



Faculty of Economics and Business

**THE RELATIONSHIP BETWEEN MILITARY
EXPENDITURE AND ECONOMIC GROWTH OF BRICS
COUNTRIES**

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Bachelor Degree in Economics with Honours
(International Economics)

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**THE RELATIONSHIP BETWEEN MILITARY EXPENDITURE AND
ECONOMIC GROWTH OF BRICS COUNTRIES**

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This project is submitted in partial fulfillment of the requirements for the degree of
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(International Economics)

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2014

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THE RELATIONSHIP BETWEEN MILITARY EXPENDITURE AND ECONOMIC GROWTH OF BRICS COUNTRIES

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ABSTRACT

THE RELATIONSHIP BETWEEN MILITARY EXPENDITURE AND ECONOMIC GROWTH OF BRICS COUNTRIES

By

Sharmen Raj

This study is conducted to examine the relationship between military expenditure and economic growth of the BRICS countries. This study uses the annual time series data of military expenditure, real GDP and real GDP per capita from 1974 to 2010 for China, India and South Africa, from 1988 to 2012 for Brazil and from 1989 to 2012 for Russia. The methodologies applied to study this relationship are the Augmented Dickey-Fuller (ADF) test, the Phillips-Perron (PP) test, the Johansen-Juselius Cointegration test, and VEC Granger Causality test. The results from the tests show that the variables for all countries are integrated of order $I(1)$, and there are cointegrated vectors for all countries except for Brazil. Besides that, the existences of causal relationships were identified for all countries except for Russia and Brazil. Based on the results obtained, several policy implications were recommended and recommendations were also provided for future studies.

ABSTRAK

HUBUNGAN ANTARA PERBELANJAAN TENTERA DAN PERTUMBUHAN EKONOMI UNTUK NEGARA BRICS.

Oleh

SHARMEN RAJ

Kajian ini dilaksanakan untuk menyelidik hubungan antara perbelanjaan tentera dan pertumbuhan ekonomi untuk Negara BRICS. Kajian ini menggunakan data tahunan perbelanjaan tentera dan pertumbuhan ekonomi yang merangkumi tahun 1974 hingga 2010 untuk Negara Cina, India dan Afrika Selatan, tahun 1988 hingga 2010 untuk Negara Brazil dan tahun 1989 hingga 2012 untuk Negara Rusia. Metodologi yang digunakan dalam kajian ini ialah Augmented Dickey-Fuller (ADF) test, Phillips-Perron (PP) test, Johansen-Juselius Cointegration test dan VEC Granger Causality test. Daripada keputusan kajian ini, didapati semua Negara yang dikaji menunjukkan tahap integrasi I(1), semua negara mempunyai kointegrasi vector kecuali Negara Brazil, dan akhirnya semua Negara mempunyai hubungan sebab dan akibat kecuali Rusia dan Brazil. Berdasarkan keputusan kajian ini, beberapa polisi telah dicadangkan dan cadangan untuk memperbaiki kajian-kajian akan datang dalam bidang berkaitan turut dikemukakan.

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Chapter 1: Introduction

1.1 Introduction

Military expenditure also known as defense expenditure is compulsory for every nation. The justification for this expenditure can be related to the security of a nation against internal and external threats. By establishing a secure nation, foreign investors and any other kind of associates of a particular nation will feel safer indulging in any form of transactions between each other.

According to the Stockholm International Peace Research Institute, SIPRI (2013), there is no generally agreed definition of military expenditure worldwide. As guidelines for its definition SIPRI includes expenditure on the following actors and activities; the armed forces (which includes peacekeeping forces), defense ministries and other government agencies involved in defense projects, paramilitary forces (those chosen to be trained and equipped for military operations), and military space activities. The guideline for the definition also includes all current and capital expenditure on: military and civil personnel (inclusive of retirement pensions of military personnel and social services for personnel), procurement, military research and development, and military aid (from the military expenditure of the donor country). Several expenditures that are not included are as follows; civil defense and current expenditure for past military expenditures such as benefits allocated for veterans, demobilization, conversion and weapon destruction.

