STUDY OF THE EFFECT OF MILITARY SPENDING ON ECONOMIC GROWTH IN THE WORLD SYSTEM FROM 1870 TO 1950

A Seniors Scholars Thesis

by

NAHUA KANG

Submitted to Honors and Undergraduate Research
Texas A&M University
in partial fulfillment of the requirements for the designation as

UNDERGRADUATE RESEARCH SCHOLAR

May 2012

Major: History
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Approved by:

Research Advisor: Samuel Cohn
Associate Director, Honors and Undergraduate Research: Duncan MacKenzie

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Major: History
ABSTRACT


Nahua Kang
Department of History
Texas A&M University

Research Advisor: Dr. Samuel Cohn
Department of Sociology

This research project involves testing the relationship between military expenditure and the economic growth of countries from 1870 to 1950. We examine the graphs of a country’s economic growth with military expenditure on a sample of 39 nations. The analysis is supplemented with a graphical analysis of the timelines of military spending and growth within each nation. The GDP data come from Angus Maddison’s historical GDP dataset and the data on military spending are collected from the Correlates of War Project. The examinations of this research show that among the 39 nations, 31 of them show that military expenditures do not contribute to economic growths, 3 of them show that military expenditures contribute to economic growth, while 5 of them cannot be determined due to lack of data or time span. Therefore the results of the research show that overall military spending does not contribute to economic growth.
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CHAPTER I
INTRODUCTION

This research project is the study of the effect of military spending on a country’s economic growth. The use of military spending generates military demands for goods and services, and this spending in turn generates general consumer demands for goods as well. The maintenance of army increases jobs, and it is often claimed that military spending on research and development generates advanced technology and infrastructure, which raise the productivity of civilian workforce. Therefore, it has been argued that military spending contributes to a country’s economic growth. Military Keynesianism is the economic policy that encourages the government to devote its spending to military in order to stimulate economic growth, and it is a theory that my research attempts to examine.

Before discussing Military Keynesianism, we will briefly discuss Keynesian economics. Keynesian economics is an economic theory based on the ideas of English economist John Maynard Keynes. The theory was first presented in his book *The General Theory of Employment, Interest and Money*. Keynes favored a mixed economy that, though based on private sector, requires policies from the public sector, such as monetary policies made by central bank and fiscal policies made by the government. Keynes’ central idea is

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This thesis follows the style of *American Journal of Sociology*. 
that investment of the government in infrastructure produces income which results in more spending in the economy, which further stimulates production and investment that generate income and spending, thus the original investment creates a multiplier effect that ends up with economic growth.

Military Keynesianism is a variation of Keynesian Economics. Slightly different from the main idea of Keynesianism, Military Keynesianism advocates that government spending be used for military development, which will in turn stimulate the country’s economy as a whole. The core of this theory is that the demand for military goods and services is increasing because of the increasing of government spending on military. There is also a multiplier effect by the government spending on the increase consumer spending. There are many jobs created when the government is maintaining or expanding a standing army, which absorbs more labors into production and activity. Military Keynesianism is supported by some scholars as a necessary component of capitalist growth. In his book *The Sources of Social Powers*, Vol. 2, Michael Mann argues that the Prussian capitalists became militarized and bourgeoisie became incorporated into the regime, becoming militaristic on domestic and foreign policy.

According to James O’Connor, military has been historically the medium for the modernization of civilian production. He used Prussia, Japan and the United States as examples. At the end of eighteenth century, Prussia spent more than 70 percent of its national budget to the military. Some Japanese industrialists believe that militarization is
necessary for advance technology. O’Connor continues to argue that many industrial
growths owe their expansion to militarization and war, and military R&D should be
regarded as social investment instead of social expenses, considering the huge influence
and changes that military R&D has innovated products such as airplanes, atomic power,
plastics and electronics (O’Connor, 1973).

