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THE EFFECTS OF TRADE OPENNESS ON ECONONIMC GROWTH OF REPUBLIC OF MACEDONIA

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Abstract: International trade is argued to be one of the several catalysts of economic growth, although the effects of trade openness on economic growth have been and remain a subject of much controversy among scholars. Therefore, the aim of this research paper is to empirically analyse the effects of trade openness on economic growth for the case of Republic of Macedonia. For this purpose, the study utilizes quarterly time series data for the time period 1998Q1-2016Q2. The empirical analysis of data consists on econometric research strategy based on ordinary least squares (OLS), vector auto regression (VAR) methodology and Granger causality test. The results of the study reveal a positive and significant impact of trade openness on economic growth. Thus, for 1% increase of trade openness the economy will grow for 0.63%. The Granger causality test suggests that a change in trade openness precedes a change in real GDP. Moreover, a bi-directional causality (feedback relationship) has been confirmed between trade openness and economic growth of Macedonia. This shows that increasing level of openness is beneficial for the country, especially export oriented trade policies are crucial. The results are robust as they are supported by all model's specifications. Consequently, the findings of this paper indicate that policies focusing on trade liberalization and opening the economy to trade enhance the economy of the country, both in the short run and the long run.
Keywords: trade openness, economic growth, effects, international trade, VAR, Granger causality.

1. INTRODUCTION

International trade is a key injection of economic expansion. It nowadays represents the 'spirit' of the economic globalization. In fact, nations have paid a special attention and dedicated themselves to this essential factor for economic development since earliest time. The theoretical literature argues that trade can spur the economic growth when countries specialize in producing goods in which they have comparative advantage; moreover, it also can indirectly encourage development via other channels such as technology transfer, product diversity, increasing scale economies, efficient allocation and distribution of resources within the economy and interaction with trading partners. Hence, production process is more effective, productivity rises and the economy as well. Thus, all above factors functioned as a motivation for a serious empirical analysis of the effects of trade openness on economic growth for the case of Macedonia.

Since the independence Macedonia has recorded a trade deficit in its balance of trade. Trade in goods is the most decisive factor in the current account performance in the country, and the continued high trade deficit is an important weakness for its economy. The foreign trade structure shows that Macedonia's exports are highly concentrated, implying vulnerability to unfavorable trade conditions. Moreover, Macedonia depends heavily on a limited number of trading partners.

The economy of Macedonia tackled to external and internal shocks during the last two decades. Recently, the global financial and economic crisis as well as the Euro zone debt crisis affected negatively the external sector of the country. Trade partners that were affected by the crisis reduced the demand for goods and services from the companies of Macedonia. Even though, this is not the only reason for the difficult position of Macedonia in 2015 and 2016 year, in terms of external sector. Other critical reasons are the political crisis and the bad economic structure of the economy of the country. The last one perhaps is the most important reason. To get out of this situation, Macedonia in the future must change its economic structure and ought to be situated in producing goods that are mostly required in the worldwide market.

2. BRIEF LITERATURE REVIEW

In this section, is briefly examined the empirical literature concerning the international trade and its impact on economic growth and development of the most cited authors. The doctrine which claims that trade promotes prosperity and growth has a long legacy, which dates from the time of Adam Smith (1723-1790). Smith, in his famous book "An Inquiry into the Nature and Causes of the Wealth of Nations"(1776), states the significance of

trade as a component that can cause a surplus product, and due to the development of markets it can positively influence even in the distribution of work and in the level of productivity.

The positive effects of trade have been empirically revealed by a wide range of authors. The most prominent studies in this regard are those conducted by Sachs and Warner (1995), Karras (2003), Yanikkaya (2003), Edwards (1998), Dollar and Kraay (2002, 2004), Chang et al.(2009), Das and Paul (2011) which argue that more openness and outward arranged nations grow faster than nations with protectionist trade policies. Moreover, Krueger (1998) concluded that trade liberalization embraced from a period of declining growth rates or falling GDP can lead to a time of growth above rates previously realized. Sachs and Warner (1995) confirmed that trade liberalization improves welfare and growth. Also the positive impact has been confirmed in some recent studies, for instance Babula and Anderson (2008) conclude that there is a positive relationship between international trade and growth. The research of Bruckner and Lederman (2012) discloses that a one percent rise in openness affect the short run and long run economic growth by 0.5 and 0.8 percent, respectively. Also, Stone and Strutt (2009) hold the view that trade is an essential driver of growth.