SIPRI (2013) also provides several reasoning on the importance of measuring the military expenditure such as determining the economic burden of military

expenditure of a country towards its economy, determining a country's priority on spending by comparing military expenditure with other sectors, and so on¹.

The global trends of military expenditure provided by the Stockholm International Peace Research Institute, SIPRI (2013) indicates an increasing trend as it approaches the year 2012. However the records also indicate a decrease in global military expenditure for the year 2012 by an amount of 175 billion US dollars which is equivalent to 2.5 percent of the global gross domestic product (GDP)². The decrease in global military spending according to Perlo-Freeman, Skons, Solmirano and Wilandh (2013), was due to a decline in spending in Northern America, Western and Central Europe, and Australia.

The study of military expenditure or also known as defense expenditure towards economic growth has been an area of interest for economists and researchers till today. The increasing trends of research comprising military expenditure and growth grew since the early works of Hitch and McKean (1960) progressive followed years later by Benoit (1978) suggesting a positive relationship between the economic activities stated. Most researchers have gone further than the Benoit and some have suggested findings that may not be in agreement with Benoit (1978).

This study tends to investigate the relationship of military expenditure towards economic growth for the BRICS (Brazil, Russia, India, China and South Africa) countries.

¹ More key points and elaboration can be retrieved from <http://www.sipri.org/research/armaments/milex/measuring-military-expenditures>.

² Retrieved from <http://books.sipri.org/files/FS/SIPRIFS1304.pdf>

1.2 Background of Study

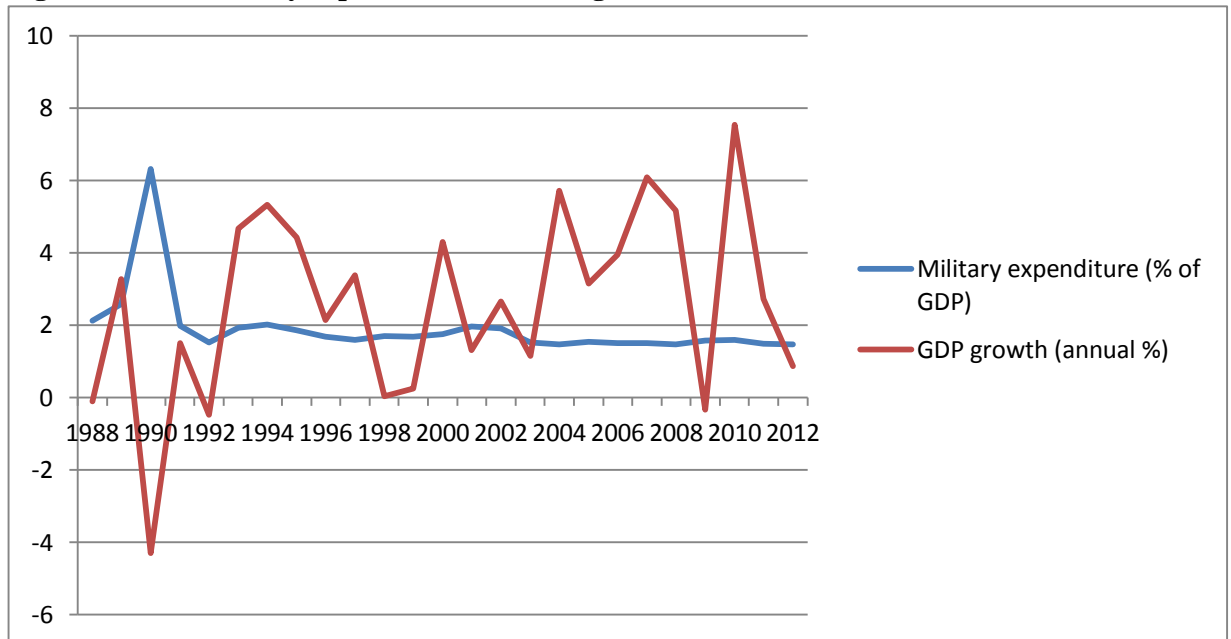
The BRICS countries are a group of countries that possesses the fastest growing and the largest emerging markets economies. The BRICS countries consists of Brazil, Russian Federation (Russia), India, China and South Africa. The term BRIC was introduced by economist Jim O'Neill of Goldman Sachs a Wall Street bank. These countries are predicted to be in the top 10 largest economies by 2020 and the most important economies by 2050³. This section provides a brief description of each country followed by a figure of the trends of military expenditure and GDP growth.

