Araştırma Makalesi ● *Research Article*

Cari Açık ve Ekonomik Büyüme Arasındaki Nedensellik İlişkisi: Visegrad Dörtlüsü Örneği[*]

The Causality Between Current Account Deficit and Economic Growth: The Case of Visegrad Four

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ABSTRACT

The purpose of this study is to determine the causality between current account deficit and economic growth for Visegrad Four (Poland, Czech Republic, Hungary, Slovakia). In this context, an empirical model was developed in the scope of the panel data analysis using annual data for the period of 1993-2015. Firstly, heterogeneity of the variables was investigated using the Delta test, and then cross section dependency and unit root notions were examined respectively by the CDlm test and Hadri-Kurozumi (2012) test. After the existence of the cointegration relationship between the series was proved by using the Durbin H cointegration test, Dumitrescu-Hurlin panel causality test was applied. According to the empirical results, in the long run there is one-way causality from current account deficit to the economic growth in Visegrad Four.

MAKALE BİLGİSİ

ÖZ

Bu çalışmanın amacı cari hesap açığı ve ekonomik büyüme değişkenleri arasındaki ilişkiyi Visegrad Dörtlüsü olarak adlandırılan Polonya, Çek Cumhuriyeti, Macaristan ve Slovakya için belirlemektir. Bu bağlamda oluşturulan ampirik model, 1993-2015 yıllarını kapsayan bir dönem için panel veri analizi ile test edilmiştir. Öncelikle değişkenlerin heterojenliği ve yatay kesit bağımlılığı sırasıyla Delta ve CDlm testleri ile araştırılmış ve daha sonra Hadri-Kurozumi (2012) birim kök testi yapılmıştır. Değişkenler arasındaki eş-bütünleşme ilişkisinin varlığı Durbin-H testi ile ispat edildikten sonra Dumetrescu-Hurlin (2012) nedensellik testi yapılmıştır. Uygulama bulgularına göre uzun dönemde, seçili Visegrad ülkelerinde cari hesap açığından ekonomik büyümeye doğru tek yönlü bir nedensellik ilişkisi mevcuttur.

1. Introduction

Since the 1980s, with the fast pace of the technological progress, liberalization policies of developing countries are significantly raised the level of integration of the real and financial sectors globally. The main contribution of liberalization is that it helps increasing the national savings, investments and finally enables fast growth. However, it is widely known that liberalizing international capital movements without adequate legislations makes countries fragile and more vulnerable against shocks, causing possible financial crises.

Current account deficit is commonly defined as having more expenses than income, in other words, excess investment above savings. This condition simply refers to the situation that the country is indebted to others. Countries with current deficit are expected to have fragile economies and be effected by the shocks easier. One of the reason is that unlegislated countries with weak macroeconomic indicators are not protected against speculative-sudden with no reason capital outflows and rapid reversal of the continuing capital inflow may cause a financial crisis. Because of the risk of capital flight (loss of confidence by investors), foreign ownership of assets (best assets could be bought by them and reduces long-

term income), unbalanced economy, uncompetitive economy, risk of depreciation (imported inflation).

The aim of this study is to analyze the causality relationship between current account deficit and economic growth within Poland, Hungary, Czech Republic and Slovakia using the panel data analysis. First, heterogeneity of the variables was tested by Delta test, then the cross-section dependency in the series was examined. The cointegration within the series was investigated by Durbin H panel cointegration test. Finally, causality relationship was tested by Dumitrescu and Hurlin Causality Test.

The paper consists of four sections. In the first section the theoretical background of the relationship between current deficit and economic growth is investigated. The second section is about the empirical model. The third part includes econometric methodology and general information about the data set. The last part presents the results of empirical model.

2. The Relationship Between Current Deficit and Economic Growth

The current account balance is one of the most important macroeconomic indicators for a country. One reason for its importance is a possible increase of fragility, and due to its effect on market performance expectations, and whether it is sustainability in the long term. It is an important indicator of an economy's health because of its definition. A positive current account balance indicates that your country is a net lender not a borrower or can increase net foreign assets. In addition to this a positive current account means balanced economy but the size of the current account deficit and continuity of this deficit provide negative signs for agents in the market may expect crises.

