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## The domestic and trade partner countries economic development as a determinant of trade balance-evidence from Macedonia

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### Abstract

*This paper investigates the determinants of the trade balance using quarterly data for Macedonia for the period 2003-2014. Specifically this study focus on the main cause of trade deficit in Macedonia by analyzing the impact of trade partner GDP growth and domestic real GDP growth. The results based on OLS (Ordinary Least Square) method under SPSS 20 software models show that the trade balance presented in millions of euro is significantly positively related to real foreign GDP growth of the trading partners. Real domestic GDP growth has a negative effect on the trade balance but is insignificant.*

Keywords: trade balance, domestic GDP growth, trade partner GDP growth

### 1. Introduction

The subjects about on the current account deficit of developing countries have been debated latterly since the current account balance was seen as one of the sensitive and important components in economies. Because the current account balance gives the balance of the commodity trade of real sector and foreign money income-outcome of manufacturer factors (Yeldan, 2005). At this point, the current account deficit is the mirror of economy in one sense. How much does a country's long-term trade balance depend on economic conditions in the rest of the world? Barring some notable objections, the general conclusion in the literature is that trade openness has a positive impact on growth (Baldwin,2003). In addition, a view is commonly held that with growing economic integration across countries, economic developments in and external balance a country are significantly influenced by developments abroad. An analysis using panel data for the period 1960–99 for 101 industrial and developing economies suggests that a 1 percentage point increase in economic growth among a country's trading partners, keeping all else equal, is correlated with an increase in domestic growth of as much as 0.8 percentage points. The positive sign of the relationship is consistent with the conclusions of the trade and growth literature, as well as with those of a few recent papers that have tried to quantify the impact of cross-country growth spillovers (V.Arora & A.Vamvakidis, 2004). A study that uses panel data for 42 developing countries (Asia, Africa and Latin America) for the period of 1970-1999 found that in general trade liberalization has aggravated the trade balance in developing countries. As regards the growing networking of the local economy and its impact on the trade balance, it came up that an increase in the local economies in some periods has reduced the trade deficit and in some periods we have a significant relationship between these variables, even for some countries

(Asia) which with the country's economic growth has increased the trade deficit (A.Parikh & C.Stirbu, 2004). In one study who investigates the determinants of the trade balance using panel data for 32 industrialized and emerging economies for the period 1990–2007. The results based on fixed effects models and linear mixed models allowing for random slope coefficients, show that the trade balance as a percentage of GDP is significantly positively related to real foreign GDP per capita of the trading partners. Real domestic GDP per capita has a negative effect on the trade balance (M.Falk,2008). The trade balance, represents the main item of the current account and the balance of payments in general, with flows of goods and services representing 81% of the estimated total current account, as the only the flow of goods (products) representing 65% of the estimated total current account. From here we can see the importance of the trade balance as well, and through the empirical study we can determine what factors are relevant to the trade balance. Classic Ricardo claimed that the trade balance is a game with a positive result for all parties involved, implying that in this round are included several parties. Accordingly, to achieve this result we depend on our country's economy and the economies that develop trade. In fact, this study begins precisely here, to study the effect of an economic situation in the country and in the trading partners and how much they affect the trade. Repercussive effects from a good economic performance in one country partner are inevitable. But do they really affect, or not? What is the direction and extent of its impact? The paper is contributing to the study of these relationships, which takes for analysis its database for Macedonia for the period between Q12003-Q42014, attempting to explain the effects of the impact of the real domestic GDP and the effect of the impact of real GDP of major trading partners of Macedonia (that is Germany, Serbia and Greece).