³ Retrieved from <http://www.economywatch.com/international-organizations/bric.html>.

1.2.1 Brazil

The country of Brazil possesses the largest economy in comparison to all other South American countries (Economy Watch, 2010). The country also possesses several developed sectors such as its agriculture, mining, manufacturing and service sectors. As of 2011 the GDP growth is about 2.7 percent, the GDP of as of 2010 records 2.09 trillion US dollars. The population is estimated about 195 million citizens⁴.

Figure 1.1 The Military expenditure and GDP growth for Brazil 1988-2012



Source: World Data Bank, 2013 and SIPRI 2013

Figure 1.1 shows the annual Military expenditure as a percentage of the GDP and the annual GDP growth for Brazil for the period of 1988-2012. The trend of the annual GDP shows that the GDP fluctuates unevenly. From the year 2003 onwards Brazil has improved its macroeconomic stability by foreign reserves, debt reduction to keep inflation rates under control. Brazil was hit hard by the Global Financial

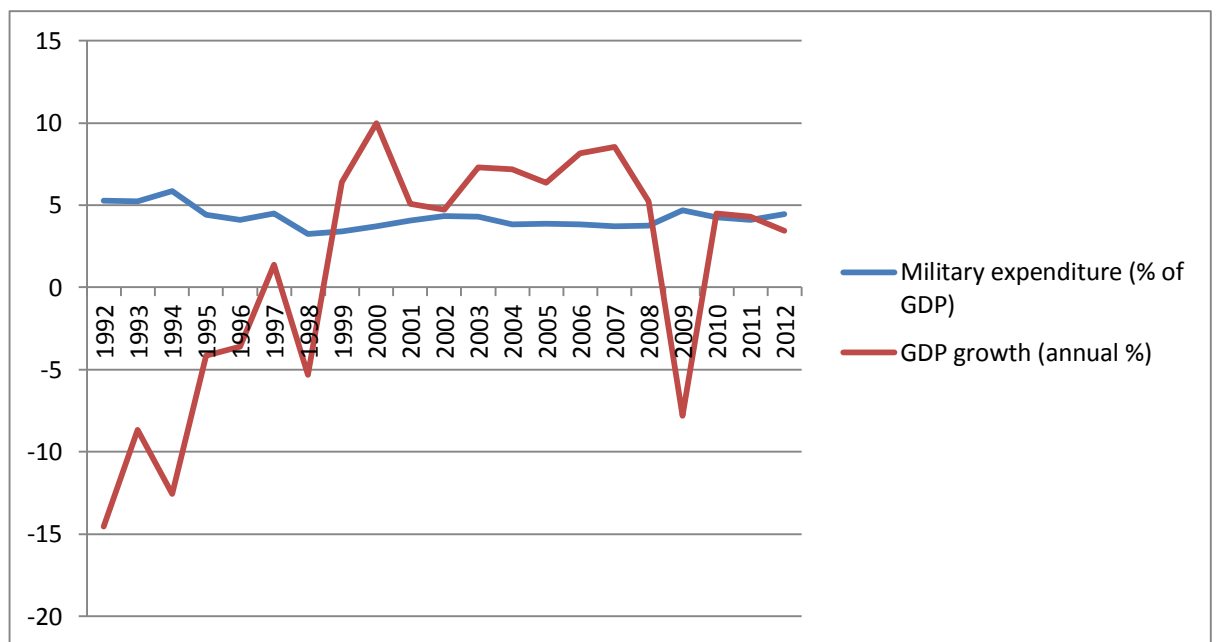
⁴ Retrieved from <http://www.economywatch.com/international-organizations/bric.html>

Crisis in 2009 but made a big recovery the following year. The military expenditure of Brazil can be seen to have a constant but slightly decreasing trend except for the spike in military expenditure in 1990. Both trends do not seem to follow each other.

