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THE VALIDITY OF COMPENSATION AND EFFICIENCY HYPOTHESIS IN BRICS-T COUNTRIES

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ABSTRACT

Nowadays it is a big dilemma if international trade carries external risks or not. Many domestic economies had risks against the USA tariff decisions. That shocks affect the real economy in a speculative way. In this study, the effect of globalization on public expenditures is investigated. Efficiency hypothesis advocates that globalization decreases government expenditures while compensation hypothesis advocates that relationship between globalization and government expenditures is positive with a different argument. In this study, The Validity of Efficiency and Compensation Hypothesis will be analyzed in order for BRICS-T for the period 1989-2016. According to test results, for Russia and India, the government expenditures seems to depend on trade openness.

Key Words: Efficiency Hypothesis, Compensation Hypothesis, BRICS-T, Government Expenditure.

1. INTRODUCTION

Compensatory effect hypothesis argues that globalization has a positive effect on public expenditures. Increasing convergence between the countries by globalization confronts countries with risks based upon globalization. This circumstance causes individuals to demand more public expenditure besides causing to come into prominence of the welfare state as the mechanism that recovers the social costs based on globalization (Altay and Aysu, 2013:131).On the other hand, the decline in public expenditure can be explained by globalization, which means that global capital targeting profit maximization compromises public revenues in order to hold longer in the country, and in this context declining budgets and expenditures are reduced. This situation is examined in the context of the efficiency hypothesis in the literature (Tasar, 2016:16).

In this study, the validity of efficiency and compensation hypothesis will be analyzed in order for BRICS-T countries. The idea to examine the Turkish economy together with BRICS countries is because Turkey has some common aspects with the BRIC countries. The Turkish economy, along with the Chinese economy, has been experienced a fast and stable growth period during the last decade. Besides the growth performance, Turkey, Brazil, and India seem to have similar processes of economic development and integration to the world economy. (Kayhan et al, 2013). The second chapter of the research consisting of 4 parts gives the literature. Empirical analysis methods and results can be seen in the third chapter. There is the conclusion in the last part.

2.LITERATURE REVIEW

Effect of the globalization on public expenditures was first researched by Cameron (1978). Cameron (1978) revealed the presence of a positive relationship between globalization and public expenditures by OLS cross-section estimator method and the data belong the period of 1960-1975. It is concluded that public expenditures are effective in decreasing the external risks that countries are exposed because of the globalization. When we look at the empirical work done, there are studies that support The Validity of Compensation Hypothesis, Rodrick (1998), Alesina and Wacziarg (1998), Garret (2001), Swank (2001); Jeanneney and Hua (2004); Pickup (2006), Gemmell et al., (2008), Kueh et al., (2008); Epifani and Gancia (2009); and Zeren and Ergun (2013).

Garret and Mitchell (2001), surveyed the relationship between globalization and public expenditures for 18 OECD countries by means of the data belong to the period of 1961-1993. It was concluded in

the research which used panel regression analysis so as to support the efficiency hypothesis that globalization has a negative impact on public expenditures. As is seen in literature, Euraskin (2010), Liberati (2007), Bısemeyer (2009) and Petrou (2014); Garret and Mitchell (2001) obtained results that globalization has a negative effect on the public expenditures.

Moreover, with reference to the expressions of Bretscher and Hettich (2002), there is no relationship between public expenditures and openness. As is in Bretscher and Hettich (2002), the results that were obtained by Molana et al., (2004) with Aydogus and Topcu (2013).

3.EMPIRICAL RESULTS

In this study, the variables are as follows; the ratio of exports and imports to the gross domestic product (TO), the ratio of public expenditures to the gross domestic product (G) and gross domestic product (GDP). The countries are Brazil, Russia, India, China and South Africa and Turkey for the period 1989-2016. Data for variables are obtained from the World Bank. In the context of the analysis, the natural logarithm of the gross domestic product variable was taken against the changing variance problem.

Table 1: Definitions of Variables

Indicator Name	Long definition
GDP (current US$)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.
Trade (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of the gross domestic product.
General government final consumption expenditure (% of GDP)	General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security but excludes government military expenditures that are part of government capital formation.

