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## Will Military Expenditure Secure National Peace and Spur Economic Growth?

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### *Abstract*

Peace has been seen to be a great factor for economic development as claimed by literature. This study aimed to establish causal relationship between military expenditure and national state of peace and further determined the effect of national peace to economic growth using binary and nominal logistics regression. With the use of a statistical software, it generated four logits according to countries' state of peace. Findings revealed that increasing military expenditures to those countries whose state of peace were high and very high did not further improve peacefulness. However, for those countries whose state of peace were very low, low, and medium, reducing or increasing the military expenditure will result to a deterioration or improvement in the level of state of peace. Thus, military budgets will be a crucial decision for developing countries but not for the developed and generally peaceful countries. Further, result showed that the state of peace of a country did not have significant effect on the economic growth in the following year. In conclusion, peacefulness and productivity cannot be directly realized in one or two years after the investment in military expenditures.

*Keywords:* Military expenditures, state of peace, economic growth, productivity

### *Introduction*

Countries around the world has continuously increased their military expenditures to improve the state of peace. Peace is essential to maintain societal order for the performance of different functions. The Global Peace Index (GPI) is the world's leading measure of global peacefulness developed by the Institute for Economics and Peace. The index indicators include the level of safety and security in the society, extent of

domestic or international conflict and degree of militarization (GPI, 2016). Data provided by the World Bank show an upward trend on annual percentages of military expenditures which include operating cost, procurement of equipment and construction of facilities and research and other development (Lamb & Kallab, 1992). The purpose of this study was to find out the relationship of the military

expenditures and national state of peace. Further, this study determined the effect of national state of peace to economic growth.

Various literature showed positive effects of peace to economic growth. One of these is the study conducted by Anthirasegaram (2008) illustrating peace having direct and indirect positive effect on economic growth. In contrast, Collier (2006) cited that military expenditures affected economic development because government resources were diverted. He found out that when military expenditures were doubled, the economic growth and revenue of a country was reduced by 20%. Earlier, Kim (1995) showed that military spending tended to stimulate economic output and contribute directly to the expansion in Korea's economy.

Despite the effort of the countries around the world to improve peace and order, the published report by GPI (2016) found out that global peace levels continue to deteriorate while the gap between the most and least peaceful countries continued to widen. According to this report, the computed violence cost of the world was around 13.3% of the world Gross Domestic Product (GDP). High positive peace is more likely to maintain stability and adapt and recover from both internal and external shocks while low positive peace systems are more likely to generate internal shocks.

On reviews and analysis of military expenditures, there were few researches on military expenditures to deterrence

and most literature analyzed the impact of military expenditures to economic development. Sandler and George (2016) explored the increasing global military expenditures and its impact to deterrence. Sen (1992) expressed that the quantified effect of military expenditure to economic development remained as a controversial issue. Because of these gaps on the relationship of military expenditures to peace and economic prosperity, this study was conducted. Particularly, the study aimed to do the following objectives:

1. determine the effect of military expenditures to the countries' state of peace;
2. identify the relationship between peace and economic growth; and
3. analyze the existing policy in the Philippines related to military expenditures.

This study can be made as a future reference for budget allocations of the country especially in military expenditures.

#### *Framework of the Study*

The paper is anchored on the cause and effect theory of Bergman and Collins (2004). On the concept of common good, government spends for military in order to strengthen the peace and order situation. Developing countries spend significant portion of resources for military despite the astonishing level of poverty. Most of these expenses go to suppression of active international warfare, peacetime military budget inertia, arm races,

civil war, and beneficiaries and vested interest (Collier, 2006). The Institute for Economics and Peace (2018) found out that peace has a strong correlation with economic growth. For the past 10 years, those countries with highest improvement on state of peace had a per capital GDP of seven (7) times higher than those countries whose peace levels deteriorated. With all these theories, the authors believed that higher military expenditures will lead to better state of peace and ultimately result to a higher economic growth.

