DETERMINANTS OF THE LONG TERM ECONOMIC GROWTH OF NATIONS IN THE ERA OF THE CRYSTALLIZATION OF THE MODERN WORLD SYSTEM

A Senior Scholars Thesis

by

NIHAD MANSIMZADA

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: Economics

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Approved by:

Research Advisor:	Samuel Cohn
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ABSTRACT

Determinants of the Long Term Economic Growth of Nations in the Era of the Crystallization of the Modern World System. (May 2012)

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It was not long ago that Keynes was arguing about the relationship of wars and economics. Most of the nations have suffered by after-war devastations which made their economies decrease during or after those wars. However, after the research we have found out that wars do not only have negative effects on countries, depending on the situations, wars can be positive for the GDP per capita of countries. Different effects of wars should be studied while analyzing economies of nations.

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CHAPTER I

INTRODUCTION

National economies have always been affected by wars. Most-nations have suffered from after-war devastations which made their economies decrease during or after those wars. The economies of Belgium and Netherlands were ruined after they became the major battlefields during the World War I and World War II. The Spanish economy decreased significantly after the Spanish Civil War. Loss of manpower and destroyed infrastructure affects GDP per capita of nations during and after the war period.

After industrialization and the starting of globalization, the world divided into rich and poor countries. For example, in the beginning of 20th century Spain and Holland were two of the world's richest countries, Japan was underdeveloped nation and the United States was poorer than Belgium. But, in 1950 the United States became the richest country in the world (Cohn, Main Proposal, 2011) and many other countries changed ranking too. In this project we will try to analyze the causes of changes in the positions of the nations from rich to poor and poor to rich by looking at the effects of wars in the economic growth of the nations between 1870 and 1950. There are several nations like Switzerland, Australia, New Zealand and etc. that enjoyed economic growth by being out of major wars. The economic growth of these nations support the theories that big military spending is a waste of federal budget and wars always affects the economies negatively.

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This thesis follows the style of the *American Journal of Sociology*.

However, according to other theories, it was the military expenditures that stimulated demand and increased economies of Germany and Japan after the World War II. As Paul Krugman stated: “First things first: Military spending does create jobs when the economy is depressed. Indeed, much of the evidence that Keynesian economics works comes from tracking the effects of past military buildups” (nytimes, 2011). Our main objective in this study is to find out effects of wars on the GDP per capita of nations.

CHAPTER II

METHODS

Data on GDP, GDP per capita, military spending, war and total death during wars were needed to use in our research to see the clear effect of wars. We have chosen Angus Maddison's historical dataset of world GDPs per capita as a main source of our GDP and GDP per capita data. He has used "1990 international dollar as the temporal and spatial anchor in the estimation of movements in GDP and per capita GDP, filling holes in the evidence with proxy estimates in order to derive world totals" (Maddison, 2006). For our military spending and war data we have used Correlates of War Project data of National Material Capabilities.

After getting all the information about the war periods of each nation from the Correlated of War Project, we created a dummy variable showing "1" if there is a war and "0" if there is not a war for each year. Another variable was created to show if the war has been fought in the borders of nations, showing "1" if the war was in the mainland of the nations and "0" if it was not.

We had to adjust the international differences in the values of currency that has been used in the military spending data so that currency fluctuations will not distort our analyses with measurement errors. International Dollars in 1990 benchmark level has been chosen as our main currency since it is a main currency that has been used for the dataset of Angus Maddison. Purchasing power parities (PPP) conversion factor from local currency unit to international dollar data of United Nations has been used to convert currencies used in military spending data to international dollars. To convert local currency units to international dollars, we divided the local currency unit by the purchasing power parity (PPP) exchange rate.

We will look at the relationship between a nation having a war on its own territory and the subsequent rate of change in its GDP per capita. Wars can destroy infrastructures of nations and make them have lower GDP per capita. However, rebuilding after the war can boost demand by replacing infrastructure and productive facilities. To see the annual change in GDP per capita we have found Delta GDP per capita for each nation. This will help us to see the war period and the changes on GDP per capita to observe if the economy suffered or increased by the effects of the war.

The Pearson Correlation function in Microsoft Office Excel has been used to find out the relationship between wars and Delta GDP per capita of nations. The Pearson Correlation shows “1” if there is a perfect positive relationship, “-1” if there is a perfect negative relationship and “0” if there is not any relationship between variables. In our research, results of the Pearson Correlation show:

1. *-1.0 ~ -0.5* The effect of war on GDP per capita is very destructive
2. *-0.5 ~ -0.2* The effect of war on GDP per capita is destructive
3. *-0.2 ~ 0.2* There is not any effect of war on GDP per capita
4. *0.2 ~ 0.5* The effect of war on GDP per capita is positive
5. *0.5 ~ 1.0* The effect of war on GDP per capita is very positive

Graphs will be used to show the relationship between GDP per capita and wars during 1870 – 1950. Vertical lines will be added to the graph to show the decrease or increase in economy during war periods. To illustrate our technique, consider the examples of France and Germany between 1870 and 1950 in the figures 1 and 2. If we look especially at the period of World War II we can see that in the first period of the war, the economy of France suffered a lot but Germany had an increase in the GDP per capita. The main reason for France's decline was, France was invaded by Germany and most of its infrastructure was destroyed during the invasion. Germany was enjoying the victories during the beginning of World War II. The Germans were increasing military spending while they were capturing new resources and expanding their labor force. However, during the ending of World War II we can see that they had a big decrease in the GDP per capita. They lost all the new resources that they had obtained during the first period; furthermore, the war moved on to German territory rather than the lands of other nations.