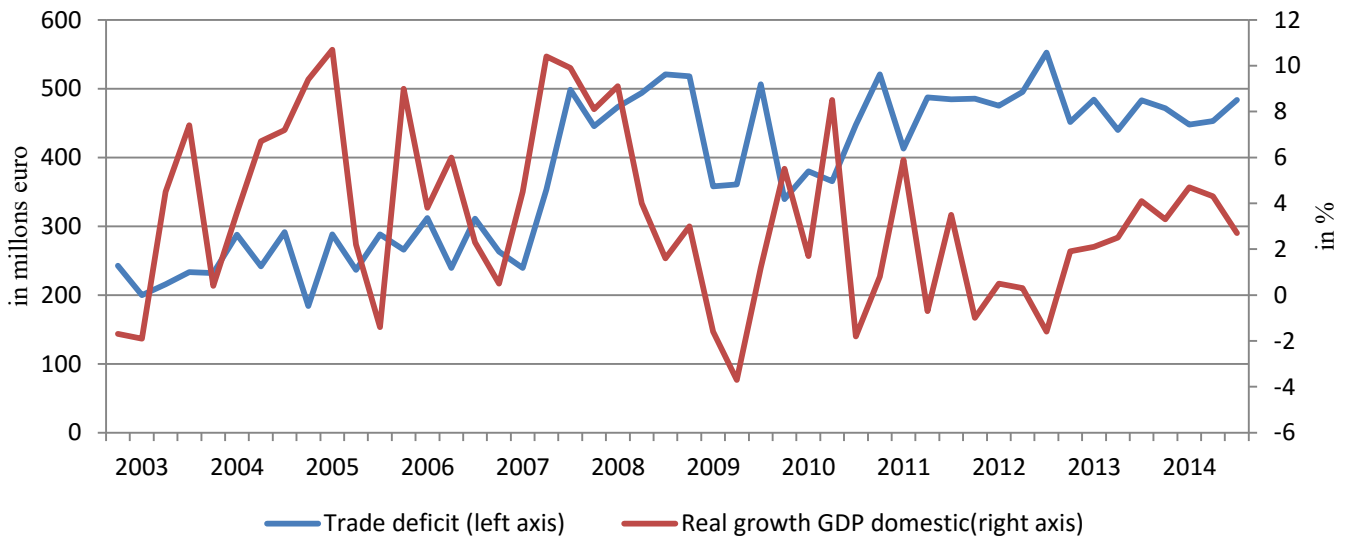
## 2. Theoretical concepts

In particular the trade balance and current account balance in general is one important indicator for the performance of an economy in transition and it plays several roles in the analysis of the policy makers for economic development. First, the importance comes from the fact that the balance of the current account, by reflecting the relations towards savings-investments, it is closely linked to the fiscal balance and private savings which are main factors for the economic growth. Secondly, the balance of one country in the current account is the difference between the exports and imports, by reflecting the entirety of the transactions of the internal inhabitants with the foreigners in the trades for goods and services (A.Aristovnik,2006). From this comes out the importance of the study of the trade deficit in the complex of the current account and this is an important indicator for the policy makers.