The diagram shown in figure 1 illustrates global peace as an effect of military expenditures and the relationship of global peace to economic growth. There are three variables involved in this study: the military expenditure, global peace and economic growth. Military expenditure is expressed as percentage of Gross Domestic Product (GDP) for the operations and maintenance of the Defense Department, salary and health care of its military personnel, different procurement of various equipment and supplies, research development testing and evaluation, military personnel housing, and defense related activities both domestically and internationally. The Global Peace could be positive or

negative. A country with a positive peace has a well-functioning government, sound business environment, equitable distribution of resources, acceptance of rights of others, good relationship with neighbours, free flow of information, high levels of human capital, and low levels of corruption. Whereas, negative peace is defined as the absence of direct violence; and fear of violence is the absence or presence of violence or fear of Violence. The Global Peace Index (GPI) is a tool used to measure global peacefulness developed by the Institute for Economics and Peace (IEP) which is an independent non-partisan and non-profit organization. IEP is dedicated to shifting the focus of peace to a positive, achievable, and tangible measure of human well-being and progress. It ranks independent states and territories according to their level of peacefulness (Institute for Economics and Peace, 2016). On the other hand, economic growth is the change of GDP signifying increase or decrease of economic productivity.

### *Methodology*

As expressed in the framework of the study, the variables of interest are the military expenditures, global peace index, and GDP growth rate. With the use of exploratory research,



*Figure 1.* Schematic diagram of the study.

the researchers employed data mining technique in data gathering and used binary and nominal logistic regression as the methods of analysis to establish causal relationship.

The data of the military expenditures came from the open database provided by the World Bank. There were 138 countries analysed on their 2015 military expenditures expressed as percentage of the Gross Domestic Product of each country. To get the effect of the military expenditures to global peace, the researcher used the 2016 global peace index of 171 countries from Institute for Economics and Peace (IEP). The Global Peace Index (GPI) is a composite index of 23 indicators weighted and combined into one overall score. The 2016 Global Peace Index report had a score from 1.192 to 3.806. A score of 1 signifies perfect peace. The report also categorized the state of peace of different countries into very high, high, medium, low and very low. The researcher assigned numbers 1-5 respectively to the state of peace category to establish relationship of the military expenditure to global peace.

With the use of a statistical software, a country's military expenditure was matched to the assigned number of the state of peace and the researcher utilized nominal logistic regression for the detailed analysis of the effect of the 2016 military expenditures. The software generated logits that were discussed and analysed. To determine further the effect of the global peace in 2016 to the economic growth in 2017, the researcher used again the data

mining method to gather information on the change of GDP from 2016 to 2017. The World Bank provides annual data on growth rate of GDP at market prices based on constant local currency. In order to get the change from the 2016-2017 growth rate data, 2016 growth rate was subtracted from 2017, and resulted to either positive or negative values. The researchers then assigned "0" to a negative and "1" to positive rate. With the same statistical software used, the data on the change in growth rate were matched to the global peace category; this time, a binary regression was used to determine effects of the two variables.

### *Results and Discussion*

#### *Effect of Military Expenditure to the Countries' State of Peace*

The relationship of military expenditures in 2015 to the state of peace in 2016 is shown in Table 1. The table presents logits, which are the logarithms of the odds showing the probability (p). Odds ratio demonstrates loading of global state of peace that determines the outcome of the military expenditure to global peace.

Table 1  
*Nominal Logistic Regression. Peace Index 2016 versus Military expenditures 2015*

Predictor	Coefficient	SE Coef	Z	P	Odds Ratio
Logit 1: (4/5)					
Constant	0.3146	0.7322	0.43	0.667	
Military 2015	0.8530	0.5626	1.52	<b>0.129</b>	2.35
Logit 2: (3/5)					

Constant	0.1452	0.7228	0.20	0.841	
Military 2015	1.2026	0.5563	2.16	<b>0.031</b>	3.33
Logit 3: (2/5)					
Constant	-1.6934	0.8033	-2.11	0.035	
Military 2015	1.3252	0.5637	2.35	<b>0.019</b>	3.76
Logit 4: (1/5)					
Constant	-2.1860	0.8657	-2.53	0.012	
Military 2015	1.3012	0.5707	2.28	<b>0.023</b>	3.67

0.05 Level of significance

There were four logits generated in the Nominal Logistic Regression on Military Expenditures and Global Peace. Logit 1 loads in favor to countries having high global state of peace as evidenced by the odds ratio of 2.35 at 0.05 level of significance. The p value of 0.129 showed that military expenditure has no significant effect on global peace. Thus, increasing or decreasing the expenditures for militarization for the suppression or prevention of international wars, civil wars and the like for securing peace will not affect significantly the state of global peace of the country.