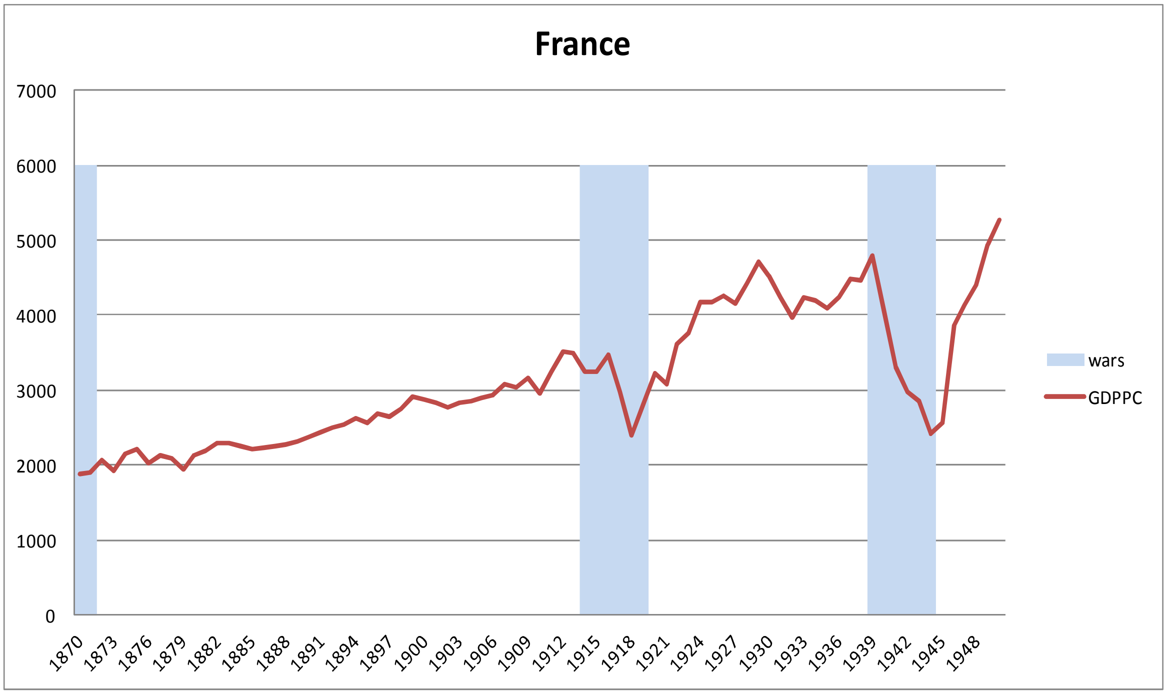

FIGURE 1: FRANCE, GDPPC AND WARS

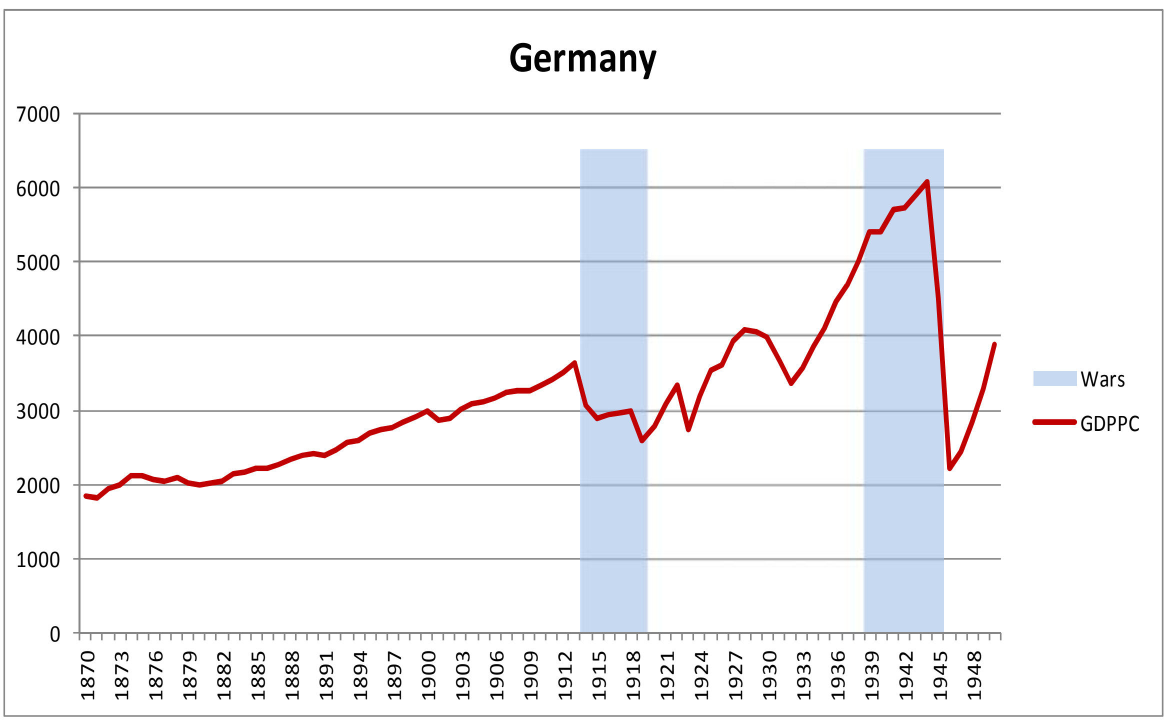

FIGURE 2: GERMANY, GDDPC AND WARS

CHAPTER III

RESULTS

The results of our research can be seen in several graphs that explain different conclusions derived from our research. After some analysis we came to the conclusion that involvement in a war and results of wars can have different effects on nations. The effect of wars can be different depending on whether the war is in a nation's own territory or is fought externally. For this reason we have divided our results into two groups that show two different effects of wars by having wars inside of borders and having wars outside of borders of the nation.

TABLE 1: WAR INSIDE BORDERS

War inside borders	
Austria	-0.248191613
Belgium	-0.51125884
Brazil	-0.45846
El Salvador	-0.49876
Finland	-0.39466
France	-0.391112746
Greece	-0.74569
Germany	-0.245978167
Mexico	-0.22649
Netherlands	-0.386144307
Japan	-0.487193582
Peru	-0.30381
Portugal	-0.228440965
Spain	-0.53447

The table 1, Pearson Correlation results of war inside borders shows the relationship between having war on the mainland of nations and delta GDP per capita. This table includes being battlefield during wars, being occupied during wars, and civil wars. As we can see in the table, all of the results are less than -0.2, which means that having wars on the territories of nations have negative effect on the GDP per capita. For some nations these results are even less than -0.5, which means that consequences of wars for those nations were more destructive. When we compare the Pearson Correlation results with our war data, we can see that most of the wars that had more destructive effects were the civil wars and the wars that resulted with occupation of most of the territories of nations during the war period.