1.2.2 Russian Federation (Russia)

Russia is the largest country in the world and borders various countries such as Norway, Finland, Estonia, Latvia, Lithuania, Poland and so on. Ranking by population shows that Russia stands at the 9th place in terms of population with a population of 142 million citizens. As of 2011, the GDP growth of Russia is at 4.3 percent and the GDP recorded for 2010 is at 1.48 trillion US dollars⁵.

Figure 1.2 The Military expenditure and GDP growth for Russia 1991-2012



Source: World Data Bank, 2013 and SIPRI 2013

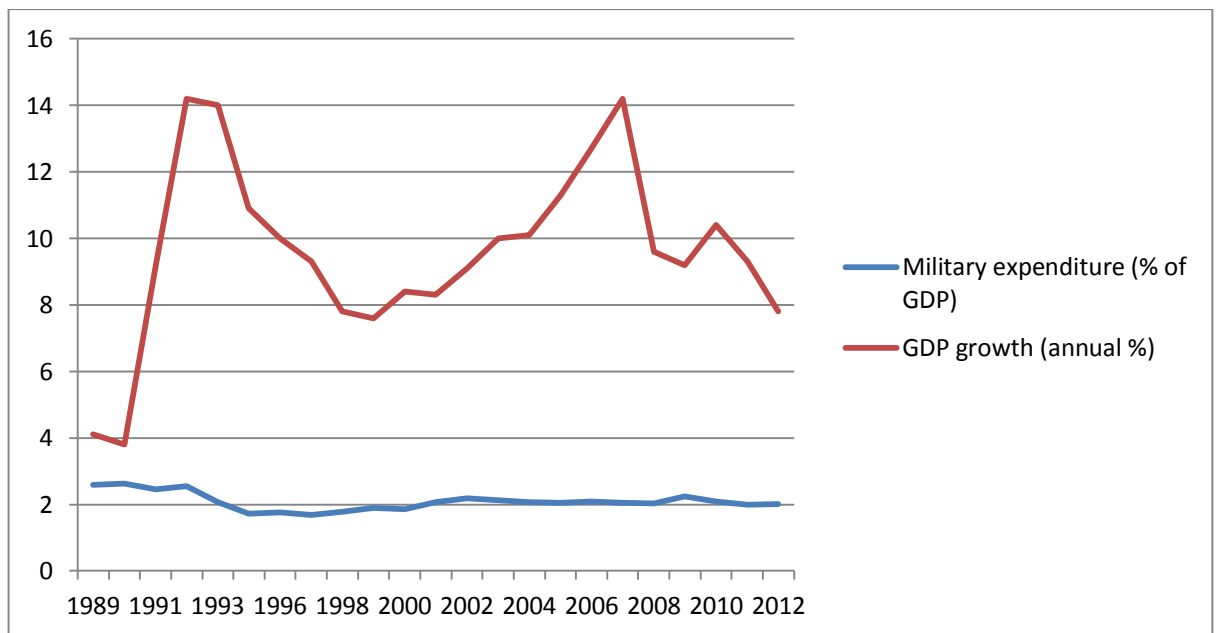
⁵ Retrieved from <http://www.economywatch.com/international-organizations/bric.html>

Figure 1.2 shows the annual Military expenditure as a percentage of GDP and the annual GDP growth for Russia for the period of 1991 to 2012. Since the crisis of 1998, the GDP of Russia has recovered with huge growth rates following the year 1999 to 2000. However, due to the dependency of Russia on commodity exports, Russia became vulnerable to the Global Financial Crisis of 2008 showing heavy decline in GDP growth. A recovery was evident for the year 2010 onwards. The trend for the military expenditure is also not consistent to the GDP growth rates. The trend for military expenditure seems to be decreasing slightly from 1991 to 2012.