Tables 2 and 3 present the list of countries with very high and high state of peace in 2016 and the corresponding military expenditures in 2015. Countries with high level of global peace presented in Table 2 are generally peaceful but not without the absence of terrorism, civil wars, crimes, and others. All of the countries presented in Table 2 are members of the Organization for Economic Cooperation and Development (OECD). GDPs are high and the military expenditures are less than 1.8% of the Gross Domestic Product (GDP).

**Table 2**  
*Countries with Very High (5) State of Peace*

Countries	Military Expenditures (% to GDP)
Austria	0.6976626
Canada	1.15085802
Czech Republic	0.9526777
Denmark	1.11651673
Finland	1.46228125
Japan	0.95805043
New Zealand	1.0943291
Portugal	1.78797441
Slovenia	0.93050301

Table 3 presents the countries with high level of global peace. Most of these are European and few from across the regions of the world although viewed as generally peaceful but not without the absence of terrorism, civil wars, crimes and others. These countries spend an average of 1.51 percent (%) of their GDP for military. Ideally a certain country aims to achieve a 4-5 global level of peace to be generally peaceful.

**Table 3**  
*Countries with High (4) State of Peace*

Country	Military Expenditures (% to GDP)	Country	Military Expenditures (% to GDP)
Albania	1.16230347	Malawi	0.63764606
Australia	1.9739374	Malaysia	1.52886312
Belgium	0.92349201	Netherlands	1.14356865
Bulgaria	1.31645352	Norway	1.50392096
Botswana	2.66027366	Poland	2.13945021
Chile	1.89786171	Romania	1.45048435
Germany	1.17947202	Singapore	3.08585019
Spain	1.26799031	Sierra Leone	0.93068901

United Kingdom	1.86660451	Serbia	1.94872327	Egypt, Arab Rep.	1.72314743	2	Cambodia	2.11269807	3
Croatia	1.52460805	Slovak Republic	1.12679351	Iran, Islamic Rep.	2.69135716	2	Liberia	0.72758112	3
Hungary	0.9216204	Sweden	1.08189321	Israel	5.67026475	2	Sri Lanka	2.55305511	3
Indonesia	0.88738545	Timor-Leste	1.19052603	Lebanon	4.52779609	2	Lesotho	1.75690484	3
Ireland	0.34308076	Tanzania	1.13335422	Mexico	0.66170957	2	Macedonia, FYR	0.99469762	3
Italy	1.38011983	Uruguay	1.82058814	Mali	2.36007307	2	Myanmar	4.08095548	3
Korea, Rep.	2.64475851	Vietnam	2.3611557	Philippines	1.13929237	2	Mozambique	0.9934981	3
Kuwait	5.00757108	Zambia	1.75323411	Chad	2.01152984	2	Mauritania	2.75074522	3
Lithuania	1.13528852	Madagascar	0.60479655	Turkey	1.84705574	2	Nicaragua	0.78449312	3
Latvia	1.04809459	Montenegro	1.40371683	Angola	3.51613434	3	Nepal	1.55663013	3
		Mauritius	0.18016897	Argentina	0.8501286	3	Oman	14.5776402	3
				Benin	1.09630266	3	Peru	1.74396679	3
				Burkina Faso	1.41981523	3	Papua New Guinea	0.48375805	3
				Bangladesh	1.44769878	3	Paraguay	1.41679726	3
				Bosnia and Herzegovina	1.00072725	3	Rwanda	1.25112413	3
				Belarus	1.2818401	3	Saudi Arabia	13.3256728	3
				Bolivia	1.74383902	3	Senegal	1.57490791	3
				Brazil	1.36551715	3	El Salvador	1.070533	3
				China	1.93492217	3	Togo	1.71186591	3
				Cote d'Ivoire	1.71944603	3	Thailand	1.42621408	3
				Cameroon	1.1444333	3	Tajikistan	1.21938118	3
				Congo, Dem. Rep.	1.29563975	3	Trinidad and Tobago	0.82822756	3
				Cyprus	1.66644121	3	Tunisia	2.26965066	3
				Dominican Republic	0.6656878	3	Uganda	2.05073933	3
				Algeria	6.27421003	3	United States	3.28963108	3
				Ecuador	2.61607416	3	South Africa	1.0988306	3
				Ethiopia	0.70549091	3			
				Gabon	1.18501793	3			
				Georgia	2.38003327	3			