Another aspect of the relationship between the current deficit and economic growth is fragility of the economy and the possibility of triggering financial crises. Depending on the fragility which is implied by the current deficit, probable negative effect of a financial crisis on economic growth puts a "keep an eye on" mark on the current deficit. The negative effects of current deficit on investments and growth were also stated in the previous literature (see Edwards 2002, and 2004). Moreover, countries which have higher investment rates are less dependent on foreign capital, i.e. they exhibit less current deficit, were claimed to grow faster (Prasad, 2007:161).

There are two main approaches in the literature, which focus on sustainability and causality. Sustainability of a current deficit is naturally critical for financial stability and growth. Although there is not a precise sustainability threshold for a current deficit, the concerns arise when it exceeds 5% of the Gross Domestic Product (GDP). Additionally, exchange rate policies, saving and investment rates, and financial markets' soundness are considered signs of the economic sustainability (Milesi-Faretti and Razin, 1996:65). Sustainability also has two approaches in the literature. The first one is the national point of view which takes into account consumption and investment, and the second view is the international finance standing which debates on the global investors' portfolios (Kee et al., 2011: 308).

The economic growth is roughly stated as the expansion of production frontier. It is also calculated as an increase in the real per capita output net of price changes after a given year.

As their main goal alongside with development, aspects of the growth varies especially across developing countries. There is a colossal literature in economics about this subject. Some of these studies tried to exert the fundamental ingredients of the growth, others focused on causality relationships amongst other variables such as the current deficit. Lastly, a number of studies examined the convergence within groups of countries.

The literature of the causality relationship between current account deficit and economic growth was summarized and showed in a table below (in which time series and panel data analysis are applied):

Table 1: Literature of Empirical Analysis

Authors	Date	Countries	Period	Method	Result
Akbaş, Lebe and Uluyol	2014	20 Emerging Markets	1990-2011	Emirmahmutoğlu and Köse (2011) Panel Causality Test	Bidirectional causality between current account deficit and GDP, unidirectional causality from short term capital flows to current deficit and GDP were determined.
Yalçınkaya and Temelli	2014	BRICS and MINT Countries	1992-2013	First Generation Cointegration Test	The effect of current account deficit on the stability of sustainable growth rates is more important problem in the MINT countries compared to the BRICS countries in the long run.
Akçay and Erataş	2012	BRICT	1993-2011	Panel Causality Test	There is a relationship from current accounts to economic growth in the BRICT countries.
Hepaktan and Çınar	2012	27 OECD Members	1975-2008	Panel VAR	
Kostakoğlu and Dibo	2011	Turkey	1991-2010	VAR	The positive changes in GDP shows that the current account deficit triggered.
Yılmaz and Akıncı	2011	Turkey	1980-2010	Granger Causality Test	Unidirectional causal relationship
De Melo et al.	2011	100 Countries	1971-2007	Probit Model	Current account deficits affects economic growth negatively.
Telatar and Terzi	2009	Turkey	1991-2005	VAR and Granger Causality Test	One way causality relationship from growth to current account balance
Kandil and Green	2002	United States	1960-2000	VECM	Real GDP was effective on current account balance.

3. Visegrad Four and Their General Economic Outlook

After communistic block has collapsed in 1989 the Central European Countries started to sign some agreements between each other. One of them is called Visegrad Four (V4) has been signed by Hungary, Czech Republic Poland and Slovak Republic in 15th of February, 1995. This was a declaration of cooperation with common goals about building democracy, freedom, modern market economy and integration into Europe Brazova et al. (2013: 5).

According to Horvath (2004), the Visegrad community may gain better economic and politic results during the negotiations with European Union because of they cannot behave independently from each other according to their agreement. In the first years they achieved many things as a group such as joining the NATO etc. The force behind of the cooperation was being a part pre-communistic history and being a transition economy. The transition started with Poland in 1991 and the country was very successful even by her own and the ambition of Poland forced it to play a key role according to Pehe (2004) to be a part of Central and Eastern Europe. Their slogan was "back to Europe". Czech Republic and Slovak Republic almost even stopped the V4

because of their governmental authorities who preferred not integration but isolation.

In May 2004 they became a member of EU after the enlargement of European Union and they promised to complete their political and financial regulations. Especially foreign policy activities have increased after being a part of EU and Schengen Area. Even Austria and Slovenia wanted to be a part of Visegrad Four or regional partnership (Bilcik and Strazay, 2006: 20). In 2011 the leader of these four countries signed also Bratislava Declaration to highlight the importance of V4 one more time.