TABLE 2: WAR OUTSIDE BORDERS

War outside borders	
Australia	0.17058485
Belgium	0.06710808
Brazil	-0.18761321
Chile	0.547303127
France	0.03130882
Germany	0.02893004
Italy	0.308330804
Japan	-0.05636197
Netherlands	-0.00170207
New Zealand	0.015624155
United Kingdom	-0.100946938
United States	0.28105282

The table 2 shows the results of Pearson Correlation between having wars outside of borders and delta GDP per capita. War outside of borders includes territorial gains from wars. We have chosen periods that the war has been outside of the territories of nations to see how it will affect the GDP per capita. As we see, most of the results are around 0 which means that most of the wars which were on the lands of other nations did not have any effect on the GDP per capita. Only on few nations we can see that the Pearson Correlation has positive effect on economies. Annexing other territories and capturing main industrial lands were the main reasons of that.

As we see there are different effects of wars on different nations. Now we will graphically analyze some of these nations to see the different effects of wars on GDP per capita clearly.

Having a war within the borders of one's own nations can have devastating effects. For example, in the graph of France, we can see the war periods of France between 1870 and 1950. Blue columns in the graph show wars that have been fought by France in outside of her borders. Red columns show the wars that have been fought inside of her territory. We can clearly see that wars that have been fought outside of her territory have not affected her GDP per capita most of the time. In some cases those wars have helped France to increase her GDP per capita by gaining additional resources outside of her borders.

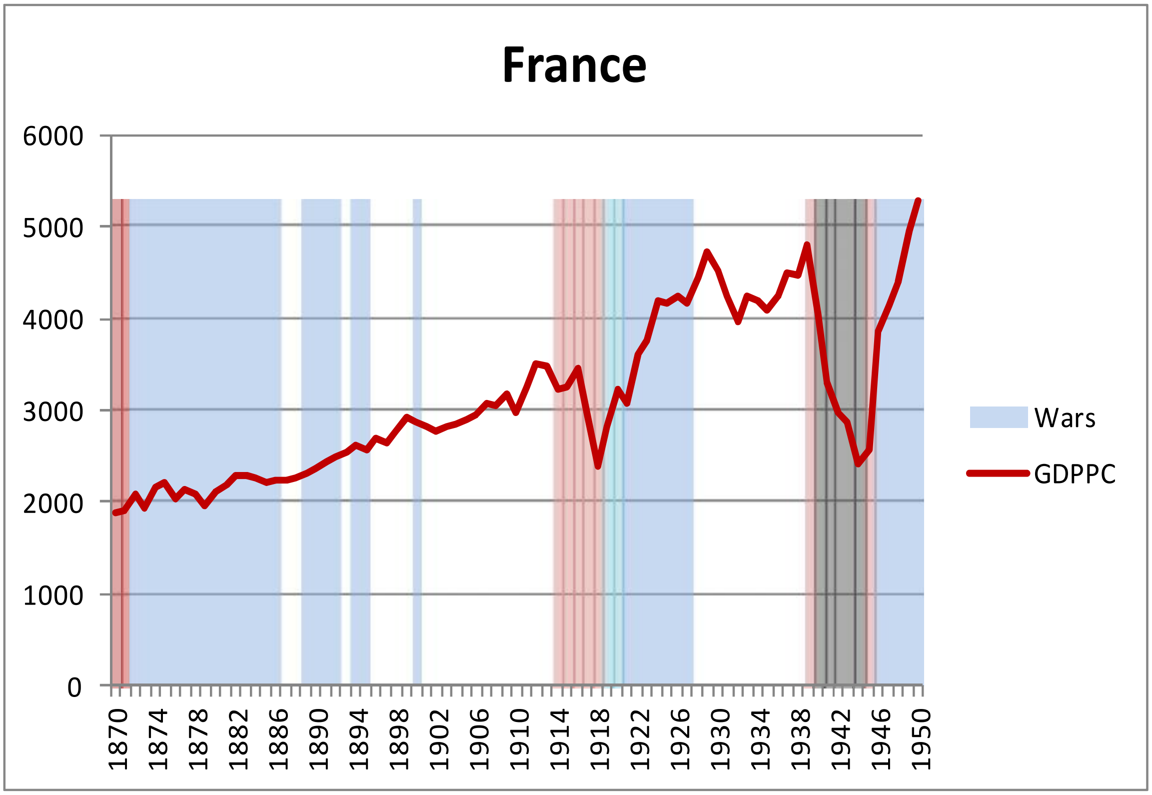

FIGURE 3: FRANCE

However, wars that have been fought on her lands had devastating effects, especially if we look at the period of World War I and World War II. Battles in her northern borders during 1914 – 1918 have destroyed her main coal industries that effects can be seen clearly in the graph. We can see in figure 3 that having war in most of her main territory during 1940 – 1945 has decreased GDP per capita of France by half. Dark columns of the graph show us the period of occupation of the lands of France by Germany during the World War II. Even though France liberated her lands during 1945, recovery of the economy started from 1946. In the graph we can see that it takes at least three years to go back to the GDP per capita level of 1939. As we can see from the Pearson correlation tables, the result of having war inside the borders of France is -0.39, which is equal to the period of red and dark columns in the graph. However, the result of having war outside of her borders is 0.031, which is shown by blue columns in the graph.