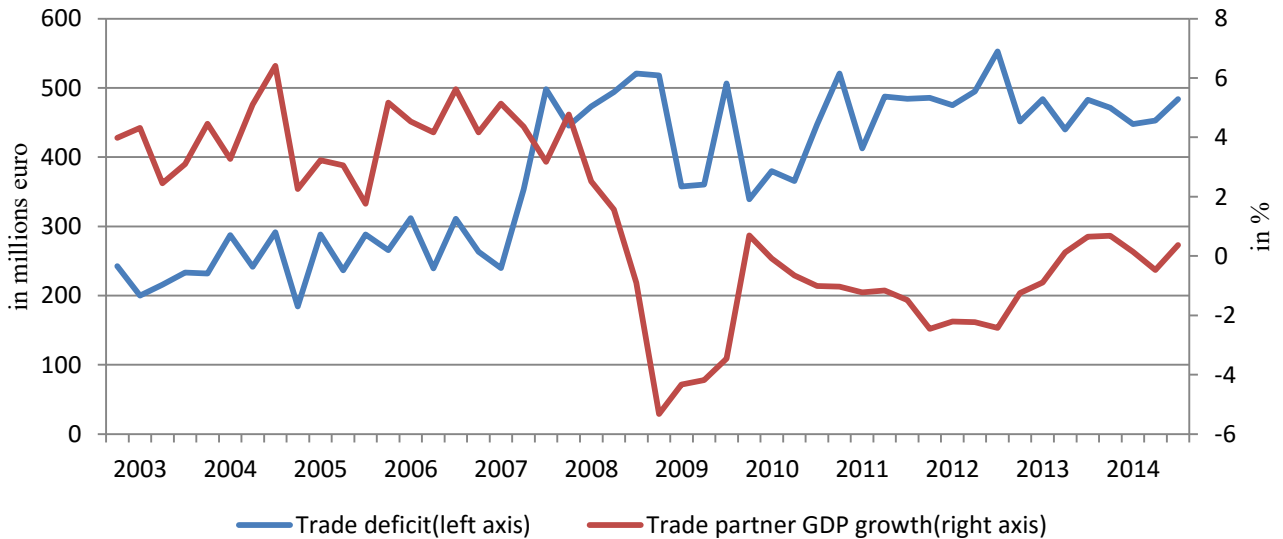
Macedonia is one country with a historical trade deficit. A trade deficit implying that a country's monetary unit goes for foreign goods because imports are greater than exports and foreign goods/products are more present in our country than our goods abroad. Except the effects on the real sector (see J.Eaton et al, 2013), the constant trade deficit balance ruins the external balance, because a trade deficit always, under *ceteris paribus*, implies a financed through cash reserves (especially for countries with a fixed exchange rate as Macedonia). The trends indicate that the importances of the trade balance are many and they all determine therefore the analyzed factors.

Figure 1:

a) The trade deficit and the real domestic GDP for the period Q12003-Q42014



b) The trade deficit and the real GDP of the trade partners of Macedonia for the period Q12003-Q42014



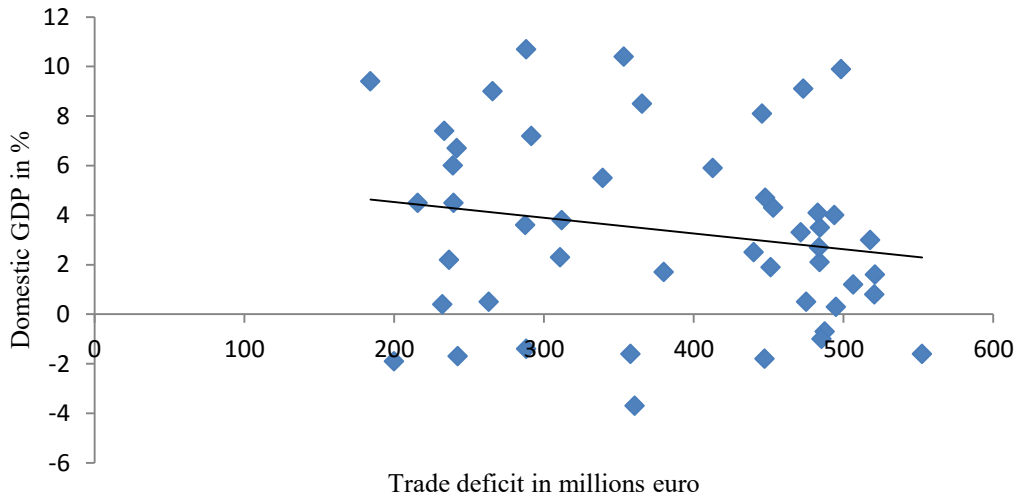
Source: The World Bank, the State Statistical Office of Macedonia

On average for the analyzed period the trade balance has a deficit of 380 million Euros per quarter, or 1.5 billion Euros annually. By other words, for the last 7 years the trade deficit has gone up to 24% of the GDP annually. These figures show that it is an indicator that should be further studied. From other hand, the GDP has increased by 3.1% every year starting from 2003 until 2014 (see Figure 1a). Under these circumstances, it seems that even though the economy is growing annually by 3.1% compared with the previous year, on the other hand, the trade deficit has been also growing with 1,5 billion euros yearly. But this story is not shown to us from figure

