THE IMPACT OF TRANSFERRING MILITARY CONFRONTATION TO ECONOMIC COOPERATION FOR ECONOMIC GROWTH - ASEAN PANEL ANALYSIS

CrossMark
← click for updates

Mon-Li Lin[1][†] --- Tze-Wei Fu[2] --- Fu-Sheng Yang[3]

[1]Associate Professor, Department of International Trade, Takming University of Science and Technology, Taiwan, R. O.C.
[2]Associate Professor, Department of Financial Management, National Defense University, Taiwan, R. O.C.
[3]Army Captain of Taiwan (R.O.C)

ABSTRACT

The Association of Southeast Asian Nations (ASEAN) is one of the three major economic regions besides the North American Free Trade Area (NAFTA) and the European Union (EU). In addition to regional economic integration, the formation of ASEAN has the special characteristics of transferring force confrontation to economic cooperation. The impacts of defense spending on economic growth of six ASEAN countries are measured through panel data. Results show that reduction of defense spending significantly increases economic growth which means that the change from military opposition to economic cooperation in ASEAN member countries helps the economic development of these six countries.

© 2015 AESS Publications. All Rights Reserved.

Keywords: ASEAN, Military expenditure, Economic growth, Panel data, Fixed effect, Random effect.

JEL Classification: F42, H56.

Contribution/ Originality

This study is one of very few studies which have investigated the peace dividend of transferring military confrontation to economic cooperation in ASEAN.

1. INTRODUCTION

The Association of Southeast Asian Nations (ASEAN) was formed on 8 August 1967 in Thailand and the founding nations are Indonesia, Malaysia, Philippines, Singapore and Thailand. In the founding ASEAN declaration, ASEAN clearly specifies the aims and purposes of Association of Southeast Asian Nations (1967) in the following statement:

"These aims and purposes were about cooperation in the economic, social, cultural, technical, educational and other fields, and in the promotion of regional peace and stability through abiding respect for justice and the rule of law and adherence to the principles of the United Nations Charter. It stipulated that the Association would be open for participation by all States in the Southeast Asian region subscribing to its aims, principles and purposes. It proclaimed ASEAN as representing "the collective will of the nations of Southeast Asia to bind themselves together in friendship and cooperation and, through joint efforts and sacrifices, secure for their peoples and for posterity the blessings of peace, freedom and prosperity."

From the above statements, we can perceive that an important aim of ASEAN is to protect regional peace. We have to take note that in 1967, Vietnam, Lao PDR and the other communist nations were serious threats to other Southeast Asian countries. Brunei Darussalam joined ASEAN in 1984. The most exciting achievements for ASEAN are that of Vietnam joining ASEAN in 1995, Lao PDR and Myanmar in 1997, and Cambodia in 1999, making up what is known today as the ten Member States of ASEAN. The following figure shows the consistently declining ratio of military expenditure/gross national product (%) of the founding five countries and Brunei Darussalam from 1988 to 2011.
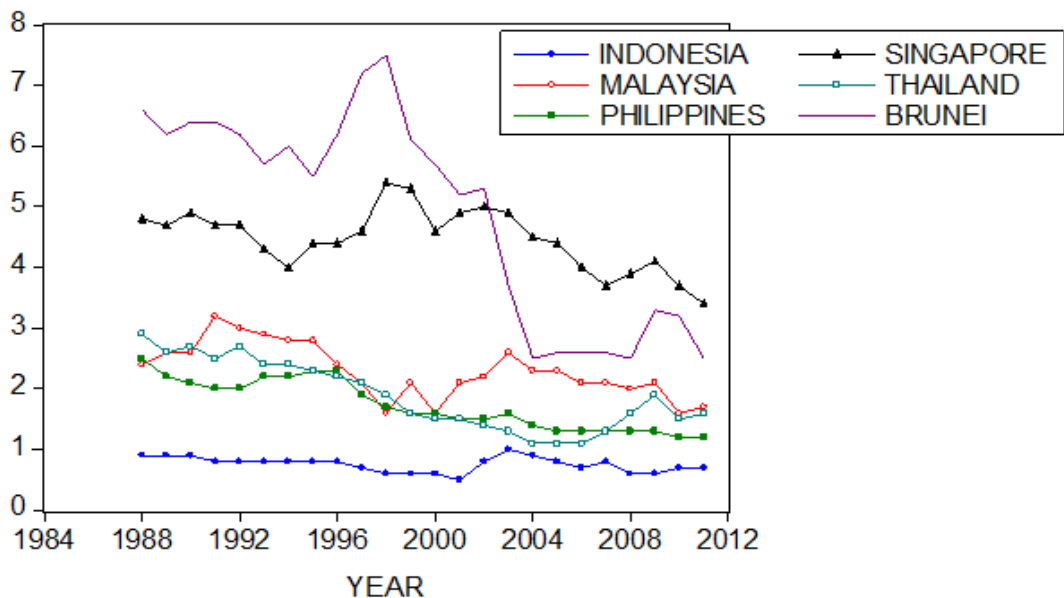