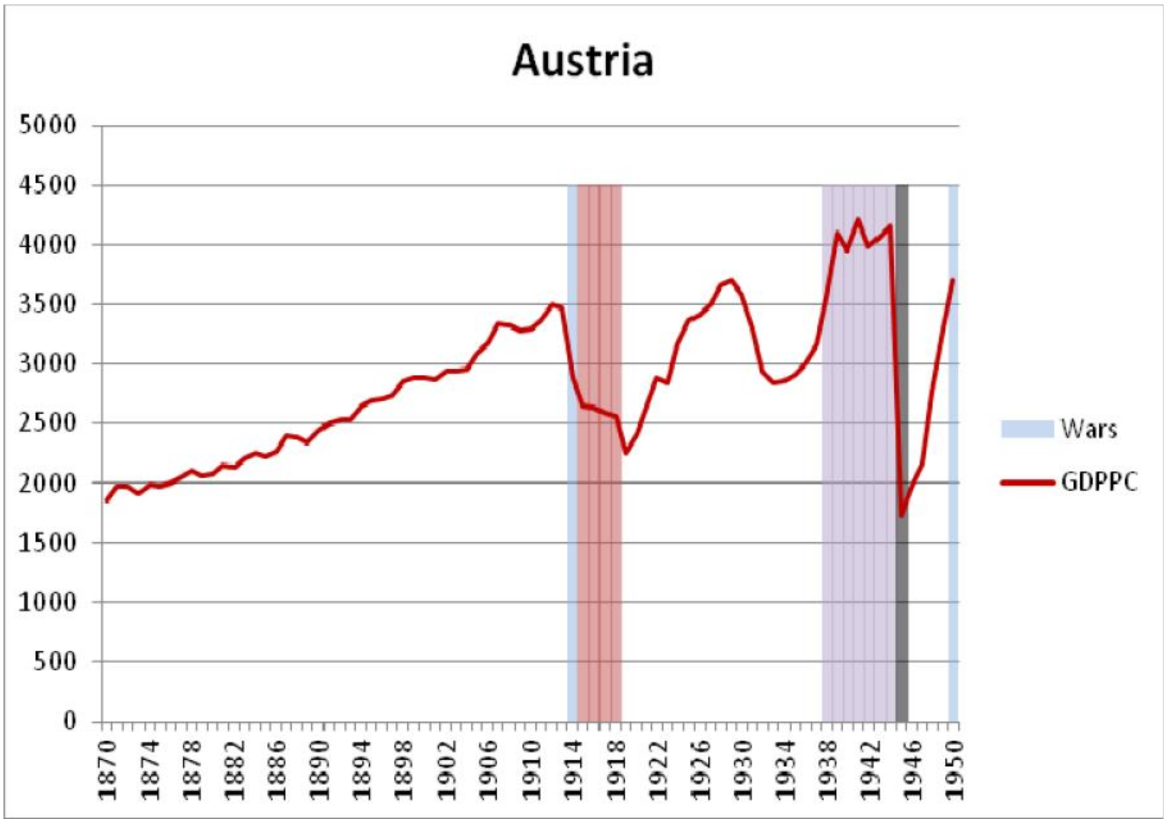

FIGURE 4: AUSTRIA

Austria is one of the best examples of having war in its territory. In the graph, if we look at the period during 1914-1918, we can see a big decrease in the GDP per capita of Austria from fighting in her lands. Even though Austria was occupied by Germany during the World War II, we can see that they did not have a decrease in their GDP per capita till 1945. The main reason is, the occupation during the war was peaceful and they did not have war on their lands till 1945. When the Red Army of the USSR reached Austria, the war started on the mainland of Austria and effects of that can be seen clearly in the figure 4 if we look at the dark column in the year of 1945.The GDP per capita of Austria decreased by half during 1945 as a result of intensification of the air campaigns and Russian occupation.

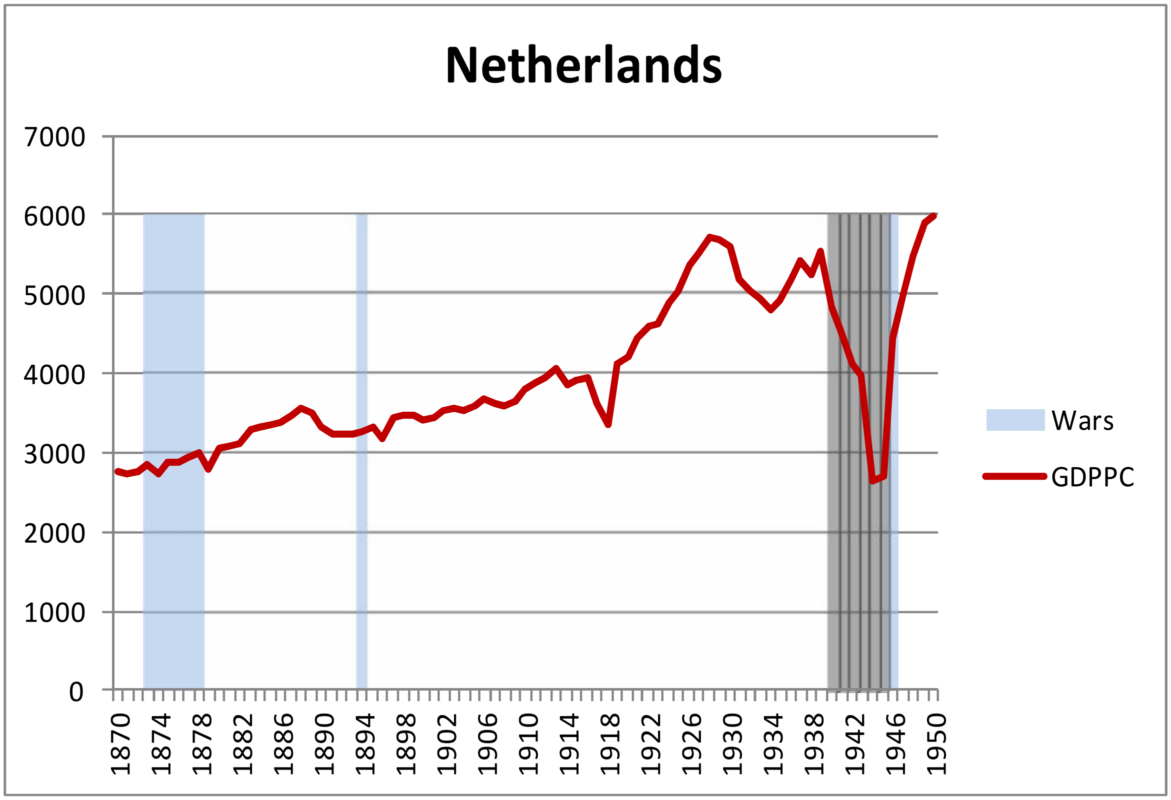

FIGURE 5: NETHERLANDS

The occupation of its mainland can destroy an economy of nation during the war period, since the primary resources and labor forces of the occupied country can be appropriated by occupant nation. In the graph of Netherlands we can see economy of the Netherlands during the German occupation between 1940 and 1945 which is marked by the dark columns. The GDP per capita of the Netherlands have decreased almost by half during the occupation. In figure 5, we can see quick recovery, after she gains her territory, resources and labor force back. As the Pearson Correlation results prove, having wars outside of her borders almost doesn't have any effects on the GDP per capita and it equals to -0.0017. However, results change to -0.386 when Netherlands was occupied by Germany.