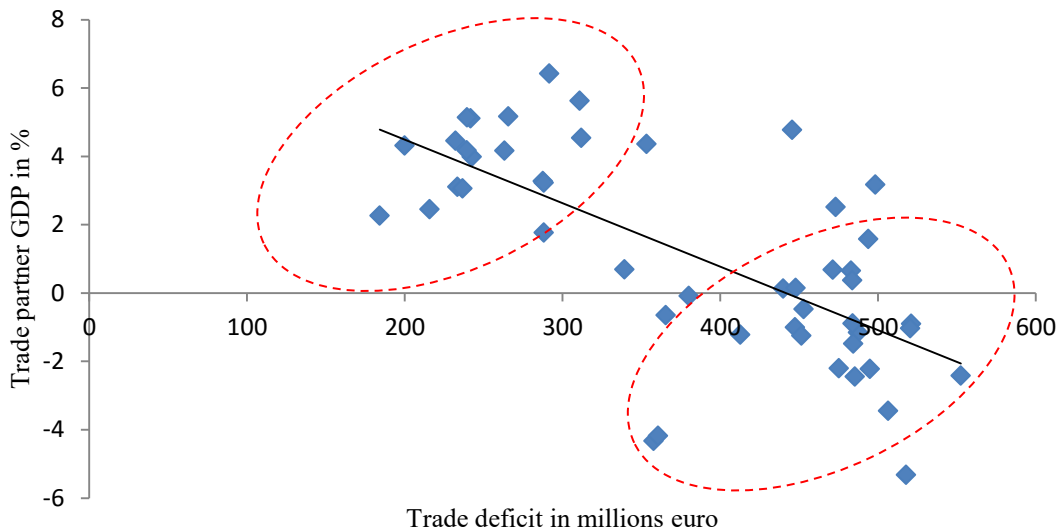
2a, where there is an inverse relationship between the rates of the GDP and the trade deficit. Respectively from the draft we can read that the more the country's economy grows up the more the trade deficit is decreased, although in a slope near to the linear.

Figure 2:

a) The correlation between the trade deficit and domestic GDP for Macedonia, Q12003-Q42014 period



b) The correlation between the trade deficit and the GDP of the trade partners of Macedonia, Q12003-Q42014 period



Source: The World Bank, the State Statistical Office of Macedonia

The concept of “globalisation” has recently been the subject of considerable attention in both academic and policy circles. This phenomenon broadly refers to the increasing integration of the world economy through financial and trade flows. As economies become more open to the international trade, the transmission and propagation of economic fluctuations through trade links has assumed increased importance. An analysis of the cyclical dynamics of international trade therefore has implications in a number of different dimensions, including macroeconomic forecasting, short-run policy making and international policy coordination. To put it in simple words, the states are economic entities inter-dependent on each other named as a "global village" and in this way are affected depending on the periods they are in. Economic growth in the trade partner country increases the flow of goods and in vice versa. Generally, the assumption is that an increase in economic activity of the trading partners causes an increase in the trade flows, affecting the trade balance. The three Macedonian trading partners (Germany, Serbia and Greece) for the period 2003 to 2014 have had an annual economic growth of 1.38% on average each year. Figure 1b shows that trading partners with the bluster of the global financial crisis decreased its economic scope, but the pace of trade deficit did not go through any change. From figure 2b we can see the correlation between the rates of the economies of the trading partners and the trade deficit, where we see an inverse proportion between these indicators, as economic growth rates of the partner countries decreasing the trade deficit. In addition to this chart, there can be obviously noticed two sets of accounts, the first group when countries register economic decline and a growing trade deficit, and the second group of countries which register high rates in the economy and Macedonia how has consolidated considerably its trade deficit. From this it seems that the improvement of the output of the partnering countries and its economic revival of these countries, Macedonia's trade deficit gets improved, because thus it is expected the products of Macedonia to have more chances to be sold in these countries and be default an increase in exports. The question to be raised is if this relation is so, or is it simply an accidental correlation. This is the case especially when we recall Keynes who claimed that a correlation between two variables does not necessarily imply causality. For this purpose there is created a regression composed of 9 variables, among whose we can see the pure effect and significances impact of these factors thought to influence the trade deficit.