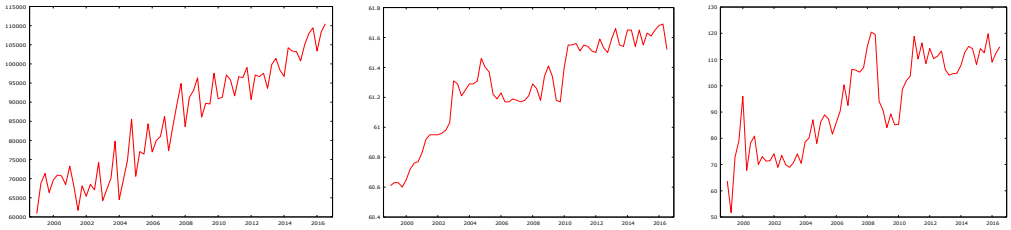
Although a great deal of authors reveal growth enhancing effect of trade openness, this issue is still debatable among scholars, as there are some scholars that haven't found robust evidence or even negative relationship between these two indicators. For instance, Rodriguez and Rodrik (2001) don't find robust evidence for the impact of trade openness on growth. In addition, Vamvakidis (2002) and Ulaşan (2015) find no support for the trade-led growth hypothesis. On the other hand, Rigobon and Rodrik (2005) find a significant negative impact of trade on income levels. Fenira (2015) finds a weak relationship between trade openness and economic growth. Rassekh (2007) investigates the trade-growth nexus for 150 countries and finds that lower income countries benefit more from international trade as compared to higher income economies.

3. METHODOLOGY AND DATA

The effects of trade openness on economic growth of Macedonia are firstly analyzed by a model specification estimated by OLS method, in view of the time series stationary properties. It has been further investigated for the long run relationship between variables using Johansen co-integration test as well as by performing an unrestricted VAR model. Also, it has been performed a Granger causality test to determine the direction of causality between trade openness and economic growth.

The quarterly data are used in the empirical analysis, covering the period 1999Q1-2016Q3. The main sources of data are the National Bank (NBRM) and the State Statistical Office (SSO). All the used series previously are adjusted for the effect of seasonality using ARIMA X12. The used variables in the analysis are presented in (Figure 1) below, whereas the data description in (Table 1).

Figure 1: Used variables in the empirical analysis



Sources: National Bank and State Statistical Office of Macedonia, MF and IMF

Table 1: Description of data and data sources

Variable	Abbreviation	Description	Source
Real GDP	RGDP	Gross domestic product with constant prices (base year, 2010)	SSO
Terms of trade	TOT	Changes in the relative prices of exports and imports base year 2010 = 100	NBRM calculations
Trade Openness	OPEN	Ratio of exports plus imports to GDP	SSO

Table 2: Descriptive statistics for the variables

	RGDP	TOT	OPEN
Mean	85378.41	103.56	93.79324
Maximum	110483.7	114.22	120.43
Minimum	60871.92	94.96	51.72
Std. Dev.	14132.41	4.801	0.3056
Observ.	71	71	71

Source: Authors' calculation

3.2 Econometric Model Specification

For analyzing the impact of trade openness on economic growth, as well as the effects of exports and imports, we specify the logarithmic model as following:

$$lnRGDP_i = \beta_0 + \beta_1 lnOPEN_i + \beta_2 lnTOT_i + \varepsilon_i$$

Hypothesis :

H0: $\beta_1 \leq 0$ The presumed linear relationship between trade openness and economic growth is not significant and non-positive

H1: $\beta_1 \geq 0$ Trade openness has a positive and significant impact on economic growth

Real GDP with constant prices is taken as dependent variable, as representative of economic growth, whereas trade openness and terms of trade are considered as independent variables. This model enables to examine the relative effects or the elasticity of trade openness on economic growth, since it is a log-log form model.

4. EMPIRICAL RESULTS

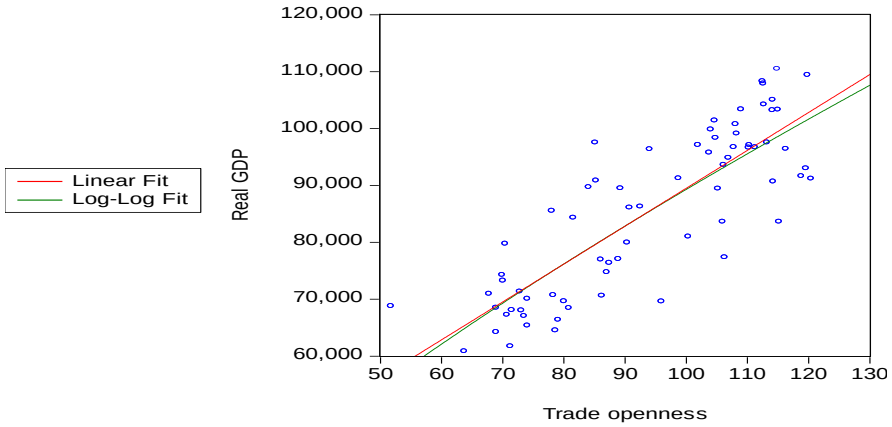
The results of the regression model estimated by OLS indicate that the coefficient of trade openness is with positive sign and statistically significant at 1% level of significance. This reveals that there is a positive relationship between trade openness and economic growth. If trade openness increases by 1% the real GDP will increase by 0.63%, holding other factors unchanged (see results in the equation below). This result confirms the hypothesis that trade openness has a positive and significant impact on economic growth.