The Hungarian economy mostly re-shaped by EU regulations in the beginning of 21st century and had rapid economic growth with high degree of openness. Czech Republic refused to be a part of Eurozone till 2019 because of the government needs special policy to manage balance of payments. When you compare Czech Republic with others they have better human development index and technological advantage thanks to structural changes in export and manufacturing industry. From 2003 till 2009 just after joining the EU, Slovakia had the highest unemployment rate but the lowest inflation rate ever due to being part of also Eurozone. After global financial crisis the Polish growth rate decreased sharply along of export independency and it also lowers the current account imbalances. Slovak Republic imported the gas from Russia baut growth rates of energy sector was weak so it shows that EU membership does not affect positively each sector of the countries. In summary all Visegrad countries have current account deficit which means negative current account balance and high level of economic growth (Zhurauliou, 2015: 124-134).

This is why it is important to test the relationship between current account balance and economic growth for the selected countries. This study contributes to the literature in two different way; first there are almost not too many papers written Visegrad countries the written literature and there is a gap to fulfill. The panel data analysis considers heterogeneity and cross-section dependency to not to gain biased results. Especially for regional agreements it is easy to reflect an external or internal shock from one country to another with the dynamics of economy. It is impossible to assume that a demand or supply shock will only affect the country it happened but not the cross-border. Also this study used the most updated data and econometric programs with second generation tests.

4. Data Set and Methodology

The aim of this paper is to determine the causality relationship between growth and current account deficit among Visegrad Four. The empirical model is based on the four countries' annual data of growth rate and current account balance from 1993 to 2015.

The empirical panel data analysis is stated as follows:

C.A = f (G)

C.A: Current Account Balance (% of GDP)

G: GDP Growth (annual %)

The data set is obtained from World Bank Development Indicators with their natural logarithmic forms which is % of GDP.

4.1. Empirical Results and Evaluation

4.1.1. Heterogeneity

As a starting point, homogeneity of the variables have been examined via delta test. Homogeneity of the variables has an effect on the directions and structures of following unit root and cointegration tests.

Table 2: Delta Test Results

Test	T-Statistics	Prob.
$\tilde{\Delta}$	-0.020	0.508
$\tilde{\Delta}_{adj}$	-0.021	0.508

According to the results on Table 2, the variables in the panel data model are homogeneous. Because probability is not significant and H_0 null hypothesis is not rejected.

4.1.2. Cross-sectional Dependency

It is important to find out the cross sectional independencies for the series which are proven to be heterogeneous with the delta test. The independence of the cross sectional data can also be stated as to whether all the cross sectional data be affected equally by a shock at any time or not.

The *CDlm* test statistic is to be obtained by the equation above in order to examine the cross-sectional independence. A contemporaneous correlation, low or high, is expected between the residuals.

Table 3: Cross-section Dependence Test (C.A.)

CD Test	T-Statistics	Prob
LM (Breusch, Pagan 1980)	32.721	0.000
CD LM 1 (Pesaran 2004)	7.714	0.000
CD LM 2 (Pesaran 2004)	-1.765	0.039
Bias-adjusted CD (Pesaran et al. 2008)	2.800	0.003

According to the results presented in Table 3, the null hypothesis, cross sectional independence of variable C.A., is rejected. So there is a dependency between the cross sections.

Table 4: Cross-section Dependency Test (G)

CD Test	T-Statistics	Prob
LM (Breusch, Pagan 1980)	23.072	0.001
CD LM 1 (Pesaran 2004)	4.928	0.000
CD LM 2 (Pesaran2004)	-2.159	0.015
Bias-adjusted CD (Pesaran et al. 2008)	5.013	0.000

The null hypothesis is rejected, because the probability is less than 0.05 for all calculated test statistics. So it's possible to say that there is a dependency between the cross sections composing G.

4.1.3. Stationary

Unit root tests which take into account the cross section dependency are called the second generation unit root tests. One of them is the test which is developed by Hadri and Kurozumi (HK) in 2012. This test is better than Coaugmented Dicky Fuller (CADF) unit root test under the circumstances that you cannot reject null hypothesis of CADF because the hypothesis of HK (2012) claims that there is unit root. The test calculates to different test statistics which are ZA_la and ZA_spc. It assumes that they have normal distribution.