However, though Military Keynesianism seems intuitively reasonable, some scholars,
such as Jeffrey Kentor, argue that military spending is not as efficient as private sector
can. Independent capitalists and civilian can use money more efficiently in promoting
research, investment, labor force utilization and development. At the same time, the
development of military might lead a country to war, which will result in destruction.
Both Germany and Imperial Japan had a period of economic growth under militarization
before World War II. But both of these countries suffered huge destruction during the
war because their militarization led them to self-destruction. Therefore, even if Military
Keynesianism is intuitively reasonable, it usually leads to war destruction which destroys
all the economic growth caused by military expenditures.

In short, the overall objective of this research project is to examine whether a government
can stimulate its country’s economic growth by increasing military expenditure. We
choose to study the economic growth of these nations from 1870 to 1950 as the world we
see today is formed during this period. For example, in 1870 the United States was not
the super power in the world. The Netherlands and Belgium were richer than other
European powers. By the end of the World War II, the United States rose to be the super power, while the economies of Belgium and the Netherlands fell. A close examination of the relationship between economic growth and military expenditures during this period will help us to better understand economic growth through a military perspective, and it will help us to examine Military Keynesianism.
CHAPTER II

METHODS

The two types of data required for this research project are GDP and military expenditures. We would like to have this for as many nations as possible from 1870 to 1950. The GDP data come from the Angus Maddison dataset on historical economic growth and it can be found online at: http://www.ggdc.net/maddison/. These were published and discussed in the hardcover in the book *The World Economy* is written by the renowned British economist Angus Maddison, and it consists of world economic data for 2000 years; the web dataset contains more recent updates to the estimates – although most of those updates involve years not associated with our project. The Correlates of War is a project started by J. David Singer from University of Michigan in 1963. This project aims to provide scholars with accurate and reliable quantitative data in international relation. Our data on Military expenditures can be found on the website of Correlates of War Project, namely the sub-dataset on National Material Capacities (v4.0).

The methods we use to conduct this research are straightforward as we will be examining graphs of each of the 39 nations to determine whether there are correlations between Military Expenditures and economic growth. Each of the graphs consists of a line of the nation’s GDP per capita and military spending per year, and a line of ΔGDP. ΔGDP is used to measure the percentage rate of growth of a nation’s economy in one year compared with previous year. For example, in year $x$, 

\[ \Delta GDP_x = (GDP_{x+1} - GDP_x) / \Delta GDP_x \]

\( \Delta GDP_x \) represents the percentage change in economic growth of year \((x+1)\) compared with year \(x\). For year \(x\), \( \Delta GDP_x \) is corresponding to the expenditure \(E_x\), and for year \((x + n)\), \( \Delta GDP_{(x + n)} \) is corresponding to the expenditure \(E_{(x + n)}\), etc. When we create lists of \( \Delta GDP \) for all the countries in the file, we can make graphs of each nation with its \( \Delta GDP \) to assist our examination of economic growth.

The examination of the graphs requires us simply to see if there is a similar pattern of both the lines of GDP per capita and military spending per year. If there is, then the military spending is influencing GDP per capita. If there is not, then military spending is not affecting this nation’s GDP growth. If a country has missing data that affects our determining whether there is a correlation between military spending and economic growth, or if it simply has very few years of data available for our analysis, then we label this country as undetermined because we will not be able to see whether there is a correlation or not.
CHAPTER III

RESULTS

After studying the relationships between military spending and economic growth of 39 countries, it is shown that overall the military spending of a country does not necessarily experience growth in its economy. Therefore this finding contradicts Military Keynesianism. I will provide graphs of all 39 countries with their adjusted military spending, GDP and ΔGDP, and I will explain how their military expenses do not contribute to the economic growth.