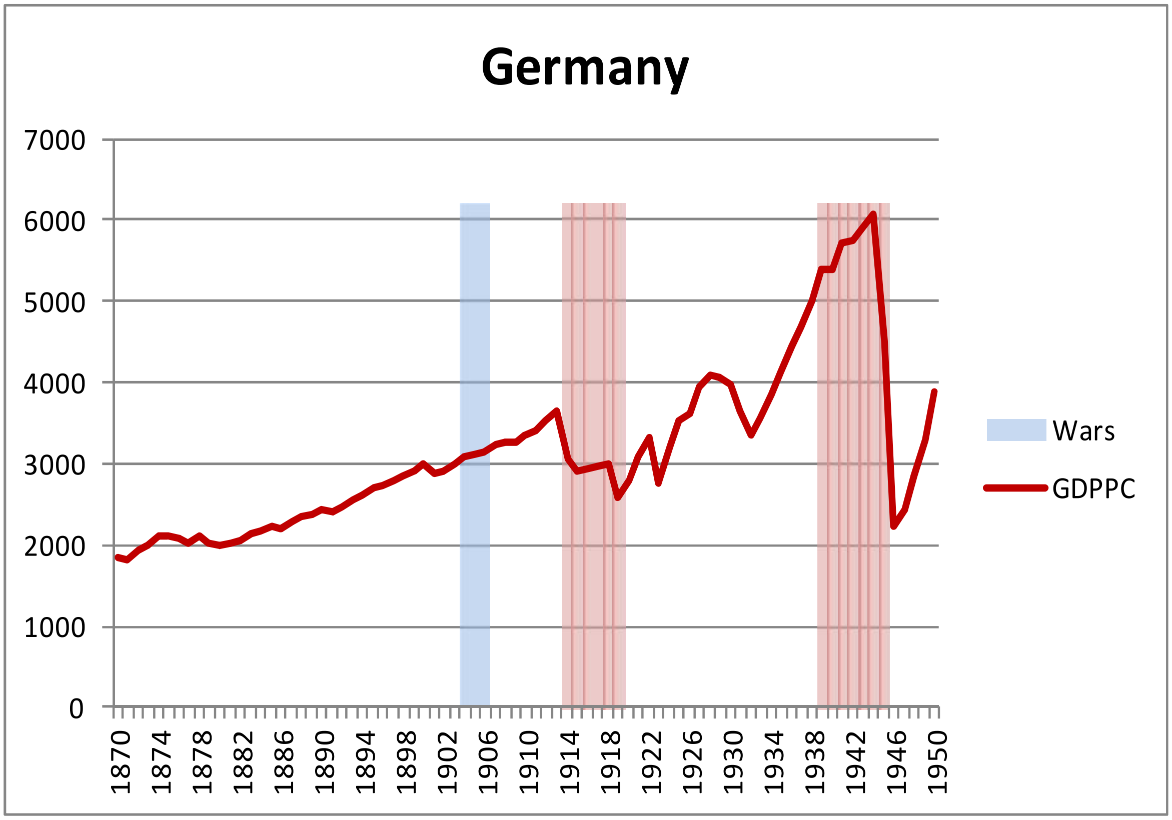

FIGURE 6: GERMANY

Wars can have positive and negative effects depending if the nation is on the winning or losing side. The best example for this can be Germany during the period of 1870 and 1950. In the graph of Germany we can see different effects of several wars. In figure 6, blue columns show us the war period during South West African revolt 1904-1905. Since the war was not on the mainland of Germany it almost did not affect the economy. However, we can see a big decrease during the period of World War I in 1914-1918.If we look at the history of World War II Germany was winning the battles, occupying lands and main economic resources of different nations till 1944. Then they switched to the losing side of the war and lost all the territories that they gained during the first period of the war. Plus starting to fight in her main territory had destructive effects to her industry that decreased her GDP per capita from 6084 to 2217 international dollars. The result of Pearson Correlation for having war in the borders of Germany is -0.245, and it is equal to 0.028 when the wars were outside of the Germany.