Figure-1. The military expenditure/GDP ratio of six ASENA

After these communist countries have joined ASEAN, the peace of ASEAN is extended. The entire region has transformed from military confrontation to economic cooperation. Previous studies on economic growth have focused only on trade and investment, and have not discussed the effect of military reduction. This study aims to evaluate this effect on the five founding ASEAN nations and Brunei Darussalam.

2. LITERATURE REVIEW

Based on economic theories, military expenditure affects economic growth. Benoit (1978) explores the relationship between military expenditure and economic growth and the data on 44 low developing countries proves that military expenditure has a positive effect on economic growth. After this important initial study, economic scholars have tried to establish an economic theory to explain the relationship between military expenditure and economic growth. Zou (1995) examines the separable and inseparable utility function to consumption and weapon stock, and concludes that capital accumulator is independent of military conflict among countries regardless of the form of utility function in the long run. Lai *et al.* (2002) developed an endogenous growth model to study the correlation between military expenditures and economic growth. They considered both the supply side and the demand side of national defense and concluded that a rise in military spending tends to stimulate a sustained growth rate, confirming Benoit's well-known empirical findings. Gong and Zou (2003) examine capital accumulation, military spending, arms accumulation and output growth in a stochastic endogenous growth model. The impact of military spending on economic growth is affected by the scale of elasticity of inter-temporal substitution in consumption.

The empirical studies of the relationship between military expenditure and economic growth are mixed. Some researchers have discovered significant positive correlation between military expenditure and economic growth. Hirnissa and Baharom (2009) examine the relationship of military expenditure and economic growth of five ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore and Thailand) by dynamic ordinary least square model of each country over the period 1962-2009. Indonesia and Thailand data demonstrate positive relationships while Malaysia and the Philippines data show no relationship. Singapore data presents a Granger causality relationship. Pradhan (2010) focus on co-integration and causality test at the individual level and panel level of five ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore and Thailand) covering the period from 1988 to 2007. The empirical findings show that unidirectional causality from economic growth to defense spending in Indonesia, Malaysia, Singapore and Thailand; bidirectional causality in Philippines at the individual level and at the panel of ASEAN. Ando (2009) surveyed 109 countries, covering the period from 1995-2003, and found that the impact of defense spending on economic growth is positive. Other research exhibit a negative impact of defense spending on economic growth. Stroup and Heckelman (2001) adopted a panel endogenous growth model to explore the relationship between defense spending and economic growth in Africa and Latin America ranging from 1975 to 1985, the results proved a significant negative correlation. Dunne and Nikolaidou (2012) explored the military expenditure impact of the EU-15 countries from 1961 to 2007 and the results indicated that defense spending has a negative correlation with economic growth. Some studies do not support any relationship between military expenditure and growth, such as the findings of Mylonidis (2008) and Habibullah *et al.* (2008).

Trade and investment are other factors that influence economic growth and are treated as control variables in this study. Most of the studies on trade support that trade and investment enlarge economic growth such as the findings of Wu (2004); Cuadros *et al.* (2004); Lee *et al.* (2004) and Ioana (2009).