1.2.3 China

China currently stands as the second largest economy and also second largest trading nation after the United States (Economy Watch, 2013). According to the EW World Economy Team (2013), China poses as the 2nd largest economy based on its GDP (current prices, US dollars) and its GDP (PPP). As of 2012 China records a GDP (current prices, US dollars) at an amount of 8.227 trillion US dollars and GDP (PPP) at 12.405 trillion US dollars. China also exhibits a real GDP growth rate of 7.8 percent⁶.

Figure 1.3 The Military expenditure and GDP growth for China 1989-2012



Source: World Data Bank, 2013 and SIPRI 2013

Figure 1.3 shows the annual Military expenditure as a percentage of GDP and the annual GDP growth rate for China for the period of 1989 to 2012. This figure

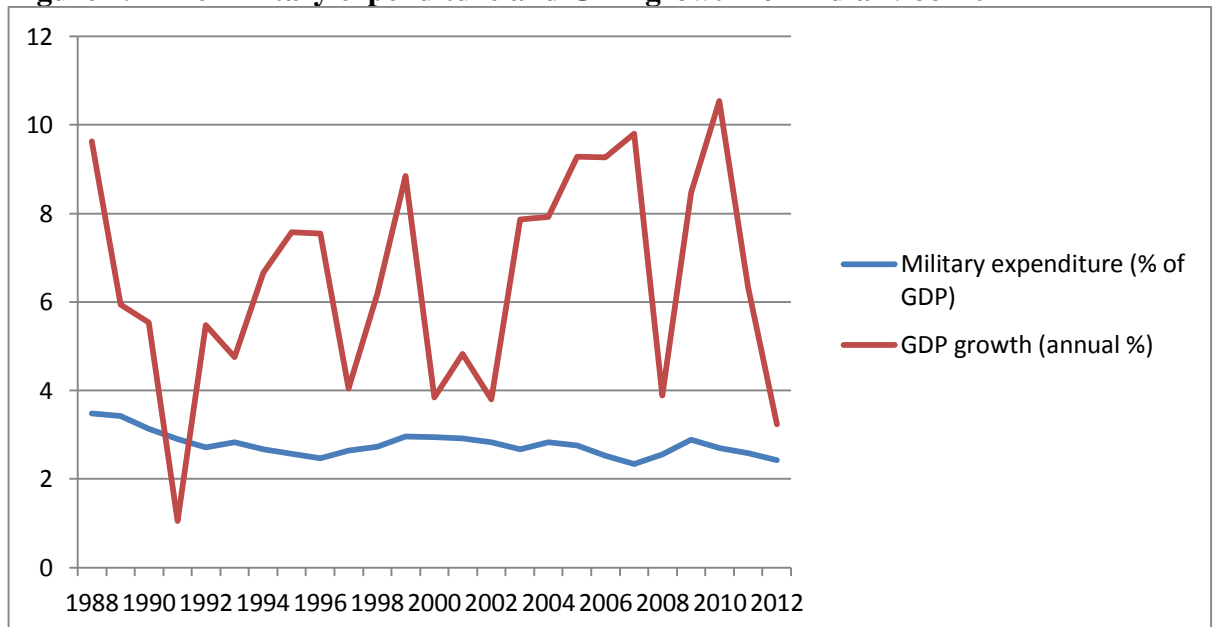
⁶ Retrieved from <http://www.economywatch.com/international-organizations/bric.html>

clearly shows that the percentage growth of each year is always higher than the percentage of military expenditure. It can be seen that the GDP growth for China is also fluctuating but shows a very slow growth rate from 1999 onwards. China also shows high growth rates from 2003 to 2010 with the exception of the Global Financial Crisis period. Economy Watch (2013) states that according to the China Economic Forecast, China is expected to overtake its rival (United States) to become the world's largest economy in both GDP (PPP) and GDP (current prices) in a matter of 30-40 years. The trend of the military expenditure also shows a constant trend that fluctuates around 2%. The trends of military expenditure and GDP growth rate show a similar trend.