My results are divided mainly in three groups. Group 1 consists of countries whose military spending has little effect on their economic growth. Group 2 consists of countries whose military spending has positive effects on their economic growth. Group 3 consists of countries whose set of data is either too small or incomplete, leaving it difficult to determine whether there is a strong or weak correlation between military spending and economic growth. The result of my research is that Group 1 consists of 31 countries, and Group 2 of 3 countries, and Group 3 of 5 countries. Group 1 consists of Austria, Australia, Argentina, Belgium, Brazil, Bulgaria, Canada, Chile, Columbia, Costa Rica, Denmark, El Salvador, Finland, France, Greece, Honduras, Ireland, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Turkey, United Kingdom, United States, Venezuela and Yugoslavia. Group 2 consists of Germany, Peru and Switzerland. Group 3 consists of Guatemala, Hungary, Poland, Romania and Uruguay. It is obvious that the
majority of the 39 countries I examine show weak correlation between military spending and economic growth.

It should be noted that abbreviations are used in the graphs. “Milex” stands for military expenses, which is also military spending. “MGDPPC” stands for GDP per capita from the Maddison GDP dataset we collected. When I make graphs comparing a country’s GDP per capita, military spending, and ΔGDP, sometimes I will have to adjust the value of these three groups of data to the same scale, so that to provide better graphs for visual examination. Below are the details of each group and the graphs of countries I analyzed.

Group 1:
For Argentina, if we analyze the graph from a Military Keynesian perspective, we can see that when military spending increases, GDP usually increases as well. However, if we look at the ΔGDP of Argentina, we can find out that even when military spending experiences a huge increase from 1943 to 1945, the fluctuation of ΔGDP is not much different from previous years. Therefore I argue that for Argentina, military spending does not have an obvious positive effect on its economic growth. The increase in GDP of the country is slow and gradual, not likely to be influenced by military spending.

![Graph of Argentina's GDP, Military Spending, and ΔGDP from 1920 to 1950.](attachment:image.png)

**Figure 2**: Australia

Australia has a huge peak of increase and decrease in military spending from 1940 to 1947. It is true that the GDP growth resembles that of military spending in these years, but again, if we see the graph as a whole, we can see that the country’s economic growth
has gradually increased throughout the years, and the huge peak of military spending is only correlated with a small increase in economic growth. When military spending drops immediately, we can see that the country’s economic growth is rising again.

**Figure 3: Austria**

Austria has data for 18 years and it seems that after 1932 military spending has positive effect on Austrian GDP growth. First, in 1922 when the military spending experienced a huge increase, the GDP of the country was growing steadily without a corresponding huge increase. Meanwhile, when the economy was suffering from the Great Depression after 1929, we could see that from 1929 to 1931 the military spending was actually maintaining at a stable level. After 1933 when the economy was growing, we can see that
the military spending is increasing tremendously. Therefore it is easy to see that there is not much correlation between Austrian GDP growth and military expenses.

![Figure 4: Belgium](image)

Belgium from 1917 to 1919 shows increasing in military spending, but the war destruction has negative effect on its GDP growth. The pattern of the GDP line and the military spending line does not provide us with any signs of positive correlation between the two. After Belgium was liberated by the Allied Force, we can see it increased its military spending from 1946 to 1947 and then dropped the military spending dramatically. But all these changes in military spending do not seem to affect the country’s GDP growth, which is steadily growing since 1943. Therefore, we can make the conclusion that there is no strong sign of correlation between military spending and economic growth.
Figure 5: Brazil

From its ΔGDP line we can see that Brazilian GDP growth fluctuates throughout the period between 1870 and 1950, but the overall trend of the economy is supported by a slowly growing GDP. We can also see that Brazilian military spending fluctuates throughout the period, and there is no sign of lags or positive effect of military spending on GDP growth. The huge increase of military spending after 1943 and the sudden decline of military spending in 1948 do not affect the trend of a growing GDP. Therefore I argue that military spending does not have a strong influence on economic growth in Brazil.
**Figure 6:** Bulgaria

Bulgaria has a very short line of data available and it is easy to see that when GDP gradually grow from 1924 to 1933, military spending is actually decreasing. It is also important to notice that the sudden increase of military spending in 1939 does not influence the GDP, which actually declines at the same time. Therefore with the small amount data available for Bulgaria, I argue that military spending does not have an effect on the country’s economic growth.