3. RESEARCH MEHTOD AND DATA

Referring to Baltagi (2008) the static panel data analysis model is as follows:

$$y_{i,t} = \alpha + X_{i,t}\beta + \mu_{i,t} \quad i=1, 2, \dots N , \ t=1, 2,..T. \ \dots\dots\dots\dots\dots\dots\dots..(1)$$

Where $y_{i,t}$ is the dependent variable, α is the intercept, $X_{i,t}$ is the matrix of explanatory variables with coefficient β , $\mu_{i,t}$ is the disturbance term.

The one-way fixed and random effect model, $\mu_{i,t}$ can be separated into two parts: μ_i and $v_{i,t}$. μ_i which represents unobserved cross-sectional (individual) effects for N cross sections and $v_{i,t}$ represents random disturbances.

Pooled OLS does not consider the effects of μ_i . On the other hand, fixed-effect OLS takes into consideration the effects of μ_i and assumes μ_i as an individual-specific time-constant variable. Under random-effect OLS, μ_i are random variables and are uncorrelated with explanatory variables. There are two ways to estimate the fixed-effect panel model: The least square dummy variable model (LSDV) and the within effect model. The LSDV model uses dummy variables to measure the individual effect, μ_i . The within effect model does not use dummy variables, it uses deviation from group means as the dependent variable and independent variables and estimates the model by OLS. Since no dummy variables are used, the within model has a larger degree of freedom for error than LSDV, resulting in a smaller mean square error than LSDV. Even though LSDV has the advantage of accurate smaller mean square error than the within effect model, LSDV is not suitable for samples with a large cross-section. The random-effect model is estimated by generalized least squares (GLS) when the variance structure is known and feasible generalized least squares (FGLS) when the variance structure is unknown. Since the variance structure is often unknown, FGLS is used more frequently than GLS.

The Lagrange Multiplier (LM) test is used to determine whether pooled OLS should be used instead of a fixed-effect/random effect specification; High values of LM favor fixed effect model/random effect model over pooled OLS. The Hausman test is used to determine whether fixed-effect should be used instead of a random-effect specification. High values of Hausman test favor fixed effect model over random effect model.

The specific panel data model for this study is as following model (2):

$$EGR_{i,t} = \alpha + \beta_1 ME_{i,t} + \beta_2 TR_{i,t} + \beta_3 lNV_{i,t} + \beta_4 RD_t + \mu_{i,t} \quad \ldots\ldots\ldots\ldots\ldots(2)$$

$EGR_{i,t}$ is the value of economic growth rate of country i in time t. α is the intercept term, where $ME_{i,t}$ is the ratio of military expenditure/gross national product of country i in time t. Data period ranges from 1988 to 2011 that covers the join of communist nations. The sample is composed of five founding ASEAN countries and Brunei Darussalam.

Referring to Cuadros *et al.* (2004); Lee *et al.* (2004) and Mylonidis (2008) this study added trade and investment as control variables. $TR_{i,t}$ is the ratio of total trade value/gross national product of country i in time t and total trade value is the sum of export value and import value. $INV_{i,t}$ is the ratio of investment amount/ gross national product of country i in time t. The parameter year dummy, $RD_t =1$, when t=1997 and 1998, and 0 otherwise. Variable RD measures the effect of the financial crisis taking place during 1997 and 1998 on economic growth. $\mu_{i,t}$ is the error term and uncorrelated with explanatory variables.

There is one explanatory variable in this model, ME, and two control variables, TR and INV. It was hypothesized that ME has a negative effect on economic growth. The six ASEAN countries faced less military threats after the neighboring communist countries joined ASEAN. The six countries could then increase their economic growth in a peaceful environment. Therefore, the coefficient of *ME* was expected to be negative. Trade (TR) and investment (INV) have hypothesized positive effects on economic growth which align with the findings from Cuadros *et al.* (2004); Lee *et al.* (2004) and Ioana (2009).