Examining further Table 1, Logit 3, 2 and 1 have p values of 0.031, 0.019 and 0.023, respectively. These values showed that countries with medium, low, and very low states of peace were significantly affected by their military expenditures. These countries are presented in Table 4.

Table 4  
*Countries with Medium, Low and Very Low States of Peace*

Country	Military Expenditures (% to GDP)	State of Global Peace	Country	Military Expenditures (% to GDP)	State of Global Peace
Afghanistan	0.99345378	1	Guinea	2.51772964	3
Iraq	5.34637053	1	Gambia, The	1.5318421	3
Nigeria	0.41763654	1	Guinea-Bissau	1.6259615	3
Pakistan	3.55138731	1	Greece	2.464098	3
Russian Federation	4.85374303	1	Guyana	1.46652187	3
Sudan	2.35651652	1	Honduras	1.53987835	3
Somalia	3.1597E-05	1	Haiti	0.00088754	3
Ukraine	3.97325883	1	Jamaica	0.87301836	3
Azerbaijan	5.46487679	2	Jordan	4.30448041	3
Burundi	2.15750647	2	Kazakhstan	1.10972145	3
Bahrain	4.63287341	2	Kenya	1.3180707	3
Colombia	3.13089257	2	Kyrgyz Republic	3.45165293	3

Majority of the countries around the world have medium to very low state of peace. With the result presented in Table 1, the significant relationship of the military expenditures to global peace implies direct relationship

to the state of peace and the odds ratio signifies an effect. Thus, if the budget for military expenditures for Afghanistan will be increased by 1, an increase in the state of peace for this country will be 3.67 (odds ratio). For countries which are heavily burdened with terrorism or international disputes, civil wars, peacetime military budget inertia, beneficiaries and vested interest, government's budget on the militarization will affect significantly the peace and order situation.

To summarize the effect of military expenditure to the peacefulness of a country, the military expenditure of those countries whose state of peace were medium, low, and very low had significant effect on the level of peacefulness. These were the developing and underdeveloped nations from regions in South America, Asia, Africa and some part of Europe. Increasing the military expenditures of these countries created significant outcomes on their state of peace. Moreover, for countries whose state of peace were high and very high already, their military expenditure would not have significant positive or negative effect on state of peace. Thus, an increase or decrease of their military budget will not guarantee any movement on their state of peace in the next year.

#### *Relationship of the Countries' State of Peace to Economic Growth*

When the country's state of peace in 2016 was regressed to the change in Gross Domestic Product in 2017, results revealed that the state of peace

did not have significant effect on the change in the Gross Domestic Product on the following year. Table 5 presents the detailed result. The computed p value is equal to 0.547 which is higher than .05 level of significance. This can be inferred that the state of peace of the country does not directly translate into productivity in the following year. Further, peacefulness alone will not guarantee economic prosperity in short term. Although cited literature had strong declaration on the impact of peace to economy and the high cost of deterrence, productivity especially on human capital and other resources were not particularly indicated.

Table 5  
*Binary Logistic Regression: High/low GDP versus peace scores*

Predictor	Coefficient	SE Coef	Z	P	Odds Ratio
Constant	2.28	1.366	1.67	0.095	
Peace 2016	0.2601	0.4319	0.60	0.547	1.30

*0.05 Level of significance*

Therefore, regardless of the current state of peace of a country, the desired economic productivity cannot be achieved after a year or two. For a developing country like the Philippines in Southeast Asian Region, which had a low state of peace, increasing the military expenditure to suppress any forms of domestic or international terrorism and strengthening its defense system against possible threats in its territory will have an immediate positive effect on the level of peacefulness. But the country cannot expect the same effect on its economy a year after.