1.2.4 India

India is potentially able to become one of the largest economies by mid-21st century, several setbacks that impede this growth of economy are poor infrastructure, political corruption and an increasing population. As of 2011, the GDP growth stand at 7.8 percent and the population is 1.17 billion. The GDP for the year 2010 is 1.73 trillion US dollars⁷.

Figure 1.4 The Military expenditure and GDP growth for India 1988-2012



Source: World Data Bank, 2013 and SIPRI 2013

Figure 1.4 shows the annual Military expenditure and annual GDP growth rate for India for the period of 1988 to 2012. The GDP growth rate of India has a fluctuating trend. From the year 2003 onwards, India has high growth rates with the exception of 2008 (crisis period). There appears to be a recovery evident for the year 2010 from the crisis but drops again as it approaches 2012. The trend of the military

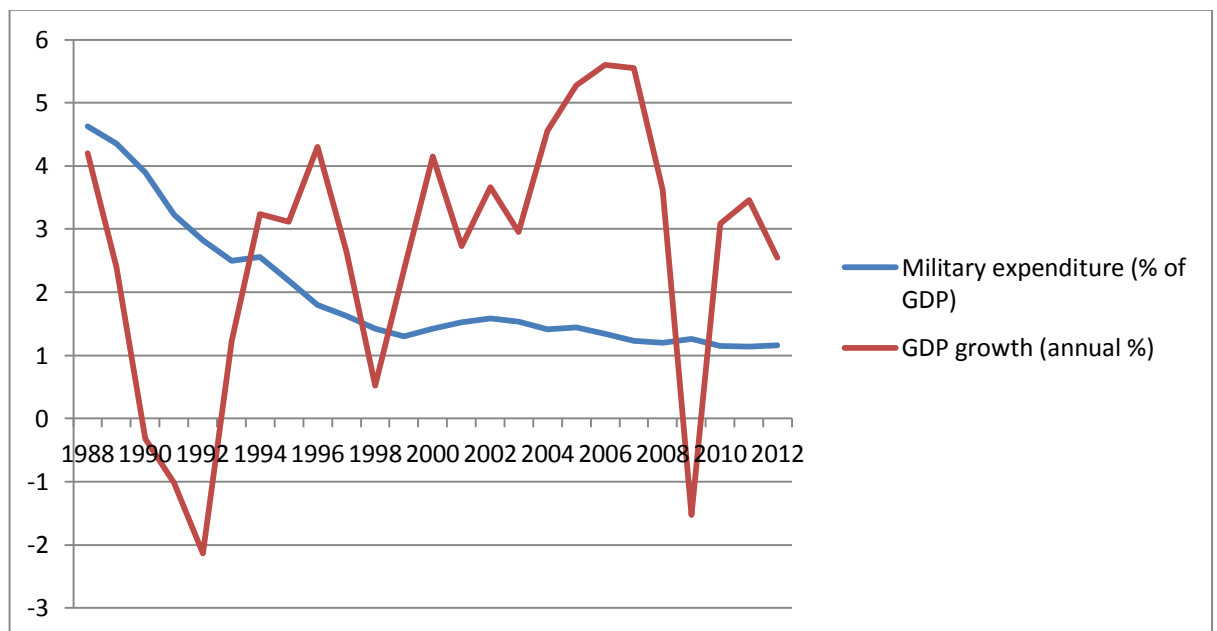
⁷ Retrieved from <http://www.ibtimes.com/brics-profile-worlds-emerging-powerhouses-431158>

expenditure is not consistent with the fluctuation trends of the GDP growth as it fluctuates within the 2-4% margin.

1.2.5 South Africa

South Africa is the newest member of BRICS, the country has lots of natural resources and mining sectors which may have caused over dependency towards these sectors. This high dependency may also hurt the economy of South Africa because of interaction with weak U.S. and European markets. As of 2011, the GDP growth is at 2.9 percent and the population is recorded at 50 million. The GDP for 2010 is at 364 billion US dollars⁸.

Figure 1.5 The Military expenditure and GDP growth for South Africa 1988-2012



Source: World Data Bank, 2013 and SIPRI, 2013

⁸ Retrieved from <http://www.economywatch.com/international-organizations/bric.html>