### 3. Econometric estimates

The study aims to verify through OLS method how is influencing a country's economic climate and trade partners and it's the trade balance (the dependent variable). In the database is included Q12003-Q42014 period, and by bringing the number of 44 observations for Macedonia. In addition to these two indicators in the study were also introduced other variables thought to affect the trade balance. For the purpose of conducting proper regression analysis there were conducted a series of tests diagnostic. Diagnostic testing process should provide answers to the question whether or not the conditions for testing the authenticity of hypotheses due to conceptualizing research have been accomplished. Diagnostic tests can be listed as follows:

1) Diagnosis multi-correlative- Table 2 (Annex), in the form of correlation matrix, the correlation coefficients are presented and their significance levels of (non) acceptance of the height of the coefficients in question. Correlative matrix aims to test one of the most important conditions for the smooth implementation of regression analysis. By applying correlation analysis we can see that the relative measure fulfilled the most important condition for the implementation of the regression analysis which multi correlativity. In other words, the correlative analysis shows that

between predictors (even though between some predictors is high again) there is a high critical multi correlativity, respectively, there is limitation in assessing the relative value of predictors which are specific in explaining the trade balance as the dependent variable. The only problem is evident only correlativity between predictors' remittances and private transfers ( $r = 0.89$ ;  $p < 0:01$ ). For this purpose, additional tests were conducted, including:

- a. multiplier test for the existence or non-correlation series of errors. Height Lagragn coefficient (2.081;  $p > 0.152$ ) suggests that there is no correlation between the series of errors.
- b. The test of tolerance - values of coefficients for the unit "tolerance" model, remittances, trend GDP growth (0.64 and 0.64), model: remittances, trend GDP growth, inflation (0:55, 0:58 and 0.86) for the model: remittances, the trend of GDP growth, inflation, FDI (12:55, 12:57, 0.75 and 0.83) suggests that the values are within the limits of tolerance and that no value is not lower than the critical values of tolerance
- c. VIF (variants inflation factor) values for the unit VIF model: remittances, trend GDP growth (1:57 and 1:57) for model: remittances, trend GDP growth, inflation (1.82, 1.72 and 1.17) for the model: remittances, trend GDP growth, inflation, FDI (1.83, 1.74, 1:34 and 1:21) suggests that the values are within acceptable limits and that no value is not lower than the critical value for VIF.

With that between statisticians different there are divided opinions on the height of the critical correlation between the two predictors enforcement proper regression analysis consider the height of the correlation between predictors remittances and private transfers ( $r = 0.89$ ;  $p < 0:01$ ) and Significance his is the critical limit (.90) consider that we have the right to ignore the two predictors correlativity concerned. In other words, there are conditions for the continuation of the implementation of regressive analysis. Diagnostic test conducted next, which gives information about the degree of independence of measurement error, as one of the conditions to implement correctly regression analysis. The value of 1.866 calculated the Durbin Watson suggests that the same is in the framework of the values specified for the receipt of the same as normal. Even in this case the condition on the degree of independence of measurement error. Figure 3 (annex) is shown the chart on the distribution of residual values. The basic condition is that residual values have a normal distribution around the variables predictive value criterion. Figure 1 provides information on the form of distribution of residual values over the values of criterion variables (dependent variables). Kurtozis Skjunes values and suggest that residual values form the normal distribution, and that the value of 1:48 to 1.65 Kurtozis Skjunes and suggest that do not exceed the critical values of 0.05 and 0,01. Figure 4 (annex) shows diagnostic tests which refers to test homoscedativity The test in question provides information whether the conditions are met or not on equitable distribution of residual results, as one of the conditions for the correct use of regression analysis. Results from the distribution of residual predictive values of criterion (dependent variables) indicate that the same is equal along the continuum of outcomes dependent variables. In other words, we conclude that condition is met on the equitable distribution of retained results or condition of homoscedasticivity. To test whether the determinants of domestic economic growth and the economic growth of trading partners can predict so valuable, statistically, the level of growth of trade balance ran a linear regression standard. Results of regression (Table 3 Annex) claim that the model which includes determinants panel, determines the variance of 81.9% of private credit growth ( $R = 0.9052$ ). The value of  $F = 17,114$ ,  $p > 00:01$  finding implies that determination coefficient is statistically significant, ie it provides the information model that includes in itself the determinant variables is high and important.