### *Military Expenditures, Peace Index and Economic Development in the Philippines*

Table 6 presents the raw scores and ranking of the Philippines in its military expenditure and growth rate in the Global Peace Index. The country's scores in the Global Peace were not significantly changed from 2008-2018. Despite the little change in scoring, the ranking was better in 2008 and 2009 at 116<sup>th</sup> and 118<sup>th</sup>, respectively. The global peace rank dropped significantly in the succeeding years. The lowest recorded rank was in 2014. On the other hand, military expenditures as expressed in percentage of GDP did not improve from 2009-2013, and decreased by 1% in 2014, 2015, and 2018. The highest expenditure for militarization was in 2017. For 11 years, the Philippine state of peace remained to be low.

The Philippines has long suffered insurgency and civil unrest; the conflict in Mindanao can be historically traced from the spread of Christianity in Mindanao 300 years back during the Spanish colonization (Wadi, 2010). Over the years, the government has failed to create opportunities for negotiations or peace talks (Brown, 2018). With the Proclamation No. 216 of 2017, Mindanao was put under Martial Law because of the Maute terrorists and is still extended up to 2019. The peace struggles in Mindanao is not the only threat for the Philippines but over decades, the National People's Army (NPA), a communist rebellion that has 3700 to 5000 armed fighters add up to the deteriorating peace and order situation of the country (Acosta,

2018). These were the enumerated causes why the Philippines remained to be one of the least peaceful countries in the world which also ranked second last in Asia. Over the years, the government spent an average of 2.53% of its total GDP for military expenditures and the highest recorded expenditure was in 2017. According to DBM (2017), the budget for national defense was 4.3% of the total 2018 budget. The highlight of the expenses is the increase of the base pay of the Military and Uniformed Personnel (MUP) by an average of 58.7% for all ranks. In addition, almost half of the AFP's budget for the year would be spent to fight communist rebellion (Acosta, 2018).

Table 6  
*Philippine Global Peace Index, Military Expenditures and Economic Growth*

Year	Global Peace Scores	Global Peace Ranking	Military Expenditure (% to GDP)	GDP growth rate (%)
2018	2.512	137 <sup>th</sup>	1.1	6.2
2017	2.555	138 <sup>th</sup>	1.4	6.7
2016	2.511	139 <sup>th</sup>	1.2	6.9
2015	2.462	141 <sup>st</sup>	1.1	6.1
2014	2.456	134 <sup>th</sup>	1.1	6.1
2013	2.374	129 <sup>th</sup>	1.2	7.1
2012	2.386	128 <sup>th</sup>	1.2	6.7
2011	2.509	130 <sup>th</sup>	1.2	3.7
2010	2.518	127 <sup>th</sup>	1.2	7.6
2009	2.397	118 <sup>th</sup>	1.2	1.1
2008	2.372	116 <sup>th</sup>	1.3	4.2

Based from the regression analysis previously presented in the nominal logistic regression result in Table 1 and binary regression in Table 4, the Philippines can improve its state of peace if it will raise its expenditure for militarization since it belongs to logit

3 with low state of peace. The result implies that any policy increasing activities and budgets for the national defense will be aligned to its goal of improving the peace and order situation. But if the Philippines will be looking for an economic progress in a year or two after raising the expenditures for militarization, this might not be felt.

### Conclusion

The improvement in the state of peace of a country may not always depend on the amount spent in the military. The current state of peace could be a determining factor in increasing or decreasing the military expenditure to achieve the desired level of peace for most developing but not for the developed countries. Furthermore, economic development may not be felt directly when the state of peace improves because of the complex behavior of different factors in the economy.

The study, however, relied on historical quantitative data and employed statistical analysis to establish relationship between military expenditures to global peace and global peace to economic growth. The researcher recognized that deeper information beyond numbers may be captured using another method. A further study may be explored and make the findings of this paper as reference.

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