The defense expenditure data were obtained from the (Stockholm International Peace Research Institute (SIPRI)) while the data on gross domestic product and trade value amount of the sampled countries originated from the (International Monetary Fund). The investment amount is from the (Penn World Table).

4. EMPIRICAL RESULTS

Table 1 exhibits the descriptive statistics of the variables. The mean value of economic growth rate (EGR) is 4.9% and the maximum economic growth rate (EGR) value was found in Singapore and the minimum value came from Indonesia. The maximum defense expenditure (*ME*) value was found in Brunei Darussalam and the minimum value came from Indonesia. A low standard deviation value showed the low dispersion of defense expenditure among the different countries. The maximum trade ratio (TR) value was found in Singapore and the minimum value came from Philippines. High standard deviation TR value exhibits high trade differences among these countries. Malaysia owns the maximum investment ratio (INV) while Brunei Darussalam has the

minimum investment ratio value and the mean investment ratio is 28.7%. Owing to RD being a time dummy variable, no descriptive statistic is described.

Table-1. Descriptive statistics on samples

	Mean	**Median**	**Standard Deviation**	**Maximum**	**Minimum**
EGR (economic growth rate) %	4.9	5.1	4.1	14.7	-13.1
ME (military expenditure ratio)%	2.7	2.3	1.7	7.5	0.5
TR (trade ratio) %	28.6	18.8	24.8	101.9	3.6
INV (investment ratio) %	28.7	26.6	10.5	51.3	10.2

The correlation test and the variance inflation factor (VIF) test of variables both verified that there were no significant linear relationships among the explanatory variables at a 1% significance level (details can be presented upon request).

Table 2 shows that the most appropriate model for this study was the random effect model, while the LM value of 14.9 indicated that fixed effect/random effect was better than pooled OLS at a 1% significance level. The result of low Hausman test verified that the random effect model was more appropriate than the fixed effect model.

Table-2. Panel data analysis

$$EGR_{i,t} = \alpha + \beta_1 ME_{i,t} + \beta_2 TR_{i,t} + \beta_3 lNV_{i,t} + \beta_4 RD_t + \mu_{i,t}$$

	Pooled Regression		**Fixed Effect Model**		**Random Effect Model**	
	coefficient	**p-value**	**coefficient**	**p-value**	**coefficient**	**p-value**
ME	-0.0942	0.683	-1.1979*	0.0546	-0.7645***	0.0084
TR	-0.0064	0.667	0.0843*	0.0871	0.04922**	0.0150
INV	0.2378***	0.0000	0.1675**	0.0117	0.1132**	0.0122
RD	-0.0742***	0.0000	-0.035***	0.0005	-0.0356***	0.0002
α	-0.008226	0.3692	-0.029159	0.3241	0.044785**	0.0115
F-value	31.56797		6.616781		14.91771	
Adjusted R ^{2}	0.519705		0.309084		0.330056	
Model Selection						
LM-test	14.92***(0.000)					
Hausman test	1.642583 (0.8562)					

Note: Probability values are in parentheses;

*** indicates significance of the values at the 1% level. ** indicates significance of the values at the 5% level. * indicates significance of the values at the 10% level.

The results from the random effect model of model (2) showed that all the variables have significantly influenced the dependent variable and economic growth rate (EGR). Both the TR variable and the INV variable have significant positive influences, with coefficient value of 0.049 and 0.113 respectively for economic growth rate in the six ASEAN countries at the 5% significance

level. Higher trade ratio and investment ratio can stimulate a country's economic growth. On the other hand, military expenditure (ME) has a significant negative impact, coefficient value -0.7645, on economic growth rate. One percent decreases in ME will increase EGR 0.765 percent. The negative coefficient, -0.765, is much higher than the positive sum of TR and INV, 0.162; which means that the establishment of a peaceful environment through economic cooperation can enhance economic growth more than other factors such as trade and investment.