Table 2: Correlations of the Variables

	GDP	G	TO
GDP	1		
G	-0.103	1	
TO	-0.002	0.066	1

The correlation between GDP, government expenditure and commercial openness is negative. The correlation between government expenditure and commercial openness is positive. That at the first look does not make sense and conflicts with the economic theory. The government expenditure to GDP ratio does not increase the GDP, that may be a result of inefficient government expenditures. TO to GDP correlation is also negative, that may be a result for countries that have a negative trade balance. TO to G correlation will be our primary focus and wil be investigated in the further tests. Before applying the unit root tests, the horizontal section dependency is tested to determine if the country datas are related. In the horizontal section dependency tests, the zero hypothesis has no horizontal section dependency and the alternative hypothesis is cross section dependency.

Table 3. Cross Section Dependency Test

Constant Model	GDP		G		TO	
	Statistic	p-value	Statistic	p-value	Statistic	p-value
CD_{lm} (BP,1980)	229.387	0.00***	149.957	0.00***	80.562	0.00***
CD_{lm} (Pesaran, 2004)	39.142	0.00***	24.640	0.00***	11.970	0.00***
CD (Pesaran, 2004)	-2.519	0.00***	-3.167	0.00***	-2.826	0.00***
LM_{adj} (PUY, 2008)	9.070	0.00***	10.117	0.00***	11.615	0.00***

Notes: For the model: $\Delta y_{i,t} = d_i + \delta_i y_{i,t-1} + \sum_{j=1}^{p_i} \lambda_{i,j} \Delta y_{i,t-j} + u_{i,t}$ lag length is considered as (p_i) 1. The figures which is ***, **, * show 1 %, 5 % and 10 % levels, respectively

If the probability values are considered, the alternative hypothesis is accepted as cross cross-section dependency exists. The 2nd generation unit root tests; Cross-sectionally augmented Dickey-Fuller (CADF) will be applied to the series, which can be tested individually for each country to see if the variables are stationary and when the time dimension is larger than the cross dimension (T> N). In the CADF test, the hypothesis is that the null hypothesis is there is unit root, and the alternative hypothesis is unit root-free. If the CADF test statistic is smaller than the critical value, it indicates that the country series is stationary. If the CADF test value is greater than the critical value, the null hypothesis is accepted and has a non-stationary process characteristic of that country's series.

Table 4. CADF Unit Root Test

		Constant		Constant and Trend
	Lags	CADF-stat	Lags	CADF-stat
GDP				
Brazil	2	-3.208*	2	-3.081
Russia	2	-2.203	2	-2.168
India	2	-1.914	2	-2.671
China	2	-1.647	2	-2.434
South Africa	1	-3.423*	1	-3.855*
Turkey	1	-2.613	1	-2.748
Panel		-2.501**		-2.826*
G				
Brazil	3	-2.235	3	-2.147
Russia	3	-2.645	3	-3.380
India	1	-3.625**	1	-3.854*
China	1	-4.344***	1	-4.502**
South Africa	1	-4.200***	1	-4.095**
Turkey	1	-3.869**	1	-3.728*
Panel		-3.486***		-3.618***
TO				
Brazil	4	-2.173	4	-1.415
Russia	1	-3.719**	1	-4.389**
India	1	-2.934	1	-3.128
China	4	-1.621	4	-2.142
South Africa	1	-3.226*	1	-3.402
Turkey	1	-3.410**	1	-3.578*
Panel		-2.847***		-3.009**

Notes: Maximum lag length is considered as 4 according to, Schwarz information criteria. CADF statistics critical values are, for the constant model; -4.11 (%1), -3.36 (%5) and -2.97 (%10) (Pesaran 2007, table I(b), p:275) ; constant and trend model -4.67 (%1), -3.87 (%5) and -3.49 (%10) (Pesaran 2007, table I(c), p:276). Critical values for the constatnt model -2.57 (%1), -2.33 (%5) and -2.21 (%10) (Pesaran 2007, table II(b), p:280) ; constatn and trend model -3.10 (%1), -2.86 (%5) and -2.73 (%10) (Pesaran 2007, table II(c), p:281). Panel Statistics are the mean of the CADF statistics.

When the test statistics are compared with the critical values obtained by Peseran (2007), it can be seen that the ratio of trade opennes to gross domestic product, gross domestic product, have unit root in both constant and constant and trend models. However, when the first differences of the variables are taken, it is the result that they do not have the unit root anymore.