Table 5: HK Unit Root Test Results for All Variables

	Constant		Constant and Trend	
Level	**T-stat.**	**Prob.**	**T-stat.**	**Prob.**
C.A.				
ZA_spc	3.3610	0.0004	2.0140	0.0220
ZA_la	1.5746	0.0577	4.7237	0.0000
G				
ZA_spc	0.9188	0.1791	1.0536	0.1460
ZA_la	0.8510	0.1974	0.6840	0.2470
First Diffrence				
C.A.				
ZA_spc	0.9658	0.1671	68.4742	0.0000
ZA_la	1.5294	0.0631	70.3359	0.0000
G				
ZA_spc	3.3881	0.0004	8.8596	0.0000
ZA_la	2.7459	0.0030	8.2895	0.0000

The maximum lag length is 4 and chosen according to Schwarz criteria.

ZA_spc has developed by Sul et al. (2005) and represent long term variance test statistic of augmented KPSS test. ZA_la has developed by Choi (1993); Toda and Yamamato (1995) and represents augmented KPSS test statistic for panel data. According to table 5 the variables have unit root on their level but after first differences they are stationary. Because of their probability value is under 0.005.

4.1.4. Panel Cointegration

The results, which are obtained from panel unit root tests, are crucial for the panel cointegration tests. While setting up the assumptions for the panel cointegration tests, considering stationarity orders of the variables can change the type of the test. Series taken into consideration exhibit cross sectional dependency, which suggests using second generation panel cointegration tests that takes it into consideration.

Table 6: Durbin-H Test Results

	Test Statistics	Bootstrap Prob.
DH_p	83.938	0.000
DH_g	153.084	0.000

According to the results, null hypothesis is rejected. Bootstrap values was taken into account because of the cross-sectional dependency when the numerical values were being interpreted. The results prove the cointegration among all the cross sections within the panel.

4.1.5. Panel Causality

Dumitrescu and Hurlin (2012) test can be used to estimate for both dependent and independent cross sections (Dumitrescu and Hurlin, 2012:1). This test has similarities to Granger causality test. The test refers to the mean of Wald tests calculated for Granger causality test (Dumitrescu and Hurlin, 2012:1). Dumitrescu and Hurlin test works for both of the cases where there is cointegration or not.

Table 7: Dumitrescu and Hurlin Causality Test Results

Null Hypothesis	Test	Statistic	Prob.
C.A does not Granger cause G	*Whnc*	1.796700	0.079420*
	Zhnc	1.126704	0.211470
	Ztild	0.784375	0.293300
G does not Granger cause C.A	*Whnc*	1.434129	0.142659
	Zhnc	0.613951	0.330415
	Ztild	0.365568	0.373156

*represents 10 % statistical significance.

When the results in Table 7 are examined, it is clearly seen that there is one-way causality from current account deficit to growth rate. Because only 0.079420 is under 0.10 and statistically significant.

5. Conclusion

Nowadays, the current account deficit is very important for many countries as a product of the financial globalization. From the late 90s to the latest global financial crisis, many countries exhibit increasing current account deficits. These deficits increase the fragility of the national economies and at the same time they contribute to the economic growth. In case of emerging market countries, the current account deficits have been financed by speculative and debt-increasing resources.

The current account deficit allows a country to consume more than it produces or invest more than it saves. Economic growth can be achieved or increased through foreign capital transfers. The concept of the current deficit can be harmless and useful especially when the financing of the deficit is sustainable.

The results of this study exhibit the cointegration between current deficit and growth. In other words, current account deficit and economic growth tend to move together in the long run. Under this assumption, causality test has been conducted and it shows that there is a unidirectional causality relationship between the economic growth and the current account deficit. In this context, it becomes important for regional agreements and Visegrad Four to find out the reason why only current account balance affects the economic growth but not vice-versa. Possible solutions for current account deficit in Visegrad Four; to raise national savings (with the help of communistic times saving habits especially for elderly people that the population over 65 is really high in Visegrad Four) and shrink the external deficit, complementary policy changes such as; new industry structure (production of tradable goods) and tax service, moving to Eurozone before than it has planned for Hungary and Czech Republic to control monetary policy.

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