Table 4 (Annex) can see statistical and economic importance of these factors. As expected, economic growth in trading partners (in this case Germany, Serbia, Greece) will improve the trade balance for 24 million Euros. This means that when these three economies will grow by 1% compared to last year, Macedonia will improve the trade balance of 24 million Euros. Level significance to this factor is the extent of 1%, which indicates a very important factor for the trade balance. A real growth of the domestic economy on the other hand does not qualify as an important factor (see the t-statistic and the last column, *Sig.*). No sense interpretation of the coefficient of impact when it is non significant factor. As shown in Table 2 (Annex), the variable real growth of domestic GDP significance with no correlation  $p > 10\%$ , while variable, GDP growth of trading partners presented a significant correlation with  $p < .000$ . In other words, the trade balance is not affected by the economic climate in the country, but by other factors that are most relevant. It's a bit paradoxical, but in line with this is the case with some other studies. In some periods noted that the growth of the local economy does not have a significant impact on the trade balance, even in some countries with economic growth, the trade deficit increased (A. Parikh & C. Stirbu, 2004). For a study of 32 industrialized countries (M.Falk, 2008) resulted in GDP growth of trading partners is positively interrelated to the trade balance, but domestic real GDP had a negative effect.

#### 4. Concludin remarks

The trade balance represents the main item of the current account and the balance of payments in general, where flows of goods and services represent 81% of the estimated total current account, while only the flow of goods (products) representing 65% of estimated total current account. From here it comes the importance of the trade balance, what the empirical study is trying to determine by identifying the factors which are relevant to the trade balance. This study attempts to study the effects of an economic development in the country and how much the trading partners affect the trade balance. Macedonia is a country with a historical trade deficit which for the analyzed period reaches the amount of 1.5 billion Euros yearly. Based on tests, the correlation between domestic economic growth and the trade balance is not observed in a significant correlation, while the economic growth of the trading partners has a significant positive correlation. An economic growth of the trading partners (in this case Germany, Serbia and Greece) will improve the trade balance for 24 million Euros. This means that when these three economies will grow by 1% compared to last year, Macedonia will improve the trade balance for 24 million Euros. A real growth of the domestic economy on the other hand is not qualified as an important factor.

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## ANNEX

**Table 1.** Tabular presentation of descriptive statistics for dependent and independent variables

	Mean	Std. Deviation	N
Trade balance	-372230537,61	112107096,189	44
Remittance	38795987,25	7229025,367	44
FDI	65032928,25	54224510,001	44
Private transfers	260299603,98	99102157,609	44
Inflations	2,3159	2,64601	44
Cash deficit % GDP	-1,30	3,185	44
Gov_Cons % GDP	18,22	1,610	44
House_Cons % GDP	75,24	3,552	44
Real_Gdp_growth	3,42	3,878	44
Trade partner_GDP_growth	1,2866	3,08344	44



**Tabela 2.** Correlation matrix of descriptive analysis get out from panel of independent variables and the trade balance

<b>Correlations</b>										
	Trade balance	Remittance	FDI	Private transfers	Inflation	Cash deficit	Gov_Cons	House_Cons	Real Gdp	Trade partner GDP
Pearson	1	-,700**	-,197	-,579**	-,450**	,432**	,161	,005	,181	,674**
Bilanci_tregtar Sig. (2-tailed)		,000	,100	,000	,001	,002	,148	,486	,120	,000
N	48	48	47	48	48	48	45	45	48	48