It can be noted that the findings of this study reinforces earlier studies. For instance, the study by Hirnissa and Baharom (2009) and Pradhan (2010) do not control the effect of trade and investment on economic growth while examining the relationship between defense and economic growth. Hirnissa and Baharom (2009) analyze the five ASEAN countries at an individual level without discussing the panel results. Pradhan (2010) verify the existence of causality but fail to indentify whether military expenditure has a positive or negative effect on economic growth.

The coefficient of RD is significantly less than zero, RD has a negative significant effect on economic growth rate. Average economic growth rate lost 3.56% during the financial crisis period.

5. CONCLUSION

Compared to previous studies, this study measures the effect of transferring military confrontation to economic cooperation for economic growth. ASEAN is a good sample for this study.

Based on economic theories, military expenditure will affect economic growth and the empirical results of this study have proved the positive effect on economic growth. Six ASEAN countries enjoy the peace dividend, the significant increase in economic growth resulting from the decrease of military expenditure. The effect is higher than the sum effect of trade and investment.

These findings offer us a reflection. Countries confronting arm conflicts with other countries should strive to resolve mutual hostility and establish friendly relationship. Peace is the best policy to promote economic growth.

REFERENCES

Ando, S., 2009. The impact of defense expenditure on economic growth panel data analysis based on the feder model. International Journal of Economic Policy Studies, 4(8): 141-154.

Association of Southeast Asian Nations, 1967. Available from http://www.aseansec.org/the_founding_of_asean/index.html.

Baltagi, B., 2008. Econometrics analysis of panel data. 4th Edn., New Jersey, U.S.A: Willey.

Benoit, E., 1978. Growth and defense in developing countries. Economic Development and Cultural Change, 26(2): 271-280.

Cuadros, A., V. Orts and M. Alguacil, 2004. Openness and growth re-examining foreign direct investment, trade and output linkages in Latin America. Journal of Development Studies, 40(4): 167-192.

Dunne, P. and E. Nikolaidou, 2012. Defence spending and economic growth in the EU15. Defence and Peace Economics, 23(6): 537-548.

Gong, L. and H. Zou, 2003. Military spending and stochastic growth. Journal of Economic Dynamics and Control, 28(1): 153-170.

Habibullah, M.S., L. Siong-Hook and D. Affizah, 2008. Defense spending and economic growth in Asian economies a panel error-correction approach. MPRA Paper No. 12105: 1-24.

Hirnissa, M.T. and A.H. Baharom, 2009. Military expenditure and economic growth in Asean-5 countries. Journal of Sustainable Development, 2(2): 192-202.

Ioana, M., 2009. Exports-economic growth causality: Evidence from CEE countries. Romanian Journal of Economic Forecasting, 2(1): 105-117.

Lai, C.C., J.Y. Shieh and W.Y. Chang, 2002. Endogenous growth and defense expenditures: A new explanation of the Benoit hypothesis. Defence and Peace Economics, 13(3): 179-186.

Lee, H., L. Ricci and R. Rigobon, 2004. Once again, is openness good for growth. Journal of Development Economics, 75(2): 451-472.

Mylonidis, N., 2008. Revisiting the nexus between military spending and growth in the European union. Defence and Peace Economics, 19(4): 265-272.

Pradhan, R., 2010. Modelling the nexus between defense spending and economic growth in Asean- 5: Evidence from cointegrated panel analysis. African Journal of Political Science and International Relations, 4(8): 297-307.

Stroup, M. and J. Heckelman, 2001. Size of the military sector and economic growth: A panel data analysis of African and Latin. Amrican Journal of Applied Economics, 4(2): 329-360.

Wu, Y., 2004. Openness, productivity and growth in the APEC economies. Empirical Economics, 29(3): 593-604.

Zou, H.F., 1995. A dynamic model of capital and arms accumulation. Journal of Economic Dynamics and Control, 19(1): 371-393.

BIBLIOGRAPHY

International Monetary Fund, Available from http://www.imf.org/external/index.htm.

Stockholm International Peace Research Institute (SIPRI), Available from http://www.sipri.org/publications.

Penn World Table, Center for international comparisons. Available from https://economics.sas.upenn.edu/research.