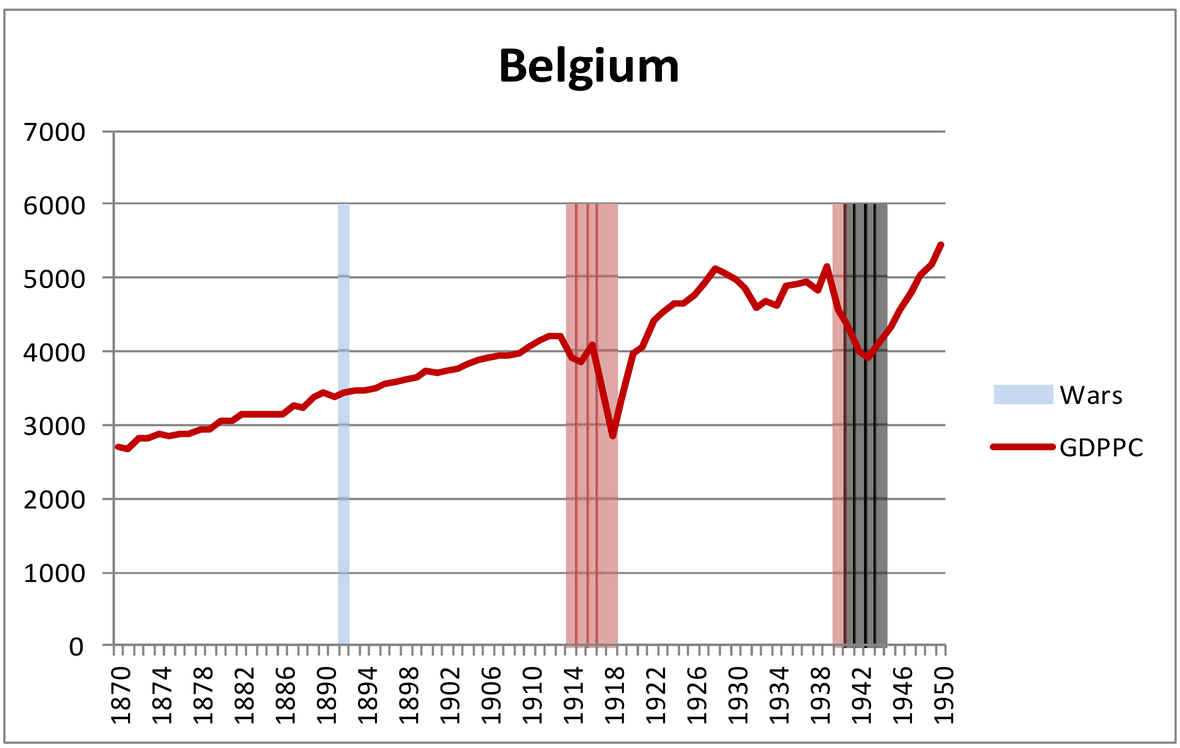

FIGURE 7: BELGIUM

Another example of the adverse effects of occupation can be seen in the graph of Belgium. Having some of the most destructive battles of the World War I within its borders ,Belgium suffered almost as much as France during 1914-1918, since it was part of the Schlieffen Plan to occupy neutral Belgium for a quick attack on France. We can see a successful recovery period after World War I in Belgium. A stable high level of GDP per capita ends when Germany invades Belgium in 1940 and occupies it till the end of the World War II. If we look at the figure 7, it takes longer for Belgium to recover from the effects of World War II than the effects of World War I. Belgium has -0.511 correlation results when the wars were inside of her borders, which means the economy was very negatively affected by them.

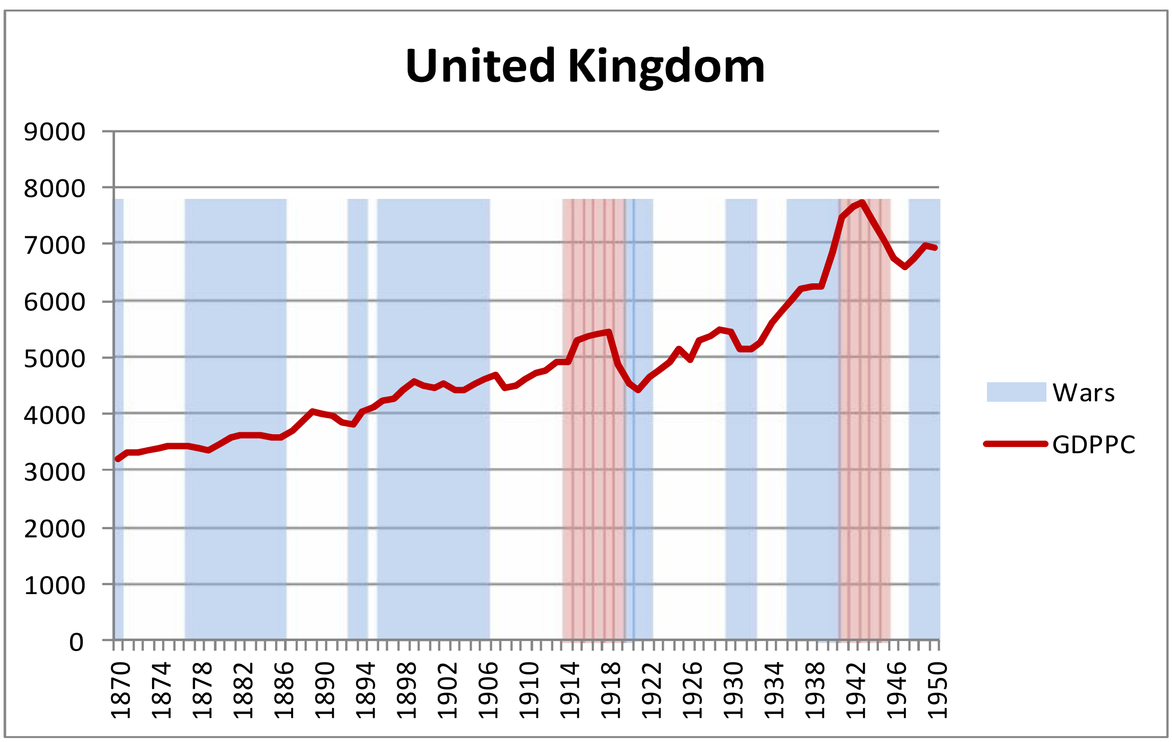

FIGURE 8: UNITED KINGDOM

There are some countries who were unaffected even by frequent wars. The United Kingdom is one of the best examples. If we look at the figure 8, the graph of the United Kingdom, we can see that they have involved to lots of wars during 1870 and 1950. However, we cannot see a big decrease in GDP per capita of the United Kingdom in most of these wars. Being able to fight overseas was one of the main reasons. Most of these wars were fought in the colonies of the United Kingdom,-in regions of India, Africa and the Middle East. The Pearson Correlation result for these wars is -0.1, almost no effect on the economy. We can only see decreases in the GDP per capita of the United Kingdom during the World War I and the World War II. However, in most of these decreases there are more economic reasons than having war in its borders. Unlike most nations, the United Kingdom suffered air and naval attacks on her territory during the world wars.