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

	Trade balance	Remittance	FDI	Private transfers	Inflation	Cash deficit	Gov_cons %GDP	House_cons %GDP	Real_Gdp_growth	Trade_partner GDP growth
Pearson Correlation	Trade balance	1								
	Remittance	-,700	1							
	FDI	-,197	-,055	1						
	Private transfers	-,579	,889	-,064	1					
	Inflation	-,450	,246	,374	,133	1				
	Cash deficit % GDP	,432	-,211	,111	-,199	-,018	1			
	Gov_cons %GDP	,161	-,484	,011	-,517	-,172	-,152	1		
	House_cons %GDP	,005	-,271	,204	-,329	,273	,204	,443	1	
	Real_Gdp_growth	,181	-,216	,286	-,251	,243	,206	-,149	,002	1
	Trade_partner GDP growth	,674	-,603	,207	-,559	,080	,390	-,160	,050	,477
Sig. (1-tailed)	Trade balance	,000								
	Remittance	,100	,361							
	FDI	,000	,000	,340						
	Private transfers	,001	,054	,006	,195					
	Inflation	,002	,085	,236	,098	,454				
	Cash deficit % GDP	,148	,000	,471	,000	,132	,162			
	Gov_cons %GDP	,486	,038	,092	,015	,037	,092	,001		
	House_cons %GDP	,120	,079	,030	,050	,056	,090	,167	,494	
	Real_Gdp_growth	,000	,000	,089	,000	,302	,004	,150	,375	,001
	Trade_partner GDP growth									
N	Trade balance	44	44	44	44	44	44	44	44	44
	Remittance	44	44	44	44	44	44	44	44	44
	FDI	44	44	44	44	44	44	44	44	44
	Private transfers	44	44	44	44	44	44	44	44	44
	Inflation	44	44	44	44	44	44	44	44	44
	Cash deficit % GDP	44	44	44	44	44	44	44	44	44
	Gov_cons %GDP	44	44	44	44	44	44	44	44	44
	House_cons %GDP	44	44	44	44	44	44	44	44	44
	Real_Gdp_growth	44	44	44	44	44	44	44	44	44
	Trade_partner GDP growth	44	44	44	44	44	44	44	44	44

