of trade openness. Fiscal deficit, initial net foreign assets, foreign direct investment inflows, and real GDP growth rate have a significant impact on the current account balances of these countries. It is expected that further economic and financial development of the accession countries would encourage domestic saving and contribute to improvement of their current account positions. Interestingly, the status of

the observed country (an EU candidate or a potential candidate country) does have significant effect on its current account deficit.

7. CONCLUSION

Persistent current account deficits have been and remain a key challenge for the accession countries on their way towards full integration into the European Union. However, whether the current account deficits are sustainable or not depends on the factors that cause these imbalances. The purpose of our paper is to investigate the impact of twelve potentially significant determinants of current account developments in the accession countries as a group of countries in the period 2005 Q1 to 2017 Q4. To achieve this objective we employ panel regression techniques and use actual quarterly data.

The results of our analysis are in line with the existing theoretical and empirical findings on the determinants of current account balances and reflect the original characteristics of the observed countries. The estimated models perform quite well in describing the current account developments in the accession countries over the last decade. We find that current account deficits in the accession countries are positively correlated with the current account balances from the previous period, fiscal balance, trade openness, relative per capita income, foreign direct investment inflows, financial development, foreign exchange reserves and status of the observed countries in the process of EU enlargement, while negatively associated with crude oil trade deficit, real GDP growth rate, domestic investment and initial net foreign assets position. The obtained panel estimates show that the current account deficits in the accession countries can be attributed mainly to factors characteristic of an economic catching-up process i.e. domestic investment, financial development, foreign exchange reserves, status of the observed countries in the process of EU enlargement, and the degree of trade openness. Other factors that have a significant impact on current account imbalances include fiscal deficit, initial net foreign assets, foreign direct investment inflows, and real GDP growth rate. It is expected that further economic and financial development of these countries would encourage domestic saving and contribute to improvement of their current account positions. The results of our empirical analysis (FGLS model) also confirm the claim of current account persistency and supports the "twin deficit" hypothesis for the accession countries. What is especially interesting to emphasize is that the level of achieved progress of the observed country in the EU enlargement process (an EU candidate or a potential candidate status) has very significant effect on the current account balance. Since this paper is the first one (to the best of our knowledge) that analyzes current account determinants of the accession countries as a group of countries, there is a room for further improvement. Future research should focus on country-specific characteristics of the concerned countries by employing a time series analysis.

Variable	Variable description	Expected Sign	Source
Current account balance	Considered as a dependent variable the current account balance is the sum of net exports of goods, services, net income and net current transfers as a share of GDP.		The Bank of Albania, Croatian National Bank, National Bank of the Republic of Macedonia, National Bank of Serbia and Central Bank of the Republic of Turkey.
Persis-tence	Lagged dependent variable (lagged current account balance to GDP ratio)	+	The Bank of Albania, Croatian National Bank, National Bank of the Republic of Macedonia, National Bank of Serbia and Central Bank of the Republic of Turkey.
Fiscal balance	Central government budget balance to GDP ratio	+	The Bank of Albania, Croatian National Bank, National Bank of the Republic of Macedonia, National Bank of Serbia and Central Bank of the Republic of Turkey.
Relative income	Difference between real GDP per capita in the individual accession countries and GDP per capita in the reference countries (EU-28)	+	Albanian Institute of Statistics, Croatian Bureau of Statistics, State Statistical Office of the Republic of Macedonia, Statistical Office of the Republic of Serbia and Turkish Statistical Institute.
Crude oil balance	Crude oil trade balance in percent of GDP	+/-	Albanian Institute of Statistics, Croatian Bureau of Statistics, State Statistical Office of the Republic of Macedonia, Statistical Office of the Republic of Serbia and Turkish Statistical Institute.
Initial net foreign assets to GDP	The sum of foreign assets held by monetary authorities and deposit money banks minus their foreign liabilities expressed as a share of GDP	+/-	The Bank of Albania, Croatian National Bank, National Bank of the Republic of Macedonia, National Bank of Serbia and Central Bank of the Republic of Turkey.
Trade openness	The sum of exports and imports over GDP.	+/-	Albanian Institute of Statistics, Croatian Bureau of Statistics, State Statistical Office of the Republic of Macedonia, Statistical Office of the Republic of Serbia and Turkish Statistical Institute.
FDI	Foreign direct investment inflows in percent of GDP	+/-	The Bank of Albania, Croatian National Bank, National Bank of the Republic of Macedonia, National Bank of Serbia and Central Bank of the Republic of Turkey.

Variable	Variable description	Expected Sign	Source
Domestic investment	A share of gross fixed capital formation in GDP.	+/-	Albanian Institute of Statistics, Croatian Bureau of Statistics, State Statistical Office of the Republic of Macedonia, Statistical Office of the Republic of Serbia and Turkish Statistical Institute.
Financial development	Loans to private sector over GDP	-	The Bank of Albania, Croatian National Bank, National Bank of the Republic of Macedonia, National Bank of Serbia and Central Bank of the Republic of Turkey.
Economic growth	Real GDP growth rate of the observed country	+/-	Albanian Institute of Statistics, Croatian Bureau of Statistics, State Statistical Office of the Republic of Macedonia, Statistical Office of the Republic of Serbia and Turkish Statistical Institute.
EU candidate country	Considered as a dummy variable that takes the value of 1 if the observed country is an EU candidate country and 0 if it has a status of a potential candidate country	-	European Commission web site, http://ec.europa.eu/enlargement/ countries/check-current-status/index_en.htm

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