**Figure 7:** Canada
Canadian GDP growth goes down after the Great Depression in 1929. From 1939 to 1948 we see a pike of military spending, during which we observe the GDP following its trend of growing after the Great Depression, and when the military spending drops dramatically, we see that GDP does not decline but remain on around the same level throughout the decade of 1940s. Therefore I argue that military spending does not have a obvious effect on Canadian economy.

![Figure 8: Chile](image)

Chile’s military spending seems to have some effects on its economic growth. But the huge rising of military spending after 1938 does not seem to affect GDP growth, which remains stable and fluctuate slightly throughout the decade. Therefore military spending does not have huge effect on its GDP growth.
In Columbia’s graph it seems that the two peaks, one in 1939 and one since the huge increase in military spending after 1943, do not affect Columbian GDP, which shows a steady trend of growth throughout the years. Therefore it is clear that military spending does not have a significant effect on Columbian economy.

Figure 10: Costa Rica
There are missing data on military spending, and with the data available we can see that throughout the years the economy of Costa Rica is very stable. And the fluctuations of its military spending do not really affect the country’s economy. Therefore military spending does not have an obvious effect on GDP growth.

Figure 11: Denmark

Denmark is one of the few countries that show a likelihood of military spending positively influencing economic growth. But there are two problems: the first being that from 1921 to 1937 its military spending has a decline overall while its GDP keeps growing; the second being that the decline of military spending in 1949 seems not to affect the still growing GDP. We will not be able to determine the effect of military spending on economic growth after 1950, but in this graph it is hard to see an obvious influence by military spending on economic growth.
Figure 12: El Salvador

We can see from the graph that El Salvador’s military spending has one sudden decline at the beginning of 1920s, and has two sudden increases, one in 1933 to 1935, and the other from 1946 to 1950. None of these changes seem to affect El Salvador’s economic growth much. In fact, El Salvador’s economic growth fluctuates and slightly changes over the years. There are no drastic economic changes, nor sign of effect by military spending. Therefore for El Salvador I argue that military spending does not positively affect its economy.

Figure 13: Finland
Finland is another example of countries that have a sudden big increase or decrease in military spending that does not seem to affect the nation’s economy. From 1938 to 1939 when the military spending increases suddenly, we can see the GDP declining. When the military spending drops suddenly from 1949 to 1950, we can also see that GDP is not affected by the change in military spending, and it steadily grows. Therefore I argue that for Finland there is no strong correlation between military spending and economic growth.

Figure 14: France

In this graph of France we can see that whenever the military spending has a peak, either in World War I or World War II, the war destruction has bigger effect on the country’s economy. Overall, it is hard to say that military spending has a huge effect on French economy.
Figure 15: Greece

In this graph it is easy to observe that Greek military spending has little influence on its economy. As the sudden drop of military spending in 1921 does not affect its GDP, and when its military spending increases in 1938, its GDP is on a declining trend.

Figure 16: Honduras
From Honduras’ graph we can see that in the 1930s when military spending is increasing, GDP growth is decreasing. We can also see that after 1945, when Honduras’ military spending increases drastically, its GDP remains stable. Therefore military spending does not have a positive effect on Honduras’ economic growth.