**Figure 3:** Histogram on the distribution of residual values

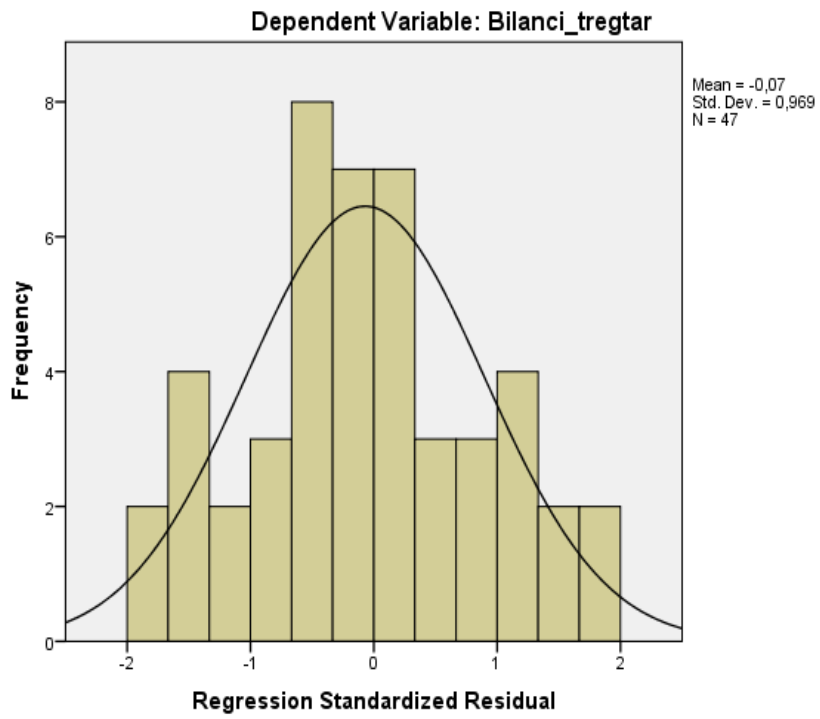
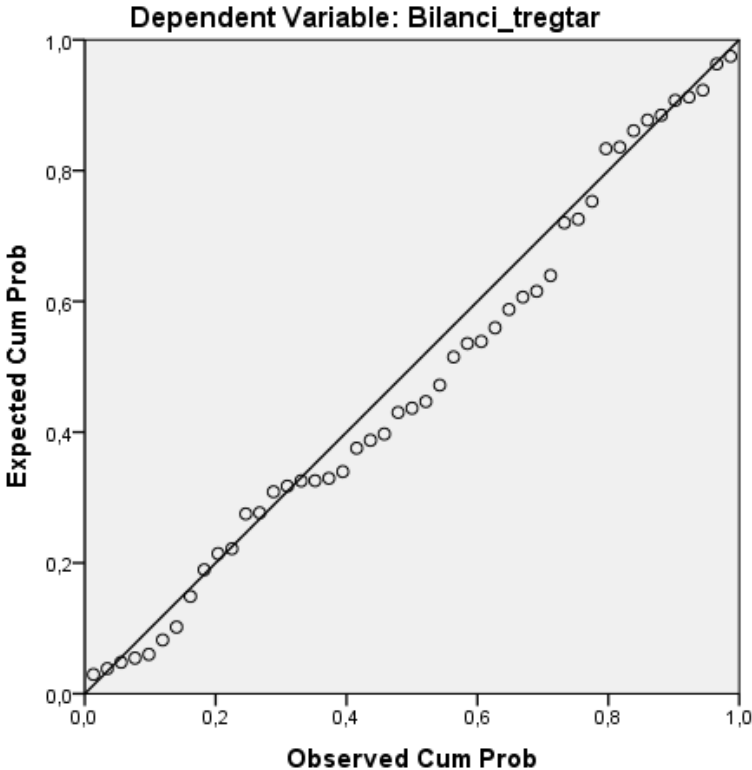


Figure 4: PP full normal distribution of standardized residual values



**Tabel 3.** Significances test of the regression coefficients multiple determinant variables and trade balance

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,905 <sup>a</sup>	,819	,771	53611752,863	1.866

a. Predictors: (Constant), Trade partner GDP growth, Households consumption, Inflation, FDI, Cash deficit, Real\_Gdp growth, Government consumption, Private transfers, Remittance  
 b. Dependent Variable: Trade\_balance

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	442700562154 327940,000	9	49188951350 480880,000	17,114	,000 <sup>b</sup>
	Residual	977234815318 05696,000	34	28742200450 53108,500		
	Total	540424043686 133630,000	43			

a. Dependent Variable: Trade\_balance  
 b. Predictors: (Constant), Trade partner GDP growth, Households consumption, Inflation, FDI, Cash deficit, Real\_Gdp growth, Government consumption, Private transfers, Remittance

**Tabel 4.** Tabular presentation of statistics which verified the value of independent variables through the trade balance

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-415610292,338	288142298,982		-1,442	,158
Remittance	-10,517	1,716	-,716	-6,952	,002
FDI	-,375	,176	-,182	-2,134	,040
Private transfers	,238	,196	,210	1,213	,233
Inflations	-14299784,940	3989209,727	-,338	-3,585	,001
Cash deficit	6160104,060	3078890,877	,175	2,001	,053
Gov_cons	15659724,453	8747194,065	,225	1,790	,082
House_cons	-1293963,018	3064476,886	-,041	-,422	,676
Real_Gdp growth	-323862,435	2545371,436	-,011	-,127	,900
Trade partner Gdp growth	24009845,901	5061146,027	,660	4,744	,000

a. Dependent Variable: Trade\_balance