$$\Delta lnRGDP_i = 5.5763 + 0.6319\Delta lnOPEN_i + 0.6266\Delta lnTOT_i + \varepsilon_i$$
$$t \ \ statistics \qquad (4.75) \qquad (9.70) \qquad (2.23)$$

The variable of total terms of trade (TOT) is also positively related with real GDP and appears to be statistically significant based on the t statistics that is greater than the critical value of 2.

The positive relationship between trade opennes and real GDP can be clearly seen from the scattered plot graph below (Figure 2) and it is affirmed that there is a positive trend between Trade Openness and Real GDP from the model's predictions and actual values.

Figure 2: The relationship between Trade openness and Real GDP in a scattered plot graph



Source: Author's calculations

4.1 Results of VAR model

Before applying the co-integration technique, it is necessary to find the lag length of the time series data. The lag length is found through the VAR technique by using the Akaike Information Criterion (AIC). This criterion suggested 4 lag length in VAR. The co-integration method is used in order to test the variables for the long run relationship. The (Table 3) provides empirical support for a long run relationship between above mentioned variables since the null hypothesis of no co integration is rejected. Both the trace tests and λ_{max} tests suggest that there is one co-integrating vector that means that variables are moving together in the long run and there is a long run relationship between trade openness and economic growth.

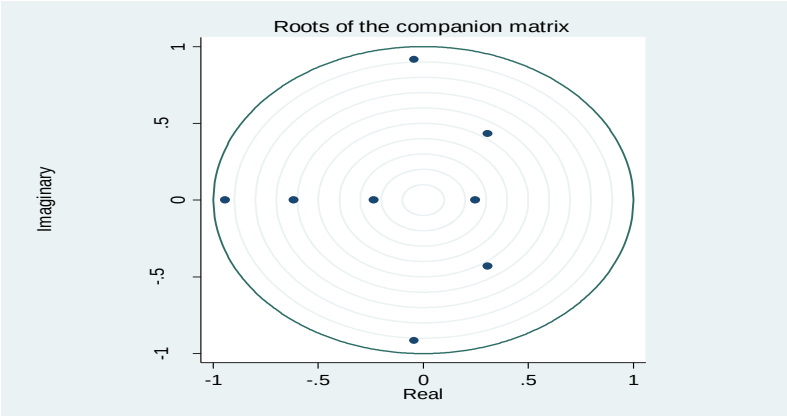
Table 3. Co- integration test results based on the Johansen maximum likelihood procedure

	Eigenvalues	H_0	H_1	5% critical value	Test values
Trace tests					
λ_1	0.6762	r = 0	r > 0	39.81	42.11*
λ_2	0.4752	r ≤ 1	r > 1	27.33	22.14
λ_3	0.3541	r ≤ 2	r > 2	18.91	16.19
λ_{max} tests					
λ_1	0.5641	r = 0	r = 1	27.94	31.21*
λ_2	0.4341	r = 1	r = 2	21.86	16.92
λ_3	0.3172	r = 2	r = 3	19.11	13.84

Source: Author's calculation

Based on the Akaike (AIC) information criterion, the optimum number of time lags for the endogenous variables specified in the previous section is p = 4, that is, 4 time lags are incorporated for each endogenous variable included in the model. Since two variables are included in the model (real GDP and trade openness), the system, or more specifically the VAR model, consists of two equations. The equation that is most interesting for our analysis is that equation, in which as a dependent variable is the real GDP, its four time lags and four time lags of other endogenous variables. As far as empirical results are concerned, at least one of the time lags for each endogenous variable is statistically significant, meaning the null hypothesis is rejected and the alternative is accepted, which means that there is a long-term link between real GDP and trade openness. Also based on the stability test, the VAR model is stable and meets the criteria that can be used as a real GDP growth forecaster as a result of long-term trading openness. This can be seen from the figure below (Figure 3) as the opposite model has no unit root, so all the roots lay within the circle.