Table 5. Cross Section Dependency and Homogenity Tests

Regression Model:		
$GOV_{it} = \alpha_i + \beta_{1i} GDP_{it} + \beta_{2i} TO_{it} + \varepsilon_{it}$	Statistic	p-value
Cross-section dependency tests:		
LM (BP,1980)	284.775	0.00***
CD_{lm} (Pesaran, 2004)	49.254	0.00***
CD (Pesaran, 2004)	16.696	0.00***
LM_{adj} (PUY, 2008)	48.725	0.00***
Homogeneity tests:		
$\tilde{\Delta}$	-1.773	0.962
$\tilde{\Delta}_{adj}$	-1.909	0.972

Notes: The figures which is ***, **, * show 1 %, 5 % and 10 % levels, respectively

If the probability values are considered, the alternative hypothesis that cross cross-section dependence and heterogeneity exists is accepted. According to this, heterogeneous estimation based cointegration methods considering cross-section dependency are used.

Table 6. Cointegration Test Ignoring Structural Break

	Constant			Constant and Trend		
	Statistic	Asymptotic p-value	Bootstrap p-value	Statistic	Asymptotic p-value	Bootstrap p-value
Error Correction						
Group_tau	-1.646	0.051*	0.432	-3.151	0.001***	0.249
Group_alpha	-0.396	0.346	0.549	-0.104	0.459	0.713
Panel_tau	-2.011	0.022**	0.251	-2.369	0.009***	0.264
Panel_alfa	-1.770	0.038**	0.351	-0.826	0.204	0.617

Notes: The null hypothesis of the test claims there is no cointegration. In the Error Correction test, the delay and the premise are taken as 1. Bootstrap probability values were obtained from 1,000 replicate distributions. The asymptotic probability values are obtained from the standard normal distribution.The figures which is ***, **, * show 1 %, 5 % and 10 % levels, respectively

When the asymptotic values are considered, the alternative hypothesis is accepted. According to the alternative hypothesis, there is a long-term relationship between the variables. Since both cross-section dependence and cointegration relation exist, it is necessary to use cointegration predictors which take into account the cross section dependency developed by Bai and Kao (2006) and Westerlund (2007).

Table 7. Panel Co-integration Estimators

		GDP		TO	
Study	Estimator	Coefficient	t-value	Coefficient	t-value
Bai and Kao (2006)	OLS	-0.029	-4.192***	-0.099	-3.185***
	CUP-FM	0.018	-2.927***	-0.043	-2.739***
Westerlund (2007)	BA-OLS	-0.033	1.984**	-0.108	-2.641***

Notes: The figures which is ***, **, * show 1 %, 5 % and 10 % levels, respectively

According to the table above, If GDP increases by 1% in the OLS model, government expenditure is reduced by 0.029% and government expenditure by 1%, government expenditure is reduced by 0.099%. If the GDP increases by 1% in the CUP-FM model, government expenditure increases by 0.018% and the commercial spending rate increases by 1%, government expenditure declines by 0.043%. If the GDP increases by 1% in the BA-OLS model, government expenditure decreases by 0.033% and government expenditure increases by 1%, government expenditure decreases by 0.108%.

Table 8. Emirmahmutoğlu and Kose Panel Causality

Country	**Lag**	**GDP=>G**			**TO=>G**	
		Wald	p-value	Lag	Wald	p-value
Brazil	1	0.143	0.704	2	0.695	0.706
Russia	2	0.265	0.875	3	6.707	0.081*
India	3	1.591	0.984	3	7.851	0.049**
China	2	1.218	0.543	2	1.299	0.522
South Africa	2	0.125	0.939	1	0.088	0.765
Turkey	1	2.955	0.151	1	1.273	0.259
Fisher		**6.840**	**0.868**		**16.260**	**0.179**

Notes: The figures which is ***, **, * show 1 %, 5 % and 10 % levels, respectively

In the Russian and Indian economies, there is a causality from trade openness to government expenditure. For other countries that relation does not exist.

4.CONCLUSION

The ratio of exports and imports to the gross domestic product (TO), the ratio of public expenditures to the gross domestic product (G) and gross domestic product (GDP) are examined in the study in order to see if the trade openness has a causality relation with government expenditure. The countries are Brazil, Russia, India, China and South Africa and Turkey that has similar macro economical graphics. According to the Panel Causality Test, that relation is valid only for Russia and India. The causality relation is from trade openness to government expenditure that approves the compensation theory. On the other hand, the causality relation from government expenditures to trade openness does not hold for any of the countries.

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