![Graph](image)

**Figure 17: Ireland**

On Ireland’s graph we can see that the country’s GDP per capita remains stable from 1920 to 1950. In 1922 and in 1946 the country had two peak of military spending. But these fluctuations do not affect the country’s GDP per capita at all. In fact, the GDP growth remains stable through these 30 years. While there is a decrease in military spending in the 1920s, there is actually a growth of GDP per capita. Therefore it is clear that military spending does not have a positive effect on Ireland’s economic growth.
Figure 18: Italy

On Italy’s graph we can see that from 1918 to 1921, when military spending is growing, GDP per capita is declining. From 1921 to 1925 Italy’s military spending declines, but Italy’s GDP is actually growing every year. We also see that the peak from 1932 to 1942 does not affect Italy’s GDP too much. Therefore it is hard to say that there is a strong correlation between Italy’s military spending and its economic growth.

Figure 19: Japan
In Japan’s graph we can see that its huge peak during the World War II period did not contribute to a similar boost of GDP growth. On the other hand, from 1939 to 1944 Japanese GDP per capita seems to be stable. Therefore I argue that military spending does not have a strong correlation to Japanese economic growth in the period.

![Figure 20: Mexico](image)

From Mexico’s graph we can see that there are two peaks in military spending from 1900 to 1950, one in early 1920s and one in late 1940s. Meanwhile, we can see that the Mexican economy, indicating by the line of GDP per capita, remains stable throughout the years. The increase of military spending does not affect the GDP growth, and the decrease of military spending does not affect the GDP growth either. Therefore I argue that for Mexico from 1900 to 1950 its military spending has no strong correlation with its economic growth.
Figure 21: Netherlands

In Netherlands graph we see a stronger correlation between World War II destruction and the decline of its GDP, rather than any positive correlations between military spending and its economic growth. Therefore I argue there is not strong correlation between Netherlands’ military spending and its economic growth.

Figure 22: New Zealand
In this graph of New Zealand we can see that the country’s GDP per capita remains stable throughout the period even during the period of time when the country experienced a military spending peak during the World War II period. Therefore there is no strong correlation between its military spending and its economic growth.

![Graph of New Zealand GDP per capita](image)

**Figure 23:** Norway

In Norway’s graph we can see that its economy grow steadily throughout the period. Even though we do not have complete data for Norway’s military spending, we can tell that the huge increase of military spending from 1939 to 1940 and the increase from 1945 to 1946 do not affect its economy that much. The decreases of military spending do not affect the GDP per capita. Therefore I make the conclusion that Norway’s military spending does not have a strong correlation with its economic growth.
Figure 24: Portugal

In Portugal’s graph we can see that though its military spending has huge increases after 1924 and after 1936, its economic growth remain steadily growing without much fluctuation. Therefore I argue that military spending does not have a strong effect on Portuguese economic growth.

Figure 25: Spain

In Spain’s graph we can see that for the three surges of increasing military spending do not change the growth of GDP per capita very much, especially the one that started in
mid 1910s and lasted till late 1920s. Therefore I argue that in Spain there is no strong effect by military spending on its economic growth.

Figure 26: Sweden

In Sweden’s graph we can see that its GDP per capita grows throughout the period steadily with an obvious decrease in the World War I period. Even though there are two peaks of military spending, we can see that during the period of the first peak, the economy was actually deteriorating as the GDP per capita is decreasing. In the second peak, though there is a significant increase in military spending, the economy grows steadily without a huge fluctuation. Therefore it is obvious that military spending has little effect on Sweden’s economic growth.
Figure 27: Turkey

It is not too obvious but during the period from 1925 to 1933 we can see that when military spending decreases, Turkey’s GDP per capita is growing, and when the military spending peak from 1944 to 1947 occurs, Turkey’s economic growth is moving the opposite way as well. Therefore I argue there is no strong effect of military spending on Turkey’s economic growth.

Figure 28: United Kingdom
From this graph of United Kingdom we can see that during World War I and World War II there are peaks of military spending increases, but when we examine United Kingdom’s GDP per capita we can see that there are only small effects by the military spending peaks on the country’s economic growth. Therefore I argue that there is no strong effect by military spending on United Kingdom’s economic growth.