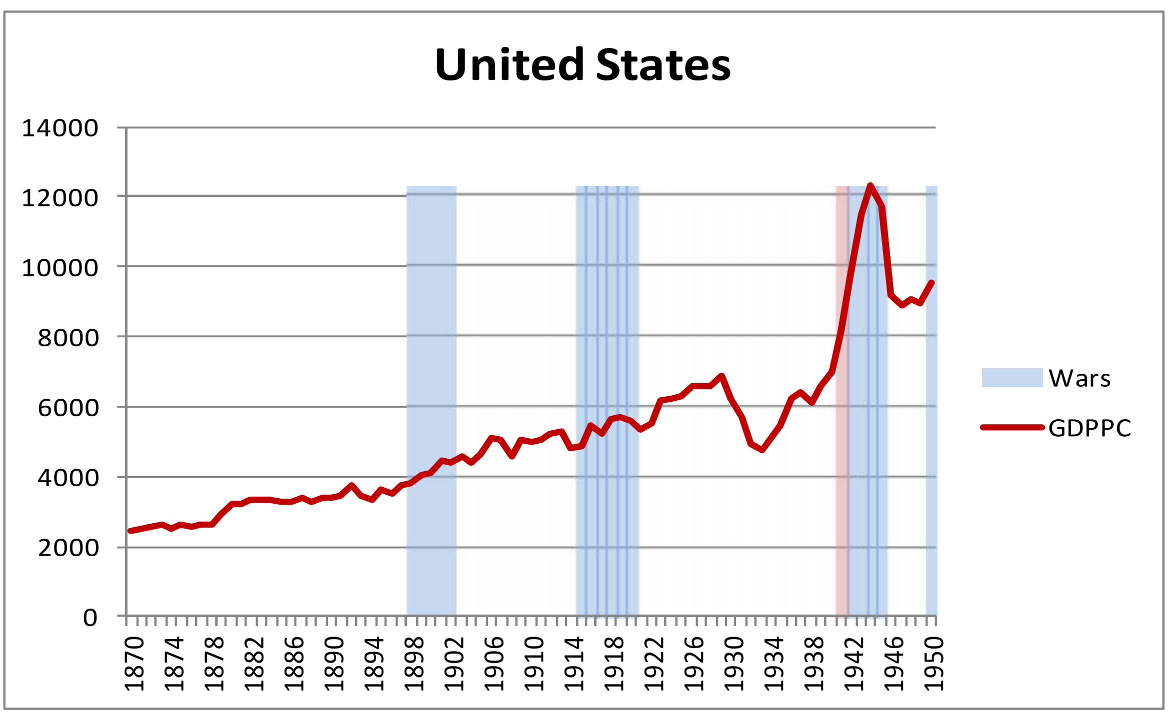

FIGURE 9: UNITED STATES

Another good example for the effects of having wars outside of her borders is the United States of America. In most of the wars such as the Philippine – American war of 1899-1902 or the World War I the GDP per capita of the United States was increasing in a stable rate. In figure 9, as we see during the World War II, the GDP per capita of the United States almost increased by 4000 international dollars while other countries mostly suffered. The main reason of the increase during the World War II was the effects of the recovery plans after the Great Depression. If we compare the United States with a nation that had battles on its territory during the World War II, such as France, we can see clear effects of having war outside of your borders instead of fighting on your lands. The United States is one of the few nations that have positive Pearson correlation result, which is equal to 0.28.

Other examples of nations that did not have wars on their own lands are New Zealand, Australia, and Chile. Even though New Zealand and Australia were part of the World War II, they never felt the effects of the war in their economies. From the graphs of the Australia and New Zealand, figure 10 and figure 11, we can see clear significant increases in the GDP per capita of both nations. Pearson Correlation results also show that there was not effect of wars on the GDP per capita of these nations.