Figure 3: Stability of the VAR model

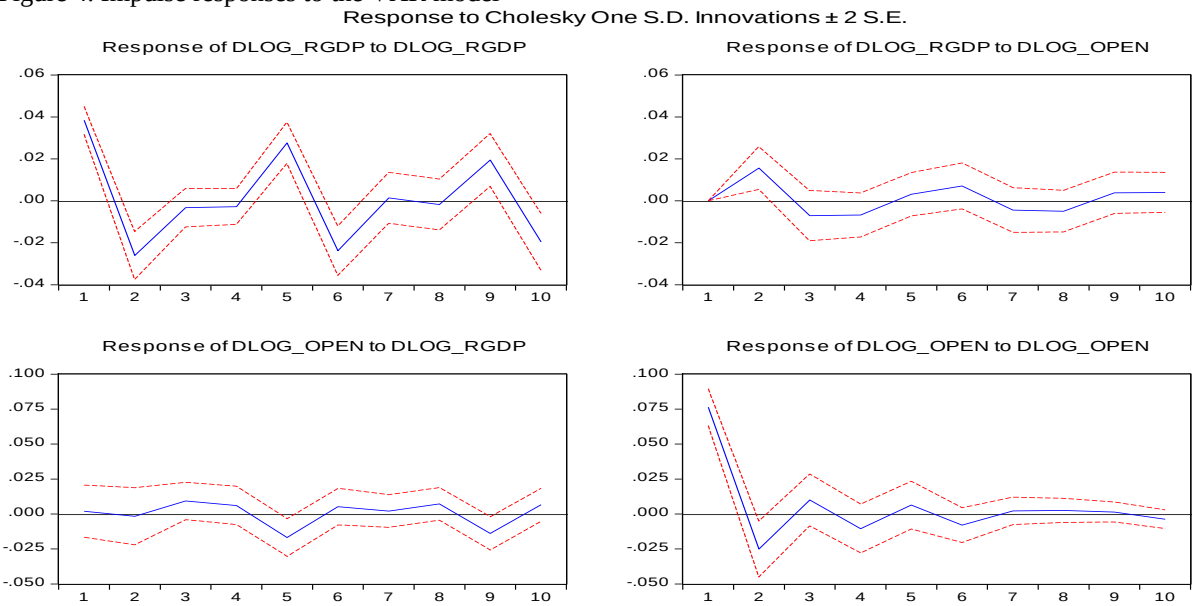


Source: Author's calculation

After the development of the VAR model, the functions of impulsive responses are performed. Initially, the VAR system is hit by the trade opening. Based on them, the real GDP response from a S.D innovation of trade openness is

cyclically positive and negative, it is negative in the second and fourth period and positive in other periods (see figure below).

Figure 4. Impulse responses to the VAR model



Source: Author's calculation

Empirical Results of Granger Causality Wald Tests

The Granger causality test is used to test the direction of causality among the variables. We regress the GDP on its own lagged values and on lagged values of trade openness by generating tests for the null hypothesis. According to the results GDP does not Granger cause Openness, the null hypothesis can be rejected, as well as for openness does not Granger cause GDP, the null hypothesis can be rejected, meaning that trade openness causes GDP and vice versa GDP causes the trade openness (see the Table below). This implies that there is a bi-directional causality between trade openness and GDP in real terms, as a representative of economic growth in the case of Republic of Macedonia.

Table 4. Granger Causality Wald Tests
Pair wise Granger Causality Tests
Sample: 1998Q1- 2013Q3
Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
GDP does not Granger Cause OPENNESS	67	22.823	0.001
OPENNES does not Granger Cause GDP		19.47	0.001

Source: Author's calculations

5. CONCLUSIONS

The main goal of this study was to empirically examine the effects of trade openness on economic growth of Republic of Macedonia. For this purpose, the study utilizes quarterly time series data for the time period 1998Q1-2016Q2. The empirical analysis of data consisted on econometric research strategy based on ordinary least squares (OLS) and vector auto regression (VAR) methodology as well as the Granger causality test. The results of the study reveal a positive and significant impact of trade openness on economic growth for the case of Macedonia. Thus, for 1% increase of trade openness the economy will grow for 0.63%. According to the results of Granger causality test there is a bi-directional causality between trade openness and real GDP, that means trade openness causes real GDP

and vice-versa. The long run relationship is also confirmed by the VAR model, as at least one of the time lags is statistically significant. This shows that increasing level of openness is beneficial for the country, especially export oriented trade policies are crucial, in order for a further increase of growth due to international trade.

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