![Figure 29: United States](image)

It is certainly obvious that during the World War II period, military spending contributes to the huge increase of United States’ economic growth. However, when we examine the rest of the graph we can see that military spending has little effect on United States’
economic growth, and before the rise of economy due to World War II expenses, the economy is already recovering from the Great Depression. Therefore I argue that overall military spending has little to do with United States’ economic growth.

**Figure 30: Venezuela**

From Venezuela’s graph we can see that the surge of military spending has little effect on its GDP per capital. Therefore I can conclude that military spending has little to do with Venezuela’s economic growth.

**Figure 31: Yugoslavia**
From Yugoslavia’s graph we can see that the country’s GDP per capita remains stable through the period even though its military spending has fluctuations. Therefore we can conclude that military spending has little effect on Yugoslavia’s economic growth.

**Group 2:**

![Graph of Germany's GDP and military spending](image)

**Figure 32: Germany**

Germany is used by scholars as one of the examples of Military Keynesianism. However, in the World War I period, we can see that war destruction has a bigger effect than military spending on the nation’s economy. In the World War II period, it is clear that German GDP starts a sudden increase in 1932 while its military spending has a huge increase in 1937. Though by 1944 it seems that military spending has correlation with the
country’s economic growth, it is hard for us to determine whether it is because of the decline of GDP that leads to the decline of military spending, or if the military spending has a positive effect on the country’s economic growth.

![Graph showing the relationship between Peru's military spending and GDP per capita](image)

**Figure 33: Peru**

Peru’s military spending and GDP per capita seem to share a very similar pattern before experiencing a huge increase after 1946. During the period around 1929 we could see that the peak of Peru’s military spending is at the same time as that of the peak of its GDP per capita. Another peak of military spending in 1936 is also corresponding to the peak of GDP per capita. Indeed there are some places where GDP per capita and military spending do not seem to be correlating with each other. But over all it can be seen as a case when military spending has a correlation with its economic growth, though the economy does not experience a huge increase when its military spending does.
In Switzerland’s graph we can see that there might be a correlation between military spending and economic growth.

**Group 3:**

**Figure 34:** Switzerland

**Figure 35:** Guatemala
Guatemala has missing data and it is impossible to tell whether military spending and GDP growth has any correlation at all.

**Figure 36: Hungary**

Hungary has incomplete data for both military spending and GDP. Therefore we cannot determine the relationship between military spending and GDP growth.

**Figure 37: Poland**
Poland’s graph has only a very short period of data, and it is obvious that during this period there is no strong correlation between Poland’s military spending and its economic growth.

Figure 38: Romania

Romania has a very short set of data, and from this small data we can see that there is no strong correlation between its military spending and its economic growth.

Figure 39: Uruguay
Uruguay has incomplete data and it is unlikely to determine an accurate relationship between its military spending and economic growth. The results of all 39 nations are listed above.
CHAPTER IV

CONCLUSION

In conclusion, among 39 countries that we examined, 5 have incomplete datasets that prevent us from further determining whether military expenses affect their economic growth. Among the rest 34 countries, 3 of them show strong correlation between military spending and economic growth, while 31 of them show negative correlation. Germany is one of the cases that show strong correlation between military spending and economic growth. But other countries that are usually associated with Military Keynesianism, such as Japan and United States, do not show much effect of military spending on economic growth. This result is not what I had expected, as I thought the effect of military spending could be bigger. At this time, we see that Military Keynesianism does not work well on the majority of the countries that we studied. In the next chapter we will discuss the reason why Military Keynesianism, which seems to be correct intuitively to many people, does not work for the countries we examined, and what might be the possible reason of the little effect by military spending on economic growth.
REFERENCES


CONTACT INFORMATION

Name: Nahua Kang

Address: c/o Dr. Samuel Cohn
Department of Sociology
417 Academics
Texas A&M University
College Station, TX 77843-4351

Email Address: kangnahua@neo.tamu.edu

Education: B.A. History, Texas A&M University, May 2014