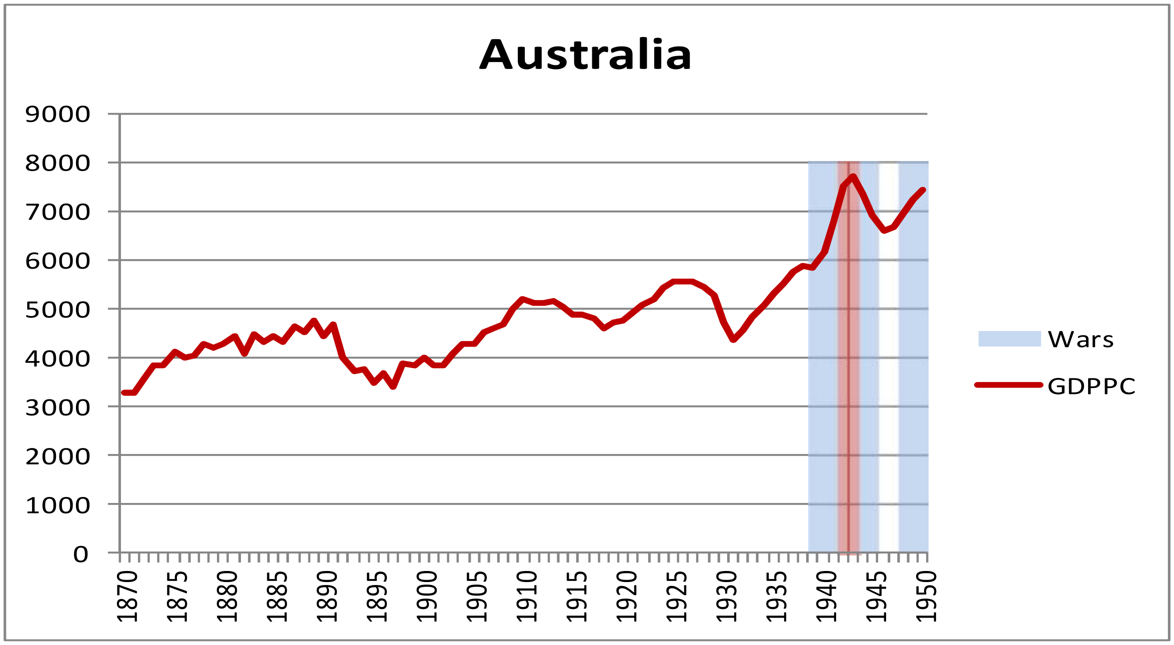

FIGURE 10: AUSTRALIA

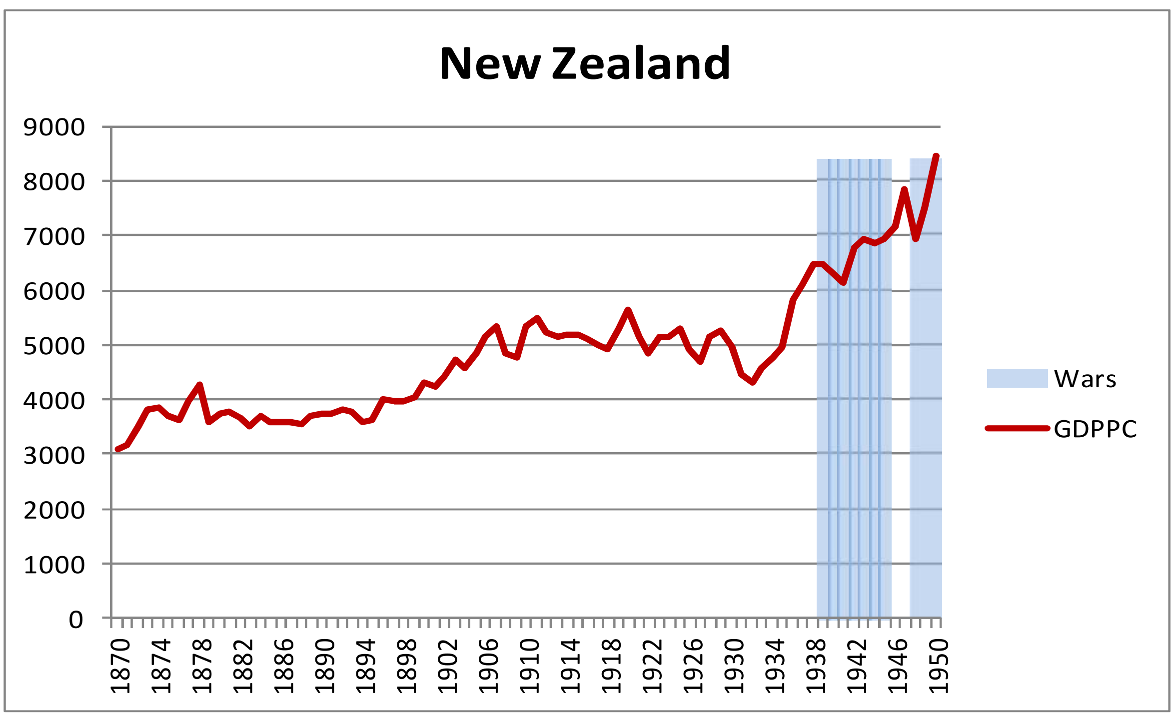

FIGURE 11: NEW ZEALAND

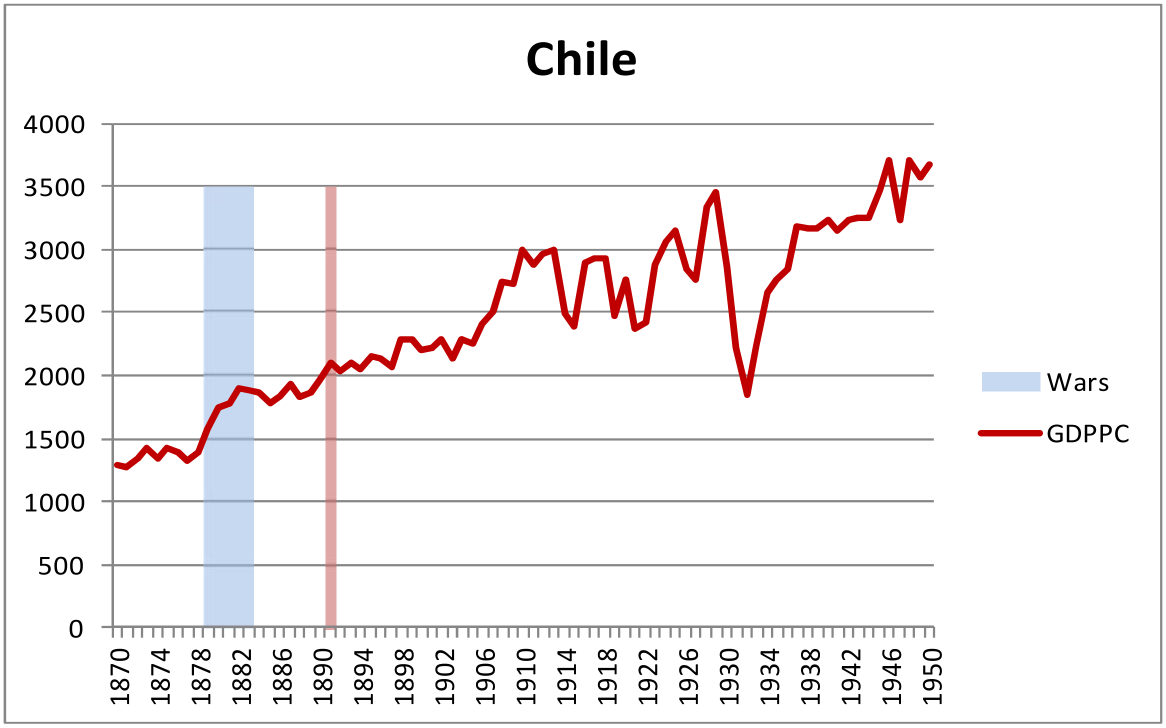

FIGURE 12: CHILE

Compared to other nations, Chile was enjoying positive effects of having wars on the territories of other nations. Chile was increasing its resources by annexing some lands with valuable industrial potential from other nations. If we look at the period of 1879 and 1883 in figure 12, we can see an increase in the GDP per capita of Chile. It was during the War of the Pacific, when Chile took control of the nitrate fields of Bolivia and Peru. It was the period when the half of the budget revenues was made by the taxes on nitrate exports. The Pearson Correlation result for Chile is 0.547, which proves our analysis that gaining important territories had very positive effect on the GDP per capita of Chile.

CHAPTER IV

SUMMARY AND CONCLUSIONS

As we see from the examples above, wars can have different positive or negative effects on economies. The Pearson Correlation results gave us enough information about the effects of wars on the GDP per capita of nations. We saw that most of the nations that had wars on their main territories were suffered a lot during those wars. The nations that were occupied during the war period like Belgium, Greece and France had the Pearson Correlation results less than -.35 which proved the negative effect of occupation.

Even though we were thinking that wars outside of borders have more positive effect on economies, the Pearson Correlation results illustrated that actually those wars were not so beneficial for the GDP per capita of nations. Only few nations that were succeeded to annex important territories of other countries enjoyed the positive effect of new resources with an increase in their GDP per capita.

The Pearson Correlation and graphical results demonstrated that wars have different effects on economies depending on situations. Clear effect of wars can be seen during the period of war instead of long term effects. However, we still can see different wars affecting economies in several ways. Even though there are lots of other variables that can affect economies of nations, effects of wars cannot be underestimated when analyzing economies of different countries.

REFERENCES

Cohn, Samuel. 2011. “Main Proposal.” Research proposal, Sociology Department, Texas A&M University, College Station: 1-2

Krugman, Paul. “Bombs, Bridges and Jobs.” *The New York Times*. 2011. 2 April 2012. <http://www.nytimes.com/2011/10/31/opinion/bombs-bridges-and-jobs.html?_r=1>.

Maddison, Angus. *The World Economy: A Millennial Perspective.* OECD, Paris, 2006

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